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PROJECT PERFORMANCE ASSESSMENT REPORT



INDIA

# Mumbai Urban Transport Project

**Report No. 106391**

JUNE 15, 2016

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and Development / The World Bank  
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**INDIA**

**MUMBAI URBAN TRANSPORT PROJECT**

**(IBRD-46650 AND IDA-36620)**

**June 15, 2016**

## Currency Equivalents (annual averages)

### India

*Currency Unit = Indian rupee (Rs)*

2002	US\$1.00	Rs48.86
2005	US\$1.00	Rs43.45
2011	US\$1.00	Rs44.48
2013	US\$1.00	Rs59.52
2015	US\$1.00	Rs63.59

## Abbreviations and Acronyms

ATC	Area Traffic Control
BEST	Brihan Mumbai Electric Supply and Transport Company
CPS	Country Partnership Strategy
DCA	Development Credit Agreement
IBRD	International Bank of Reconstruction and Development
ICR	Implementation Completion and Results Report
IDA	International Development Association
IMP	Independent Monitoring Panel
MCGM	Municipal Corporation of Greater Mumbai
MMR	Mumbai Metropolitan Region
MMRDA	Mumbai Regional Development Authority
MRVC	Mumbai Railway Vikas Corporation Ltd
MSRDC	Maharashtra State Road Development Corporation
MUAE	Ministry of Urban Affairs and Employment
MUTP	Mumbai Urban Transport Project
MUTP – 2A	Mumbai Urban Transport Project – 2A (follow on project)
NGO	Non-government Organization
PAD	Project Appraisal Document
PAP	Project Affected Person
PDO	Project Development Objectives
PPAR	Project Performance Assessment Report
RAP	Resettlement Action Plan
R&R	Resettlement and Rehabilitation
RIP	Resettlement Implementation Plan

## Fiscal Year

Government of India: April 1 – March 31

Director-General, Independent Evaluation	: Ms. Caroline Heider
Director, IEG Financial, Private Sector and Sustainable Development	: Mr. Marvin Taylor-Dormond
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This report was prepared by Fang Xu and Peter Freeman (consultant), who assessed the project in December 2015. The report was peer reviewed by Jean-Charles Crochet and panel reviewed by George T. Keith Pitman. Richard Kraus provided administrative support.

## Principal Ratings

### India: Mumbai Urban Transport Project (IBRD – Ln. 4665; IDA – Cr.3662)

	ICR*	ICR Review*	PPAR
Outcome	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Risk to Development Outcome	Moderate	Moderate	Moderate
Bank Performance	Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory

\* The Implementation Completion Report (ICR) is a self-evaluation by the responsible World Bank department. The ICR Review is an intermediate Independent Evaluation Group (IEG) product that seeks to independently verify the findings of the ICR.

## Key Staff Responsible

### India: Mumbai Urban Transport Project (P050668)

Project	Task Manager/Leader	Division Chief/ Sector Director	Country Director
Appraisal	A.K. Swaminathan	Mieko Nishimizu	Edwin R Lim
Completion	Atul Agarwal	Isabel M Guerrero	N Roberto Zagha

**IEG Mission: Improving World Bank Group development results through excellence in evaluation.**
**About this Report**

The Independent Evaluation Group (IEG) assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20-25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEG peer review, panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. The PPAR is also sent to the borrower for review. IEG incorporates both Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

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IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: <http://worldbank.org/ieg>).

**Outcome:** The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Risk to Development Outcome:** The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High, Significant, Moderate, Negligible to Low, Not Evaluable.

**Bank Performance:** The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Borrower Performance:** The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

## Preface

This Project Performance Assessment Report (PPAR), prepared by the Independent Evaluation Group (IEG), evaluates the Mumbai Urban Transport Project in India. An International Bank for Reconstruction and Development (IBRD) loan of US\$463 million (Ln. 46650) and an International Development Association (IDA) credit of US\$79 million (Cr. 36620) were approved on June 18, 2002.

At appraisal, the total project cost was estimated at US\$945 million, while the final cost was US\$1,128 million. The borrower's contribution at appraisal was US\$482 million and at completion was US\$759 million. No other financiers were involved. The closing date was originally June 30, 2008, but the project actually closed on June 15, 2011, nearly three years later. US\$92.7 million was cancelled from the Loan for activities not completed by closure and US\$9.5 million from the Credit because of savings that accrued.

The project was selected for evaluation by IEG as an input to the proposed study on the effectiveness of the World Bank Group's support to urban transport development scheduled for FY2017 because of the sheer size of the suburban rail component and the scale of the resettlement activities (over 100,000 persons). The resettlement process encountered difficulties following complaints by project-affected persons to the World Bank Inspection Panel in 2004. This resulted in the end in a better project after management intervention. There is considerable learning from the investigation report, the subsequent management action plans and the six progress reports to the Board to rectify the situation.

IEG prepared the PPAR on the basis of the project appraisal documents, implementation completion reports (ICRs), development credit agreements, project papers, related reports and documents for the Inspection Panel, as well as memoranda and working papers. An IEG field mission visited Mumbai in December 2015 to validate the results reported by the ICR and to assess the sustainability of the project. Meetings were held with Bank staff at the resident mission in New Delhi. Discussions were held with the Mumbai Metropolitan Regional Development Authority, the Mumbai Railway Vikas Corporation Ltd., the Municipal Corporation of Greater Mumbai, the Tata Institute of Social Sciences, and some of the project affected persons.

The mission also expresses its appreciation for the cooperation and attention given by the borrower and all concerned parties. A list of persons met by the mission is in Appendix B.

Following IEG practice, copies of the draft report will be sent to government officials and implementing agencies, and comments received from the government are attached as Appendix E.

## Summary

This is a Project Performance Assessment Report (PPAR) for the World Bank-supported Mumbai Urban Transport Project in India. At appraisal, the total project cost was estimated at US\$945 million, while the final cost was US\$1,128 million. An International Bank for Reconstruction and Development (IBRD) loan of US\$463 million (Ln. 4665) and an International Development Association (IDA) credit of US\$79 million (Cr. 3662) were approved on June 18, 2002. The closing date was originally June 30, 2008, but the project actually closed on June 15, 2011, nearly three years later.

The Mumbai Metropolitan Region is one of the world's largest urban areas with a population of 20.7 million. Mumbai is the major commercial, entertainment, and fashion center in India and one of the world's top 10 centers of commerce in terms of global financial flows. Suburban rail services are the backbone of the region's transportation system, but at project appraisal they were carrying more passengers than capacity, resulting in extremely overloaded trains. Rail service demand in Mumbai went up from 6.1 million to 7.2 million passengers per day between the project start and closure. For this project, the World Bank supported a comprehensive urban transport plan, which was in line with the Bank's strategy to help overcome infrastructure bottlenecks, thus promoting economic growth and reducing poverty. Capacity building for all relevant entities was included.

The project development objectives were to facilitate urban economic growth and improve the quality of life by fostering the development of an efficient and sustainable transport system including effective institutions to meet users' needs in the Mumbai Metropolitan Region. There were three components: the first was to improve the capacity and performance of the suburban rail system through service efficiency improvements, procurement of rolling stock, and the expansion of network capacity. The second, aimed at the road sector, involved support for Area Traffic Control to optimize the functioning of traffic signals, as well as pedestrian facilities, traffic improvement schemes, and parking controls. In addition it was intended to increase the road network functionality by improving two east-west link roads and eliminating the main road-level crossings across railway tracks. The bus system was to be improved through support for organizational reforms, efficiency measures and the procurement of environmentally, and user-friendly buses. The third component involved the relocation of over 100,000 people affected by the project—some who were living in squatter settlements adjacent to the rail tracks and others, many of whom had shops and other enterprises, to make way for the east-west roads. At the time, this was the largest urban resettlement project in which the Bank had been involved. However, the component turned out to be more complex than anticipated and grievances expressed by the project-affected persons were not adequately addressed, resulting in an Inspection Panel investigation.

Concerns raised by the panel led management to suspend disbursements of the road and resettlement and rehabilitation components in March 2006. Disbursements were resumed in June 2006 after the Board of Executive Directors accepted a 10-point action plan. By project closure, virtually all households and 98 percent of the affected shopkeepers were successfully relocated and a grievance redress mechanism handled over 4,600 cases.

Bank procedures for resettlement and rehabilitation are now being used in the Mumbai region for all subsequent infrastructure projects involving relocations whether funded by the Bank or not.

Regarding the transport improvements, the average peak-hour rail passenger load per train was reduced from 5,400 to 4,016, but fell short of the target of 3,600 because better services increased demand more than had been expected. Some 250 road junctions were equipped with the Area Traffic Control system technology, achieving the target for reduced delays and thus improving traffic flows at intersections. In addition, 644 low-emission, user-friendly buses were purchased to replace old vehicles, providing additional seats and improving service quality. Only one of the two east-west roads was completed by closure due to protracted negotiations with project-affected people. This road was only completed using borrower funds in April 2014, six years after the original completion date. Moreover, some contracts were cancelled including most pedestrian crossings because of reduced funding availability due to exchange rate fluctuations, while the supply of 108 bogie assemblies for electric multiple unit coaches had to be deferred to the follow-on project.

A significant achievement was the development of a Resettlement Division within the Mumbai Metropolitan Region Development Authority for management of resettlement implementation and various innovative approaches that were introduced. The authority, on the other hand, did not succeed in persuading other stakeholders to establish a Road User Charging Policy as originally planned. The government and stakeholders continue to discuss a draft policy. This said, both the suburban rail and bus fares have been revised upwards to levels agreed with the Bank, but there does not yet appear to be significant political support for radical reforms, such as congestion pricing, land use reform, and parking restrictions. Meanwhile, air quality, as in most Indian cities, is deteriorating due, in part, to the rapidly increasing number of vehicles.

The outcome is rated moderately satisfactory taking into account the objectives were mostly achieved albeit with moderate shortcomings. The risk-to-development outcome is rated moderate since although a Bank follow-on project is ensuring continuity on the rail side and institutional capacity continues to be strengthened, the authorities still need to agree on a comprehensive plan to restrain traffic in the central area through appropriate policy reforms. Adequate attention continues to be given, however, to maintenance issues. Both Bank and borrower performance are rated as moderately satisfactory. Shortcomings in achievements were largely due to an underestimation of the complexity of the project and the time it would take to negotiate and implement the resettlement component. The procurement function also could have been speeded up through high-level intervention. The Mumbai Metropolitan Region Development Authority initially had limited capacity, but was strengthened considerably during the course of the project. There was no question as to the level of commitment of all parties to the project.

## Lessons

**Project development objectives should be specific and measurable.** The overall development objectives in this project were too generalized and the results had to be based on sub-objectives, which were effectively proxies for the overall objective. This detracted from clarity on what the project was seeking to achieve and how well the project goals were met.

**Large-scale resettlement is a complex operation that needs considerable planning, adequate provision of time, good negotiation skills, and strong capacity to implement successfully.** At the time of appraisal, the scale of the Mumbai Urban Transport Project was unprecedented in an urban context in India. Not all groups being displaced were alike and initially there were insufficient opportunities for grievances to be heard empathetically. Poor inter-agency coordination and too many implementing agencies can also become a serious obstacle to the implementation of the key activities of such a project.

**A lack of adequate synchronization of resettlement activities with civil works can cause significant time and cost overruns.** This project demonstrates that civil works began prematurely before all the resettlement issues were resolved, especially those businesses and households affected by road links. This led to dissatisfied project-affected groups appealing to the Inspection Panel for assistance and this delayed project progress significantly. Prior to the commencement of civil works, substantial land acquisition and resettlement should always be completed.

**Transition from an administrative compensation approach to a win-win negotiated approach can resolve seemingly intractable problems with project-affected groups.** There is a need to understand the nature of peoples' grievances in a transparent way. In this project the state government went beyond normal procedures and was flexible in negotiating the resolution of some extremely contentious resettlement issues.

**Introducing entitlements and market-based solutions was a major contributor to resettlement success.** Provision of free, alternative housing with title has had an empowering effect on the project-affected households, which have acquired new social status and gained wider access to employment in the formal sector. The market solution of offering transfer of development rights as a tradable benefit in lieu of land compensation proved to be an attractive form of compensation to the legal owners for allowing resettlement on part of their land.

Marvin Taylor-Dormond  
Director, Financial, Private Sector, and  
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# 1. Background and Context

## Economic Background

1.1 India is the seventh largest country in the world by area and the second most populous with nearly 1.3 billion people. It had a gross domestic product (GDP) per capita of US\$1,627 in 2014, at which time it was the world's fourth-largest economy.<sup>1</sup> The World Bank's 2014 overview of the country declared: "India's recent growth and development has been one of the most significant achievements of our times. Over the six and half decades since independence, the country has brought about a landmark agricultural revolution that has transformed the nation from chronic dependence on grain imports into a global agricultural powerhouse that is now a net exporter of food. Life expectancy has more than doubled, literacy rates have quadrupled, health conditions have improved, and a sizeable middle class has emerged. India is now home to globally recognized companies in pharmaceuticals and steel as well as information and space technologies. It also has a growing voice on the international stage that is more in keeping with its enormous size and potential."<sup>2</sup> The service sector, focused around the major urban areas has been a major contributor to India's rapid economic growth in recent years. India has eight cities with more than five million people, and three with over 10 million (Mumbai, Delhi, and Kolkata). It is projected that the urban population will grow to 473 million by 2021 and 820 million by 2051.<sup>3</sup>

## Mumbai Urban Transport Context

1.2 The Mumbai Metropolitan Region (MMR) is one of the world's largest urban areas with a population of 20.7 million, according to the 2011 census.<sup>4</sup> It covers 4,355 sq. km. and has 20 urban local bodies spread over an 18 km-long peninsula running north-south. This results in a linear urban transport network with long average journey lengths. Within the next 25 years, MMR is expected to overtake Tokyo to become the largest city in the world. Mumbai is the major commercial, entertainment, and fashion center in India with a nominal GDP of US\$278 billion in 2014. It is one of the world's top 10 centers of commerce in terms of global financial flows. The MMR accounts for six percent of India's economy, 10 percent of factory employment, 20 percent of income tax collections, 60 percent of customs duty collections, 20 percent of central excise tax collections, and 40 percent of foreign trade. Headquarters of a number of Indian financial institutions, such as the Bombay Stock Exchange, the Mint, and numerous Indian companies, such as the Tata Group, Essel Group, and Reliance Industries are located in Mumbai. On the other hand, more than half of Mumbai's population now lives in slums. This is the result of unchecked migration into the city by people in search of jobs,

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<sup>1</sup> IMF World Economic Outlook (April 2015)

<sup>2</sup> [www.worldbank.org/en/country/india/overview](http://www.worldbank.org/en/country/india/overview)

<sup>3</sup> Agarwal, A, 2013, *Mumbai Urban Transport Project – A Multi Dimensional Approach*, CODATU Special Issue, Research in Transportation Economics 40 (2013) 116-123, [www.elsevier.com/locate/retrec](http://www.elsevier.com/locate/retrec)

<sup>4</sup> Press Information Bureau, 2011, Million Plus Cities in India as per the 2011 Census, Government of India

antiquated housing laws, and accelerating real estate prices.<sup>5</sup> Records from the Maharashtra Pollution Control Board also show that pollutants in Mumbai's air frequently cross the permissible levels.<sup>6</sup>

1.3 Mumbai has long been dependent on public transport. Although 50 percent of trips are made on foot, of the remainder, 80 percent are by bus and suburban train services. In 2013-14, some 4.8 million passengers were carried daily by bus at average speeds of 12 km/hr. and 7.9 million passengers were conveyed daily by rail. The rail services are the backbone of the transportation system, but suburban trains at project appraisal were carrying more passengers than capacity, resulting in the now legendary photographs of people hanging on to the sides of overloaded carriages. Prior to the Mumbai Urban Transport Project (MUTP), nine car trains used to carry more than 5,000 passengers—that is, more than 16 persons per sq. meter—the highest density passenger service anywhere in the world.<sup>7</sup> On the positive side for users, the fares charged were among the lowest in the world. The main priority, however, was to increase the capacity of the railway. The squatter settlements adjacent to the railway tracks were a problem and resulted in trespassing and accidents. Moreover, stations did not have sufficiently good passenger dispersal systems to handle the high volumes of people.

### **Urban Transport Institutional Arrangements and Priorities**

1.4 Urban infrastructure was primarily funded from the state budget until 1998 when the then Ministry of Urban Affairs and Employment (MUAE) endorsed a report entitled *Traffic and Transportation Policies and Strategies in Urban Areas in India*. The Ministry of Urban Development, the successor to MUAE, adopted some of the recommendations, including granting aid to cities that aligned with their policy. The Government of Maharashtra accepted the conditions of such grants to improve transport in the MMR. It undertook, with Bank assistance, a comprehensive transport study under the auspices of the Mumbai Metropolitan Regional Development Authority (MMRDA). The preferred strategy emanating from the study was to strengthen the public transportation system and put in place appropriate demand management measures in congested parts of the MMR (like the island city of Mumbai). This was accepted both by the Government of Maharashtra and the Indian Railways. Priority measures were to improve existing railway capacity, improve east-west road connectivity, better parking controls and traffic management, and improved road safety. Other issues to be addressed included enhancing bus services, reducing pollution from motor vehicles, improving road maintenance and greater involvement of stakeholders.

1.5 The allocation of resources for rail services is subject to the approval of both the Planning Commission and Indian Railways. Two zonal railways (western and central) operated with the MMR as separate agencies with their own lines, but no integration of services. To overcome this issue, during the preparation of MUTP the Mumbai Railway Vikas Corporation (MRVC - hereafter called Vikas) was established, jointly owned by

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<sup>5</sup> Infochange Poverty, 2016 [www.infochangeindia.org/poverty/news/54-of-mumbai-lives-in-slums-world-bank.html](http://www.infochangeindia.org/poverty/news/54-of-mumbai-lives-in-slums-world-bank.html)

<sup>6</sup> Huffington Post, India, December 21, 2015

<sup>7</sup> ICR, MUTP, page 2

Indian Railways and the Government of Maharashtra in the ratio 51-49 of equity capital. It developed an operating plan including separation of costs for the suburban railway system—this was considered a first step towards the eventual separation of the suburban services from the main line operation.

1.6 Other institutions involved in MMR were the Municipal Corporation of Greater Mumbai (MCGM), responsible for the planning and implementation of traffic management schemes and the municipal bus company, Brihan Mumbai Electric Supply and Transport Undertaking (BEST).

### **World Bank Assistance and Strategy**

1.7 The World Bank supported the comprehensive transport study and agreed with the approach proposed, which was in line with the Bank’s strategy to help overcome infrastructure bottlenecks, thus promoting economic growth and reducing poverty. Since the scale of the problem in Mumbai was so large it was decided that it was not possible for the Bank or the Mumbai authorities to tackle all issues in the life of one project. Accordingly, it was agreed that a programmatic approach should be pursued and that the Bank would consider a series of loans. Timing would be based on an evaluation of the impacts and the level of commitment of the counterpart agencies involved. A second loan Mumbai Urban Transport Project – 2A (Ln 7941, approved June 29, 2010) partially funded by the Bank extends and consolidates the railway investments already supported in the first project. Project 2B was funded by the state government.

## **2. Objectives, Design, and their Relevance**

### **OBJECTIVES**

2.1 The project development objectives for the Mumbai Urban Transport Project in the Project Appraisal Document (PAD) and the legal documents are identical:

*“To facilitate urban economic growth and improve quality of life by fostering the development of an efficient and sustainable urban transport system including effective institutions to meet the needs of the users in the Mumbai Metropolitan Region (MMR).”*

2.2 The project underwent a first order restructuring on September 30, 2008, as a result of which several outcome targets were revised (see Appendix C), but the development objectives remained unchanged:

### **RELEVANCE OF OBJECTIVES**

#### **Substantial**

2.3 At appraisal, it was recognized that the city’s transport system was unprepared to face the issues accompanying rapid urban growth. These included insufficient and inefficient public transport, fast motorization growth, heavy traffic congestion, a stressed road network as well as poor traffic safety, high levels of traffic-related pollution, and weak institutional arrangements to coordinate the work of government agencies. This

project was intended as a first step in a program to overcome these problems. The project development objectives were consistent with the Government of India's development priorities mentioned in the 10th and 11th Five Year Plans (covering the period 2002-2012). These priorities included rapid and inclusive growth and accelerating economic growth to sustain industrial competitiveness. It also accorded with the World Bank Urban Strategy Review (2002), *Cities on the Move*, which had a strong focus on linking better urban transport with improving accessibility for the poor.<sup>8</sup> The objectives were also in line with the state government's transport plan

2.4 The World Bank's country strategies of 2002-2005 and 2006-2008 reflected the Government of India's 10<sup>th</sup> and 11<sup>th</sup> five-year plans in respect of alleviating infrastructure bottlenecks and sustaining rapid economic growth, but the overall project objectives were rather generally framed. The objectives professed to encompass the "facilitation of urban economic growth and improvement of the quality of life," but were not linked to any measurable indicators in this regard. Although there was no mention in the objective of poverty alleviation, as the project had a component to relocate very poor people this was obviously intended. The three sub-objectives used as proxies on the other hand were offset by a fairly good set of indicators in the PAD. At project closure, project development objectives remained highly relevant. The World Bank Group's 2009-2012 Country Partnership Strategy (CPS) key goals included inclusive growth, ensuring sustainable development, and removing structural constraints to growth through expanding and improving the quality of infrastructure service delivery. The CPS overarching goal was to help India achieve its long-term vision of a country free of poverty and exclusion. Finally, the objectives were in line with the Bank's transport sector strategy to strive for safe, clean and affordable transport.<sup>9</sup>

## DESIGN

### COMPONENTS

The project had three components:

2.5 **Component 1: Rail Transport Component** (appraisal cost US\$654.27 million; actual cost US\$848.47 million). The component aimed to improve the capacity and performance of the suburban rail system through service efficiency improvements (increasing existing track capacity, direct to alternating electrical current conversion, improved signaling, electrical and telecommunication systems), procurement of new rolling stock and upgrading of existing rolling stock, as well as expanding the network capacity. The component further supported studies and technical assistance, so as to improve, among other things, the maintenance capabilities of Indian Railways for their railway tracks and rolling stock, their financial management and control systems, the railway safety and quality assurance systems.

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<sup>8</sup> World bank, 2002, *Cities on the Move: A World Bank Strategic Review of Urban Transport*, Report 24910, Washington DC

<sup>9</sup> World Bank, 2008, *Safe, Clean and Affordable Transport for Development*, Transport Business Strategy 2008-2012, Transport Sector Board, Washington DC

**2.6 Component 2: Road-based Transport Component** (appraisal cost US\$183.02 million; actual cost US\$143.95 million). This component supported increases in the capacity, efficiency and safety of the road network, better facilities for pedestrians, improvements to the operating efficiency and quality of bus services, and reductions in motor vehicle emission levels. It also aimed to strengthen the capacity of the responsible agencies to plan, deliver, maintain and operate efficiently road based urban transport infrastructure and services. Sub-components were:

- Support traffic management programs including Area Traffic Control (ATC) to optimize the functioning of traffic signals, pedestrian facilities, Station Area Traffic Improvement Schemes and parking control;
- Increase the road network functionality by improving two east-west link roads and eliminating the main road level crossings across railway tracks;
- Improve the bus system through support for organizational reforms, efficiency measures and procurement of environment and user friendly buses; and
- Strengthen the capacity of transport agencies in Mumbai in road in traffic management, road maintenance, road safety, and communication, and air quality monitoring as well as providing technical assistance for updating of the Comprehensive Transport Study, review of user charges, and developing a Motor Vehicle Emission Control Strategy.

**2.7 Component 3: Resettlement and Rehabilitation** (appraisal cost US\$92.0 million; actual cost US\$127.68 million). This component would enable the Government of Maharashtra to undertake the timely implementation of the Resettlement Action Plan (RAP) and resettle those affected by investments under the rail and road based transport components. It would also provide assistance to those displaced to improve their overall living standards. This component was to provide for the procurement of about 19,200 housing units to resettle project affected households.

2.8 The other activities under this component included the acquisition of a limited amount of land for civil works, reconstruction of some of the basic civic amenities for the leftover population and payment of compensation for increased distance to work place and permanent loss of livelihood opportunities. The technical assistance under this component included consultancies for baseline surveys, preparation of RAPs, supervision consultants, Non-government organization (NGO) support for implementation, and training of project staff/ NGOs involved with the implementation.

2.9 As noted above, the project underwent a first order restructuring in September 2008, at the borrower's request. The main reasons were to take account of the appreciation of the Indian Rupee against the US dollar and slow progress in implementing the components. Some sub-components were dropped (the main ones being road over rail bridges and station area traffic improvement schemes) and a few added (mainly related to bus efficiency).

## **RELEVANCE OF DESIGN**

### **Substantial**

2.10 The project objectives were framed as fostering the development of an efficient and sustainable urban transport system including effective institutions to meet the needs of the users in the Mumbai Metropolitan Region, and were expected to lead to the facilitation of urban economic growth and improvement of the quality of life. This indicated three sub-objectives namely, foster the development of an efficient urban transport system; foster the development of a sustainable urban transport system; and enhance the effectiveness of institutions. This PPAR assesses efficacy against the three sub-objectives, which are assumed to contribute to the overall objective.

2.11 Based on the above sub-objectives, the project results framework provided a logical link between the activities financed by the project and the outputs and outcomes related to the attainment of the development objectives (see Appendix C). For example, with regard to physical investments in the rail and road system (Components 1 and 2), the activities were expected to improve rail travel comfort and enhance suburban rail service frequency and availability, reduce road journey times and junction delays, and improve public transport cost recovery. These, reinforced by strengthened institutional capacity for transport development, particularly in traffic management, the bus system, road safety, emission control, and resettlement, were intended to lead to a more efficient and sustainable urban transport system in the MMR. The priority of the activities included in the design was assured as they were based on the state government's comprehensive transport study.

2.12 Two exogenous factors that potentially could affect the outcome were taken into account. First, the possibility of a lack of coordination between institutions was tackled through the strengthening of the coordinating agency, the Mumbai Metropolitan Region Development Authority. The fragmentation of suburban rail service operations was addressed through the establishment of Vikas, which had a separate business and operating plan, including separation of costs from main line operation by the Indian Railways. The project design supported these initiatives to bring decision making for the suburban rail system closer to users and local authorities and to ensure the suburban railway system in Mumbai was seen as a distinct business with adequate funding.

2.13 However, the proposed implementation period of five-and-a-half years was simply unrealistic for this immensely complex project given the huge number of people to be relocated and the absorptive capacity of some of the institutions involved. The objectives were also very broad and could have been made more specific to the project.

## **3. Implementation**

### **Institutional Framework**

3.1 There were five implementing agencies involved in the project -- Mumbai Metropolitan Region Development Authority (MMRDA), Mumbai Railway Vikas Corporation Limited (Vikas), Municipal Corporation of Greater Mumbai (MCGM),

Brihan Mumbai Electric Supply and Transport Company (BEST), and Maharashtra State Road Development Corporation (MSRDC). The creation of Vikas was a major improvement for providing suburban railway service in Mumbai. Vikas, although it is still evolving, has proved to be a good institutional entity to improve the coordination decision-making between Indian Railways and the Government of Maharashtra. The project also led to the positioning of MMRDA as the key agency responsible for major transport and land developments in Mumbai.

## IMPLEMENTATION EXPERIENCE

### *Loan and Credit Details*

3.6 An IBRD Loan of US\$463 million (Ln. 46650) and an IDA Credit of US\$79 million (Cr. 36620) were approved on August 5, 2002. At appraisal the total project cost was estimated at US\$945 million, while the final cost was US\$1,128 million. The borrower's contribution at appraisal was US\$482 million and at completion was US\$759 million. No other financiers were involved. US\$92.7 million was cancelled from the Loan for activities not completed by closure and US\$9.5 million was cancelled from the Credit. Table 1 shows the appraisal and actual costs of the project.

**Table 1. Project Costs and Financing**

#### **Project Cost by Component**

<i>Components</i>	<i>Appraisal Estimate (US\$ millions)</i>	<i>Actual/Latest Estimate (US\$ millions)</i>	<i>Percentage of Appraisal</i>
Rail Transport Component	654.27	848.47	130
Non-Rail Transport Component	183.02	143.95	79
R &R Component	92.00	127.68	139
P.P.F. Reimbursement	3.00	3.00	100
<b>Total Baseline Cost</b>	<b>940.37</b>	<b>1,123.10</b>	<b>119</b>
Front-end fee PPF	0.00	0.00	0
Front-end fee IBRD	4.63	4.63	0
<b>Total Financing Required</b>	<b>945.00</b>	<b>1,127.73</b>	<b>119</b>

#### **Project Financing**

<i>Source of Funds</i>	<i>Appraisal Estimate (US\$ millions)</i>	<i>Actual/Latest Estimate (US\$ millions)</i>	<i>Percentage of Appraisal</i>
Borrower	403	674	167
IBRD	463	371	80
IDA	79	83	105
<b>Total</b>	<b>945</b>	<b>1,128</b>	<b>119</b>

Source: ICR

### *Project Restructuring*

3.8 The closing date was originally June 30, 2008, but the project actually closed on June 15, 2011, nearly three years later. There were four Level II restructurings mostly to extend the date of closure and one Level I restructuring, but the development objectives were not changed throughout. An interim extension of three months, from June 30, 2008 to September 30, 2008, was approved to allow sufficient time to finalize the Level I restructuring process, which the Board approved on September 30, 2008; this extended the loan period by 15 months to December 31, 2009 and provide a more realistic implementation schedule and reduced the scope taking into account the delays during the Inspection Panel process (see below). Two additional extensions were later granted on December 30, 2009 and June 15, 2010 to complete outstanding activities making the final closing date June 15, 2011. A further minor restructuring approved on April 26, 2011 canceled a small remaining part of the IDA credit.

### *Procurement*

3.9 Although the Inspection Panel request led to an eighteen-month suspension of activities on the project, the lengthy time periods required for completing procurement procedures also negatively affected its progress. Some implementing agencies struggled to follow the procurement process schedule and clearance deadlines agreed at appraisal. For example, Vikas, as the major procurement entity in the project, regularly and significantly exceeded the 75 days allowed after bid opening for the evaluation of bids. This was in part because of some disagreements between the Vikas and its suppliers, which took a long time to resolve. In addition, differences between Bank procurement guidelines and those of the Indian Railways caused some misunderstandings at times. For example, a few requests were made that the Bank could not initially approve without further explanation, and in one case there was a double claim for the same expenditure. The IEG mission was given copies of correspondence regarding an amount of US\$20,561 that was reimbursed to the Bank after the auditors highlighted this.

Of greater significance, however, was an important contract that was not finalized before the project closing date. It concerned 108 bogie assemblies for electric multiple unit rolling stock. These assemblies were subsequently transferred to follow on project MUTP-2A in a restructuring of that project dated August 4, 2011. The bogies have now been procured and are currently undergoing testing according to information in the project portal.

### *Financial Management*

3.10 Two agencies were responsible for financial management - the railway corporation (Vikas) and the Regional Development Authority (responsible for the road and resettlement components). The latter also had the role of coordinating with Vikas, the bus company (BEST), the Municipal Corporation of Greater Mumbai, and the Maharashtra State Road Development Corporation.

3.11 In terms of financial management compliance, acceptable financial reports and annual project audit reports were submitted regularly by both agencies and reviewed by

the Bank. In a few cases, audit reports were submitted with delays resulting in temporary suspensions of disbursements of the road component. The railway corporation showed sufficient financial management capacity except for some miscommunication between the state government and the Ministry of Railways. The corporation misunderstood the Government of India's general financial rules, which required it to deposit the rupee equivalent of special commitment payments with the Controller of Aid Accounts and Audit in a timely manner. The internal controls in the railway corporation were strengthened during the project following an entity-wide internal audit.

3.12 The MMRDA experienced difficulties with financial management issues during the early stages of implementation, but improved as the project progressed. The root causes were insufficient institutional capacity due in part to a delay in appointing accounting professionals, and because of the complex funding flow mechanisms, which resulted in funds transfers between the implementing agencies and book adjustments in order to apportion the funds and expenditure equally between them. After the Authority appointed an accounting professional towards project closure and intensified its efforts to improve financial management, there was a marked improvement in the handling of financial management.

3.13 Regarding auditing, the project external auditors' opinions were unqualified except for the audit period FY 11-12. In this case although the audit report was found to be "acceptable" the auditor held an amount of INR 8.25 million (US\$184,977 equivalent) under objection. Of this amount INR 0.24 million (US\$5,381) was eventually found to be in order with a difference due to exchange rate fluctuations, but an amount of INR 1.14 million (US\$25,560 equivalent) was a duplicate claim, while INR 6.87 million (US\$154,035) needed to be re-certified. This matter was discussed by IEG with the Bank financial specialists who confirmed that these matters had been simple errors and the parties concerned resolved all the outstanding issues in due course. Although the project financial management was rated as "moderately unsatisfactory" in the implementation supervision report at the time of project suspension, it had improved to moderately satisfactory in these reports by closure.

### **Safeguards**

3.14 This was classified as an environmental Category "A" project under OP/BP 4.01 Environmental Assessment. Three other safeguard policies were triggered - OP 4.12 Involuntary Resettlement, OP4.04 Natural Habitats, and OP4.11 Cultural Resources.

#### *Environmental Safeguards and Management*

3.15 The ICR reported the project closed with a moderately satisfactory performance on environmental aspects. This was due to the mixed performance of the implementing agencies. There was at times a lack of capacity in MMRDA due to an overburden of responsibilities handled by the Joint Project Director for Environment during the course of project implementation, and insufficient support staff in the Environmental Cell. MMRDA partially overcame this by deploying other qualified staff to the cell, but their frequent rotation/movements, as more interesting opportunities became available to them, both within MMRDA and beyond, remained a persistent issue.

3.16 The project faced some challenges on environmental management related issues during implementation. For example, there were inadequate facilities for workers in contractors' camps and a concrete mixing plant that had been suspended from operation, was found to be still in use by another (unauthorized) contractor. In such cases, shortcomings were brought to the attention of the relevant implementing agencies and the agreed follow-up actions were subsequently monitored. Nonetheless, such scrutiny only resulted in compliance with OP4.01 requirements "to a large extent" - full compliance was not achieved. Even after continued follow-up, the removal of a concrete batching plant installed for the Jogeshwari-Vikhroli Link Road was not in compliance. Similarly, the removal of a toilet block situated within the Coastal Regulatory Zone did not occur, because it was being used for other projects.

3.17 Positive aspects, on the other hand, included high survival rates for plantations provided as compensation and this even attracted accolades from journalists and environmental activists. Out of 1,550 transplanted trees over 1,400 (90.3 percent) survived, while out of a further 2,200 planted as compensation, the survival rate was about 2,000 (90.9 percent). In addition, provision of environmental services and compliance with the safety-related aspects at resettlement sites was eventually accomplished. and improvements made to the living quarters of the laborers. For the rail component, Vikas benefited substantially from the capacity building initiative on environmental aspects under the project and in addition to the practical training for staff, the assignment also contributed to sensitizing the organization to environmental management issues. During implementation of MUTP, Vikas' management system was also certified to be ISO 14001 compliant.

#### *Natural Habitats*

3.18 The project had triggered the Natural Habitats policy due to the impact that would be caused on the mangroves in the Mumbai area. In order to compensate for such loss, Vikas undertook the plantation of 12,000 mangrove plants in relatively undisturbed areas using the services of the Forest Development Corporation of Maharashtra. The stakeholders recognized the high survival rates of mangrove flora and fauna as a project achievement and the Bank considered this policy to have been satisfactorily complied with.

#### *Cultural Resources*

3.19 No cultural heritage properties were directly affected. In one case where the Jogeshwari Vikhroli Link Road passed within the 100 meters of a cave listed by the Archeological Survey of India, due permission was sought and obtained for the road work. However, a number of religious buildings and "structures" were affected by the project including five by the Jogeshwari-Vikhroli Link Road and 10 near the Santacruz-Chembur Link Road. All these structures were unauthorized but erected on public land.

3.20 Under the project's Resettlement and Rehabilitation (R&R) procedures, these structures were surveyed and listed as "affected other structures" in the Resettlement Implementation Plans. Consultations were held with the locally recognized custodians of the structures and their views recorded. Relocation options were explored consensually

and reconstruction took place with the cooperation of the custodians. In the majority of the cases, an alternative site was provided. The custodians were provided with an additional construction allowance of INR 1,000 (US\$20) per square foot, which they used to rebuild their religious shrines, often to a more substantial structure than the one that they had funded previously through their own contributions. Two religious structures were left untouched in view of extreme local sensitivities, and in these cases the road alignment was partially modified to accommodate their presence. The Bank considered compliance with this safeguard policy to be satisfactory. IEG found these matters were well handled with appropriate sensitivity to local customs and beliefs.

### *Involuntary Resettlement and Social Aspects*

3.21 At the time of appraisal, it was estimated that the project would displace 19,228 households, or roughly 100,000 people, the majority of whom lived in informal settlements in challenging circumstances along the roads and adjacent to the railway tracks. In compliance with the Bank's Policies, the Government of Maharashtra adopted a project-specific R&R policy to provide compensation and assistance to the affected people. The project was able to speedily relocate over 6,000 households living adjacent to the railway tracks with the help of community mobilization support from some non-government organizations (NGOs). Most people in this group wanted to relocate because it was clearly advantageous to them. However, as implementation progressed, the client's relative inexperience and the NGOs' limited capacity undermined efficient management of the complex task of relocating the shopkeepers, land owners and religious structures along the east west road corridors. The implementation of resettlement and rehabilitation for the road component experienced escalating difficulties due to mounting resettlement grievances.

3.22 In 2004, the Inspection Panel received four Requests for Inspection submitted on behalf of several hundred residents and shopkeepers. The nature of the complaints focused on the adequacy of resettlement options and income restoration opportunities, especially for shopkeepers; the suitability and quality of resettlement sites; poor housing and living conditions in the resettlement sites; as well as inadequate access to information concerning disclosures, consultation and grievance redress procedures. Unlike the squatters adjacent to the railway tracks, most of the people affected by the east west road projects did not want to move - they were satisfied with their dwellings and businesses, and considered the compensation inadequate and the process flawed.

3.23 The Inspection Panel undertook an investigation and issued its findings in December 2005. The report found areas of non-compliance by the Bank with various aspects of its own operational policies. Management in its response acknowledged these shortcomings and prepared an Action Plan to improve the quality and outcome of R&R implementation. The Action Plan was included in the Management Report and Recommendation submitted to the Board and it was discussed and approved by the Executive Directors. The Action Plan focused on implementation issues, including the resettlement procedures for shopkeepers with medium to large-size shops, restoration of incomes, post-resettlement services, baseline data, grievance redress mechanisms, and the quality of supervision.

3.24 Several steps were taken to improve the quality of the R&R process, including finalization and disclosure of the implementation manual, improved database management, disclosure of updated baseline surveys and Resettlement Information Plans prior to relocation. In addition, further steps included regular implementation reporting, distribution of identity cards among the project affected persons (PAPs), establishment of procedures for relocating affected religious/community structures through negotiations, streamlining of the grievance redress committees, strengthening of the post resettlement support to PAPs and the reconstitution of an Independent Monitoring Panel. Management submitted six progress reports on the implementation of the Action Plan to the Board.<sup>10</sup> The final report submitted in 2013, confirmed that the measures listed in the Action Plan were mostly completed (see Table 2 below).

**Table 2. Resettlement and Rehabilitation Implementation Status (June 10, 2013)**

<i>Unit Type</i>	<i>Totals (Baseline)</i>	<i>Revised Totals (Baseline)</i>	<i>Resettled at (05/05/13)</i>	<i>Remaining cases</i>
<b>Households</b>	17,378	17,572 100%	17,566 100%	0
<b>Shops</b>	2,469	1,822 100%	1,783 97.9%	39 2.20%
<i>of which &gt; 225 sq. ft.</i>	800	566 100%	556 98.2%	10 1.94%
<b>Total</b>	<b>19,847</b>	<b>19,394</b> <b>100.0%</b>	<b>19,354</b> <b>99.8%</b>	<b>39</b> <b>0.19%</b>

Source: MMRDA

3.25 The final report to the Inspection Panel in mid-2013, two years after the project closed, documented those remaining activities still to be carried out. All cases regarding households and all but two religious structures had been resolved, but the cases of 34 shops were still in process in the court system. Five more were subject to land acquisition procedures. It was also decided to amend the road design to accommodate the remaining religious structures. IEG confirmed from documents perused at MMRDA that most of these litigation cases have since been resolved, but it was not possible for the IEG mission without considerable research to determine the exact number because data are no longer kept specifically for MUPT, but for all the many involuntary relocations undertaken under the Authority.

3.26 The MMRDA registered and trained over 98 percent of housing societies formed by PAPs, enabling them to responsibly self-manage their affairs. This increased confidence that the post-resettlement strategy would continue to be sustained long after project closure. Efforts by the Bank and the borrower in response to the resettlement and rehabilitation challenges led to a significant improvement in both the Authority's capacity and the way in which the resettlement process itself was handled. The sheer scale of the accomplishment of the resettlement activities has led to many visitors from

<sup>10</sup> Some of these steps would nowadays be covered at least in part by a Government Accountability Plan.

elsewhere in India and abroad to view and learn from the innovative approaches (see Appendix D for a more detailed description of post resettlement progress). During the course of this project, MMRDA created a permanent internal unit to manage resettlement impacts. The Authority is now using the benchmark approaches to resettlement developed under the project for subsequent infrastructure projects that require resettlement, not just those funded by the Bank.

## 4. Achievement of the Objectives

4.1 The objectives were: *fostering the development of an efficient and sustainable urban transport system including effective institutions to meet the needs of the users in the Mumbai Metropolitan Region. This was expected to facilitate urban economic growth and improve the quality of life in the Mumbai Metropolitan Region.* As explained under relevance of design, this PPAR assesses efficacy against the three sub-objectives, which are assumed to contribute to the overall objective.

### Objective 1. Foster the development of an efficient urban transport system.

#### Substantial

##### *Rail Services:*

##### Outputs

4.2 Complete direct current (DC) to alternating current (AC) conversion of 645 km of suburban rail system. Target Achieved.

4.3 Increase size of train fleet by 251 nine-car rakes (electrical multiple units). Target exceeded, 285 rakes were added.

4.4 . IEG observed that delays in procurement led to the failure under MUPT to procure 108 bogie assemblies for electric multiple unit coaches from Siemens (Austria). This large item was subsequently transferred to follow on project MUTP-2A in a restructuring of that project dated August 4, 2011. According to the MUTP-2A project paper field tests were to be carried out on 18 prototype bogies before the remaining 90 bogies were supplied.

4.5 The length of suburban train tracks was increased by an additional 93-railway line km. (but not shown as an indicator).

##### Outcomes

4.6 Peak hour average frequency of train services was increased. The baseline was 13 trains per hour and the target of 16 trains per hour was met. The figure for 2015 is 16.1 trains per hour.

4.7 However, train fleet availability at the peak hour, that is, the proportion of trains that would be available to be put into operation, remained at around 91.5 percent, rather than increasing to the target of 94 percent, because old train sets were still operating in

the system and required more downtime for maintenance. This indicator was not achieved

4.8 Regarding a reduction in overcrowding, the baseline (2002) was 4,500 passengers per rake. The target was 3,600, but 4,016 was actually achieved at project closure. The latest figures available for the Central line (2015) are now for 12-car rakes, which carry more people, but converting the ridership into 9-car units, there would be 3,675 per rake (close to the target). The reduction was only partially achieved in the project period mainly because the better services increased demand more than had been expected. Rail service demand in Mumbai went up from 6.1 million to 7.2 million passengers per day on the central lines between the project start and closure (the volume for 2014-2015 is 7.94 million). The average trip length has increased, but only marginally. In summary, the trains are more frequent and less crowded, but the full benefits will only be realized once the follow up project, MUTP-2A is completed, which will add 864 additional units to the 2,260 in the system.

**Table 3. Suburban Rail Traffic Growth in Mumbai**

Millions except trains (number)	2001-2002	2011-2012	2012-2013	2013-2014
Passengers carried per year	2,288.49	2,899.95	2,918.50	2,918.50
Ave trip length (km) per year	27.16	32.43	32.49	32.77
Passenger km/yr.	6,2151.61	94,047.56	95,072.35	95,628.88
No of trains	2,049	2,718	2,813	2,813

Source: Indian Railways

#### *Road Services:*

#### Outputs

4.9 The target to equip 250 road junctions with Area Traffic Control (ATC) systems was achieved.

4.10 The 10.6 km. Jogeshwari-Vikhroli Link Road section was constructed under the project, thereby increasing the two-lane highway to six lanes with an additional 43 km. of traffic lanes. Achieved.

4.11 The works on the 6.45 km. Santacruz-Chembur Link Road, with Mumbai's first double-decker flyover, were not completed during the life of the project. Not achieved.

#### Outcomes

4.12 It had been originally planned to reduce the incidence and severity of pedestrian road traffic accidents by 10 percent in the areas where 26 new pedestrian facilities were to be constructed. In the event this indicator was dropped at restructuring and only two such facilities were completed.

4.13 The 250 junctions were equipped with the ATC system technology, which contributed to improved traffic flows at intersections. The target was a reduction by 10 percent in passenger car units/hour at such intersections. This target was exceeded and the delay reduction was calculated to be 23.4 percent. Cameras now detect the intensity of traffic and feed data to the computers for real time adjustments of traffic signals. Traffic police are able to respond more quickly to traffic accidents and real time changes can be made to traffic signal cycles as required by circumstances observed in the control room.<sup>11</sup> The Ministry of Urban Development made an award for the “Best Intelligent Transport System Project” for the ATC system. IEG visited the control room and was given a demonstration of the system’s capabilities.

4.14 The target to reduce journey times by six minutes per vehicle on the Jogeshwari-Vikhroli link was not achieved because the actual traffic was three times higher than forecast and also because some resettlement was still under way. In 2011 the saving in time was only two minutes. Since the project closed, traffic flows have been improved through better signalization, but in the peak hours there is still considerable congestion.

4.15 The target of reducing journey times on the Santacruz-Chembur Link Road by four minutes per vehicle was not achieved at closure because the works were not completed. At the project closure in 2011, the traffic congestion were worse than the baseline figure. IEG confirms that 12 years after project approval in 2002 the link was finally completed in April 2014 financed through MMRDA. The IEG mission observed that the road appeared to have generated more traffic than anticipated because it already backs up in the rush hours. There are now plans to extend the road by three kilometers to the Western Express Highway because of traffic congestion, especially at Vakola junction.<sup>12</sup> The Centre for Urban Research reports that there are now plans to widen both the Jogeshwari-Vikhroli and the Santacruz-Chembur links in the Maharashtra Development Plan to accommodate more traffic.<sup>13</sup>

## **Objective 2. Foster the development of a sustainable urban transport system.**

### **Modest**

#### *Road Services*

#### Outputs

4.16 The Brihan Mumbai Electric Supply and Transport Company (BEST) procured 644 low emission and user-friendly buses to replace used or over-aged buses, to provide additional seats for users and to improve the service quality. Originally the target was 450, but was increased to 644 at restructuring. The acquired buses were newer EURO III compliant, single-deckers with reduced noise levels and better emission control

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<sup>11</sup> The World Bank in India, 2011, *Mumbai Uses cutting Edge Traffic Management Technology to Ease Congestion on the Roads*, Vol. 9, No 6, New Delhi, May 2011

<sup>12</sup> The Asian Age, April 22, 2016

<sup>13</sup> [www.urbanresearch.in](http://www.urbanresearch.in) accessed on April 23, 2016

especially of particulates. Older buses were upgraded to slightly lower EURO II standards.<sup>14</sup> The target was achieved.

4.17 The MMRDA did not establish the Road User Charge Policy as originally planned, nor was there an indicator for this subcomponent.

4.18 Another sustainability output indicator was the strengthening of the ambient air quality and reporting system. This comprised of a study to recommend a system and the installation of three air quality-monitoring stations and both tasks were carried out. In addition, in 2004 the ambient air quality at the resettlement sites was measured and found to meet the standards for a residential area.<sup>15</sup> However, 12 years later in 2016 relatively little progress appears to have been made in controlling emissions in Mumbai. Records maintained by the Maharashtra Pollution Control Board show that pollutants in Mumbai's air are consistently over the permissible levels in respect of both nitrogen oxide and particulate matter. As in most Indian cities air quality is deteriorating due in part to increasing numbers of vehicles.<sup>16</sup>

### Outcomes

4.19 Car-restraining charges have not been introduced. The state government and stakeholders continue to discuss a draft user charging policy. There does not yet appear to be significant political support for radical reforms such as congestion pricing and stringent parking regulations.

4.20 The Brihan Mumbai Electric Supply and Transport Company (BEST) operate public buses in Mumbai as well as an electric utility. Bus fares have been subsidized from electricity revenues.<sup>17</sup> The target of full cost recovery of bus services (100 percent of revenues covering costs) was not achieved during the project period. At project closure, cost recovery was 74 percent, less than the baseline indicator of 90 percent. This backward progress was due to an increase in operating costs that included *inter alia* a delay in revenue from depot commercialization, and voluntary retirement scheme payments for 530 abolished posts. According to the information subsequently provided to IEG, BEST has taken several measures to augment revenue using a financial model developed under the project for revenue enhancement and cost cutting. The company put up bus fares twice during 2012 (in April and November), so that by January 2013, the cost recovery stood at 85 percent (93.2 percent if income from depot commercialization is also considered). Full cost recovery was only achieved in 2015 when two further

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<sup>14</sup> European Emission Standards were introduced to define limits for the exhaust emissions of new vehicles. Euro II and III compliance is now below the limits currently expected in Europe, but in a developing country they can be regarded as a significant step in the right direction.

<sup>15</sup> Inspection Panel Report, 2004 *Report and Recommendation in respect of the Mumbai Urban Transport Project*, Appendix 4

<sup>16</sup> Economist, 2015, *Air Pollution in India*, February 7, 2015

<sup>17</sup> Cropper M and Bhattacharya S, 2007, *Public Transport Subsidies and Affordability in Mumbai, India*, Policy Research Working Paper No 4395, World Bank

increases in February and April eliminated the transport subsidy. This move was heavily criticized in the press since it adversely affected the poorest section of the community.<sup>18</sup>

*Rail Services:*

**Outcome:**

4.21 The target of reducing the working ratio (costs excluding depreciation and interest/income) of rail services from 0.88 to 0.85 was not achieved as tariff surcharges had not been implemented and remained at 0.88 at project closure. The project team subsequently confirmed that on January 1, 2013 the suburban fares were revised levying all the surcharges agreed to under the project, thus improving cost recovery ratio.

**Objective 3. Enhance effectiveness of the institutions.**

**Substantial**

*Railways:*

Outputs

4.22 Eleven technical studies were completed. In addition to pre-investment studies, these technical support sub-projects covered topics such as station design, track maintenance and drainage improvements, strengthening of the rolling stock maintenance system, overhead equipment system improvement study, an urban rail strategy simulation study, and the development and strengthening of financial, costing, and project management systems.

4.23 In addition, separate accounting and financial management systems were established for Vikas, which was seen as a first step to the eventual separation of the rail suburban services from the Indian Railways main line operation.

Outcomes

4.24 The creation of Vikas (supported by the project) was an institutional step to improve the organizational structure and efficiency for the management of the suburban railway system. Previously, two zonal railways (Western Region and Central Railway) operated as independent agencies with their own lines and no integration of services. There was also no participation of the state and city governments in the decision making process. However, Indian Railways and the state government now own Vikas jointly, so the suburban railway business plan involves input from users and local organizations. The plan is updated annually.

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<sup>18</sup> Hindustan Times, January 16, 2015.

*Roads:*Outputs

- 4.25 An Annual Business Plan was developed for BEST operations as part of its annual budget process.
- 4.26 BEST procured and installed a fuel efficiency monitoring system deployed to its bus fleet. It also now procures only buses running on compressed natural gas and is gradually phasing out diesel buses.
- 4.27 Training of staff in the Municipal Corporation of Greater Mumbai's Traffic Management Unit was completed increasing the technical capacity to manage traffic.
- 4.28 A MMRDA communication strategy was implemented, and a Road Maintenance Management System was installed. However, the installation of the Management Information System was only completed after project closure.

Outcomes

- 4.29 Increased technical capacity of transport planning, road maintenance and road safety was achieved. New procedures were developed and implemented, a road maintenance study was completed and implemented, a road management system was installed, and 15 qualified professionals were available to implement such activities. The systems were still in operation at the time of the IEG mission.
- 4.30 The hitherto limited capability of the environmental management unit was strengthened. Procedures were put in place and capacity partially established to carry out the necessary tasks. On the basis of interviews by the IEG mission, it appears that support for environmental management could be further strengthened.

*Resettlement and Rehabilitation:*Outputs

- 4.31 The target of 100 percent affected households living in houses of at least 225 square feet was achieved. The baseline was 9 percent.
- 4.32 The target of 100 percent of households having access to individual tap water was achieved. The baseline was 1 percent.
- 4.33 The MMRDA created a permanent unit to manage the resettlement impacts.
- 4.34 At the closure of the project 17,566 of the residential households (99.97 percent) and 1,782 (97.8 percent) of shops, including 555 large or medium size shops, had been resettled in permanent buildings, joined other redevelopment schemes, or retained by agreement their partly affected houses beyond the road alignment (see Table 1). In the final Inspection Panel Report in 2013 the percentage resettled grew to 99.8 percent.

Thereafter, separate data were not kept for MUTP as all data regarding resettlement throughout the Mumbai Metropolitan Region was consolidated.

### Outcomes

4.35 The most significant achievement was developing the capacity of the MMRDA for management of resettlement implementation. The Authority is now successfully undertaking similar complex resettlement activities for other projects. The social development cell is led by a social scientist with 18 assistant field workers. This work was previously undertaken by NGOs.

4.36 A post resettlement strategy was put in place, which has been acknowledged as innovative and close to best practice in developing countries. This has been replicated in other schemes in Mumbai and elsewhere - see also Appendix D.

### **Efficiency**

#### **Modest**

4.37 The overall weighted economic rate of return (ERR) for the project at closure was estimated to be 53.7 percent as compared with 37.7 percent at appraisal. However, IEG has reservations about the assumptions made. The ERR was calculated for the rail and road components, as well as the ATC subcomponent, amounting in total to 87 percent of the final project cost.

4.38 For *the rail component*, the actual traffic carried by the suburban railway, its operating cost and level of comfort were considered from 2002 to 2010 along with actual expenditure in investments. The ERR went up from 36.4 percent at appraisal to 60 percent at closure, but this was because the fare structure was not increased as had been planned, so considerably more passengers traveled by rail and diverted from the buses than had been anticipated. This would not have occurred if the updated comprehensive transport strategy and harmonized user charges had been in place as envisaged. Also, the railways had a large order of bogie assemblies in process for the electric multiple unit coaches, but this was not procured before project closure and was funded from the follow on project. This was not adequately factored into the rate of return calculations.

4.39 For *the road component*, the ERR for the new link road sections was reduced from 39.7 percent at appraisal to 27 percent at closure mainly due to an almost 50 percent increase in cost, at constant 2002 prices, and a delay of four to six years in the construction of the Santacruz-Chembur Link Road. In the event the situation was much worse than expected, as the Santacruz-Chembur road was not completed as expected and its cost continued to soar – it was only opened to traffic in April 2014, some 12 years after approval. Since the Bank project had closed the balance of this sub-component had to be financed by MMRDA. The estimated ex-post ERR for the ATC is 19 percent. This calculation was made based on the costs of stops and delays derived from information supplied by Regional Development Authority supplemented by analysis in the United

Kingdom Highways, Economic Note 2.<sup>19</sup> ATC represented about five percent of total project costs. It is not clear that a weighted average for the rail, road and ATC components can be assessed together since each was calculated on different assumptions including elapsed time for the benefit stream.

4.40 The project experienced a delay of three years and high cost overruns (20 percent overall, and much higher in the case of the two new link roads). Following the Inspection Panel investigation and the preparation of the Management Action Plan, the delays led to a restructuring in which a number of sub-components were dropped. These included road over rail bridges, pedestrian facilities (including pedestrian footbridges, pedestrian crossings, sidewalks and underpasses), and station area traffic improvement schemes at six major stations. In addition, road safety and black spot improvements were dropped and air quality monitoring was reduced in scope. The lack of a traffic management policy meant that the traffic volumes were higher than expected on the link roads requiring further investments very soon after opening to cope with the pent up demand, which was under-estimated.

4.41 Given all the shortcomings, the overall efficiency of the project is rated as modest.

## 5. Ratings

### OUTCOME

5.1 The project's objectives, though rather broad, were relevant to the needs of urban transport users in the Mumbai Metropolitan Region. Design relevance was substantial, given that the sub-objectives were proxies for facilitating urban economic growth and improving the quality of life. Through two of the three sub-objectives the project contributed substantially to the goals of achieving efficient urban transport systems in Mumbai with enhanced effectiveness of the key institutions. However, progress towards sustainability was only modestly achieved. The efficiency is modest. Outcome is assessed as **moderately satisfactory**.

### RISK TO DEVELOPMENT OUTCOME

#### Moderate

5.2 The railway investments are part of a program to upgrade the suburban passenger system and improve the carrying capacity in greater comfort. Two follow-on projects (one funded by the Bank) are continuing this process and the risk to development outcome is considered negligible. For roads the results are less clear. While east-west connectivity has been improved and greater efficiency achieved in the central city

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<sup>19</sup> Highways Agency (UK), 1997, Design Manual for Roads and Bridges, TA 46/97, United Kingdom

through the ATC system, these will be short-term gains only unless there are policy changes regarding road user charging, land use and parking. Although under discussion for some years now the solution will be politically difficult and so far decisions have been deferred. Until this impasse is overcome the risk to development outcome is significant. Taking into account the positive picture in terms of transport infrastructure maintenance arrangements, the overall risk is rated as moderate.

5.3 Regarding maintenance, the project investments have become part of the critical infrastructure facilities for the city and the expenditure required for their maintenance constitutes a relatively small proportion of total funds available. In 2012-13 total revenues for the city's public infrastructure was US\$5.32 billion of which US\$5.29 billion was expended. Of this amount US\$293 million was budgeted for roads and US\$113 million was spent on road maintenance. In the 2015-16 budget there was a 20 percent increase in the amount allocated.<sup>20</sup>

5.4 *Rail:* The maintenance expenditure for Mumbai suburban railways constitutes a small fraction of the overall budget of the Indian Railways and, hence, the risk of Vikas not receiving its due allocation is relatively low considering the fact that the system is considered the lifeline of the city. For instance, the allocations for maintenance have been sustained with progressive increases over the years: e.g., US\$52.7 million (FY09), US\$61.1 million (FY10) and US\$61.6 million (each in FY11 and FY12). These amounts reflect actual needs in the railway system of accounting, where passenger safety is the first consideration.

5.5 *Buses:* BEST is a municipal corporation responsible for electricity and bus transport. It subsidizes bus fares from its electricity revenues.<sup>21</sup> In the case of bus services, maintenance funding is accorded a high priority because BEST's 4,700 fleet constitutes a very important part of the city transport system. In 2014-2015 the Corporation's Annual Report (latest available) showed that about 62 percent of fare box revenue was allocated to repairs and maintenance. In addition, BEST is phasing out 272 older buses and replacing them with better quality air-conditioned buses that run on compressed natural gas. The fleet as a whole will thus incur lower maintenance and repair costs.

5.6 *Roads:* MCGM has established a system for maintenance for over 1,950 km. of city roads and important roads such as the Jogeshwari-Vikhroli Link Road receive top priority. For example, an allocation of US\$8 million was made for FY 14 for the maintenance of city roads in the Eastern suburbs, which include Jogeshwari-Vikhroli. It is also noteworthy that this road has a concrete pavement because of the high volumes of traffic, and this type of construction is hard wearing and requires less maintenance in the short-to medium-term. However, the public expressed some concerns in 2013 that the city focus was on new construction rather than maintenance. There must have been some truth in this because the municipal corporation responded by introducing a 24-hour helpline for residents to report potholes and, more importantly, announced that in the

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<sup>20</sup> Indian Express, January 28, 2015

<sup>21</sup> Cropper C, and Bhattacharya, S, 2007, *Public Transport Subsidies and Affordability in Mumbai, India*, World Bank Policy Research Working Paper 4395, Washington DC

2015-16 financial year there would be no new roads and the focus would be road maintenance.

5.7 *Area Traffic Control:* MCGM has engaged an agency to maintain the ATC system procured under the project, (initially from November 1, 2012 to October 31, 2014 at a cost of about US\$three million). IEG established that this arrangement has been extended. Spurred by the results of this system, MCGM is in the process of expanding ATC to cover the entire city by year 2017 with an investment of about US\$28 million. However, Mumbai has not yet adopted and enforced a policy to restrict traffic through parking fees, user charges and other restraint measures. This means that the additional capacity created by new and rehabilitated roads and the ATC system will be relatively short-lived because demand is much greater than supply. This is the reason why new facilities are virtually running at capacity as soon as they are commissioned.

5.8 *Resettlement:* The experience gained in MUPT has served the agencies well especially the MMRDA. The procedure introduced by the Bank and refined by MMRDA is now mainstreamed and used on all similar projects, whether funded by the Bank or not. Progress with post resettlement support has been significant (figures for mid 2013 – after this date data for all resettlement projects under MMRDA were consolidated):

- 185 housing societies had been registered by 2013 and 18,547 identity cards issued;
- 181 maintenance grants have been provided to these societies;
- Community management funds to the value of INR 93.18 million (US\$1.6 million) had been paid to the registered societies;
- Internal street lights have been provided on the understanding that the residents will provide for the recurrent costs.

For further details of how MMRDA has mainstreamed resettlement support see Appendix D.

5.9 The sustainability of building management was probed during the field visits of the IEG mission. Cooperative housing societies questioned revealed that they had issued share certificates to their members, had their financial reports audited and also maintain a substantial reserve fund balance for unforeseen expenditures. They are carrying out minor repairs of the buildings and regularly paying the electricity dues and property taxes, thus ensuring the security of the buildings, and maintaining details of the flat owners.

## **BANK PERFORMANCE**

### **QUALITY AT ENTRY**

#### **Moderately Unsatisfactory**

5.10 The Project design appropriately targeted the highest priority issues of the urban transport sector in the Mumbai Metropolitan Region, in particular the urgently needed physical investments in the rail and road system, and the strengthening of the institutional capacity required for sustainable transport development, particularly in traffic

management, the bus system, road safety, emission control, and resettlement. The project had a complex design with ambitious implementation arrangements involving five implementing agencies. Effective coordination, however, was not assured. Although project preparation recognized that successful implementation would require a major coordination effort, the Bank's preparation team underestimated the high cumulative risks faced when so many institutions from different levels of government are meant to act in harmony under the umbrella of a nascent institution (the MMRDA), which required more time to mature and assume its responsibilities.

5.11 A broad variety of risks were evaluated during project preparation and mitigation measures were considered. However, risks, which were overlooked, included project cost and time overruns due to factors such as delays, currency fluctuations, capacity insufficiencies, and weak empowerment of the MMRDA to manage adequately all the components and to take necessary action when other implementing agencies were not delivering. In the effort to have the first year program ready by project appraisal, the risks of poor coordination of engineering design and resettlement, and the risk of poor project engineering design were underestimated.

5.12 During preparation of the project, the team strived to ensure that the different levels of government were committed to the project, and encouraged the establishment of Vikas as implementing agency for the rail component. However, the Corporation could not approve major projects without clearances from all levels of the Indian Railways, and the process was fraught with delays and disagreements.

5.13 In 2004, the Inspection Panel received four Requests for Inspection due to concerns regarding the equitable resettlement and rehabilitation of the people affected by the road component. The Panel found that, although merging of the resettlement component into the project was appropriate, the component was not ready for implementation when the project was launched. Due to the failure to consider a number of significant resettlement and impoverishment risks at appraisal, the Inspection Panel stated noncompliance by the Bank with the requirements of risk analysis in Bank policies, including OMS 2.20 on Project Appraisal and OP/BP 10.04 on Project Economic Evaluation of Investment Operations. The complexities involved in relocating such a large number of people were seriously underestimated. The project involved the largest urban resettlement of any Bank project at the time. Given the large number of people to be relocated, the team initially considered undertaking the resettlement activity as a separate project. However, in order to align the resettlement activities with the civil works in an efficient manner, it was decided to include the resettlement activities in the project rather as a separate component.

## **QUALITY OF SUPERVISION**

### **Satisfactory**

5.14 Supervision missions were carried out frequently and 19 supervision reports were filed between August 2002 and June 2011. The ICR reports that the teams had the appropriate skills for the tasks. In addition, there were separate financial management, social development and procurement supervision missions that took place at least once

every year. Supervision was substantially enhanced, however, following the Inspection Panel investigation and the subsequent implementation of the Action Plan to address the issues of non-compliance.

5.15 The team in IEG's view worked diligently to respond to the Inspection Panel investigations and with the borrower to implement the Action Plan and Inspection Panel Recommendations. Bank Management provided strong support and an adequate budget allocation to supervise the project. The quick response allowed the lifting of the Inspection Panel-related suspension in less than four months. Nevertheless, implementation suffered a knock-on effect from the investigation and the finalization of resettlement took longer than originally anticipated. The Mid-Term Review was thorough. Management kept the Board informed through periodic (six) Progress Reports of the implementation of the agreed action plans following the Inspection Panel investigation.

5.16 The Task Team provided advice and proposed solutions to the borrower to address the implementation problems, for example by agreeing to reallocate Bank financing of some components when the US dollar depreciated in relation to the Indian Rupee, and used local consultants based in Mumbai to help supervise technical and procurement issues.

5.17 According to the project team, this Category "A" project complied with environmental safeguards "to a large extent," but a few environmental issues remained unresolved at closure. The project team reported that the latest external audit of the project for the financial year 2011-2012 was qualified, i.e., the auditors had objected to an amount of INR 8.25 million (US\$184,977), but this too was eventually fully resolved.

### **Overall Bank Performance Rating Moderately Satisfactory<sup>22</sup>**

## **BORROWER PERFORMANCE**

### **Government**

#### **Moderately satisfactory**

5.18 The Government showed strong commitment to the project during its preparation and throughout implementation. During preparation, both the Government of India and Government of Maharashtra supported the necessary studies, estimated the investment needs, recognized institutional weaknesses based on previous experiences with Bank operations, and initiated reforms such as the creation of Vikas and authorizing the MMRDA to implement the project. The Government of Maharashtra was able to address

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<sup>22</sup> The Bank's harmonized evaluation criteria states that when the rating for one performance dimension is in the satisfactory range, while the rating for the other dimension is in the satisfactory range the rating of overall Bank performance normally depends on the outcome rating. Since the outcome rating is in the positive range the overall performance is considered moderately satisfactory.

quickly the requests made during the Inspection Panel and took careful steps to ensure that most of the resettlement and environmental management was done according to Bank guidelines. The state government also took notice of the recommendations of the mid-term review, and subsequently requested the loan restructuring in view of the slow progress of some of the components and the currency fluctuation.

5.19 However, the MMRDA proved to be insufficiently empowered to perform effectively its coordinating role. Moreover, during implementation, there were significant delays related to protracted procurement in key contracts of the rail component. These might have been resolved more quickly if the Government of Maharashtra had approached the Chairman of Indian Railways and the Minister of Railways for faster decision-making and resolution in a timely manner.

### **Implementing Agencies**

#### **Moderately satisfactory**

Five separate agencies were involved:

5.20 ***Mumbai Metropolitan Region Development Authority:*** At project commencement, MMRDA was not fully equipped to handle resettlement and rehabilitation; its capacity to handle both resettlement and environmental management improved considerably, however, during implementation. Its ability to coordinate the various agencies involved in project implementation was also initially weak because it lacked a clear mandate to do so. MMRDA developed innovative solutions to increasing the supply of land available for resettlement. It encouraged private sector participation by offering Transfer of Development Rights for private developers willing to allow resettlement on part of their own land. In return the developers could utilize their remaining land for permitted development projects. Such rights could also be sold to other builders. MMRDA's post project program for improving the conditions for resettled people has been acclaimed by many as evolving best practice and these ideas have been replicated in other schemes in Mumbai and elsewhere.

5.21 ***Mumbai Railway Vikas Corporation:*** Vikas succeeded in implementing the railway component and carried out the activities assigned to it. However, its performance was marked by long procurement delays due to the numerous clearances required to approve the bids and the evaluation reports. The ICR reported that the coordination between Vikas and Indian Railways was, at best, inefficient as demonstrated by the several changes in the location of the pier on the Santacruz-Chembur Link Road, which needed to be built on a railway right-of-way.

5.22 ***Municipal Corporation of Greater Mumbai: The Corporation*** successfully completed the implementation of the ATC component, the most important activity for which it was responsible. It ensured the provision of adequate training to the Traffic Management Unit, and Traffic Police, which operate the ATC control center. MCGM was, however, unable to complete the Road Maintenance Management System by project closure, and construction of most pedestrian crossings was not achieved after budget cuts led to a substantial reduction in the number of crossings supported by the project.

5.23 ***Brihan Mumbai Electric Supply and Transport Company:*** The Company acquired the buses as planned, improved its management information system and installed fuel consumption monitoring devices in the buses. It implemented all the activities that it was assigned with only minor delays. However, it was unable to fully meet cost recovery targets in the project period and did not measure the expected improvements in pollution and noise factors after the introduction of the new vehicles.

5.24 ***Maharashtra State Road Development Corporation:*** The MSRDC was in charge of implementing the Jogeshwari-Vikhroli and Santacruz-Chembur Link Roads. These investments took longer than expected because of resettlement problems, which in some cases were also caused by engineering design changes. According to the ICR, the coordination between MMRDA and MSRDC, which received a fee from MMRDA to implement the links, was “not very good and caused several problems.” This was vehemently denied in a letter from MSRDC dated November 11, 2011, but no one from MSRDC was available to meet with the IEG mission during its visit to Mumbai.

5.25 On balance, the implementing agencies’ performance was moderately satisfactory. Although coordination between the agencies remained weak, the performance of MMRDA, BEST and Vikas grew steadily throughout implementation as capacity was built. MMRDA’s achievements in its resettlement activities were in the end close to best practice.

### **Overall Borrower Performance: Moderately Satisfactory**

## **MONITORING AND EVALUATION ARRANGEMENTS**

### **Substantial**

#### **Design**

5.26 The project's indicators were appropriately linked with the project objectives and included baseline data and measurable targets set at appraisal (See Appendix C). The key performance indicators for the development objectives were: (i) rail travel comfort substantially improved - average loads in trains reduced; (ii) reduce the incidence and severity of pedestrian road traffic accidents; (iii) suburban rail service frequency and train availability enhanced; (iv) road journey times and junction delays reduced; (v) improvement in public transport cost recovery; (vi) poor households resettled satisfactorily from hazardous slum/squatter areas to permanent housing with improved living condition; and (vii) increased technical capacity through trainings and development of systems for traffic management, road maintenance, and air quality monitoring. However, there were no indicators to measure attainment of the project’s final objectives of higher urban economic growth and improved quality of life, nor was there an indicator concerning the establishment of a road user charging policy based on updating the 1994 comprehensive transport plan. Responsibility for collecting, analyzing and reporting the data was with the MMRDA. It was tasked with coordinating with the other implementing agencies and reporting the progress on a quarterly basis.

## Implementation

5.27 As part of the level one project restructuring approved by the Board the project scope was decreased. Consequently, the indicators associated with the reduction of the incidence and severity of pedestrian traffic accidents was dropped as was the multi year black spot improvement and road safety program and the station area traffic improvement schemes at six stations. Instead of “increasing the technical capacity of the Traffic Management Unit in the Municipal Corporation of Greater Mumbai to a fully functional level,” the target became “completion of training.” Instead of “road maintenance procedures to be in place,” the target became “completion of road maintenance study.” All these revisions pointed to somewhat lower achievement, (though likely more realistic, than the original expectations).

5.28 However, indicators for strengthening capacity for resettlement implementation and environmental management were added:

- Developing the capacity for management of resettlement implementation through a reasonably well functioning Resettlement and Rehabilitation division in MMRDA; and
- Strengthening capacity for environmental management in urban infrastructure projects through staff training.

In addition, the number of low emission and user-friendly buses purchased by BEST was increased from 450 to 644.

5.29 The project team appropriately used the physical and financial output indicators to supervise the progress of the works and the delivery of equipment. To measure the institutional development progress and compliance with related covenants, the semi-annual monitoring reports included useful updates on the progress of the studies and technical assistance financed by the project.

## Utilization

5.30 The monitoring and evaluation system was used to support recommendations or inform management decisions during the course of implementation. For example, it informed the decision to restructure the project, and enabled a focus on those activities that were critical for the achievement of the objectives.

## 6. Lessons

6.1 Several lessons can be drawn from the evaluation; some are adapted from the ICR and others from the final progress report in respect of the implementation of the Management Action Plan. The lesson on project objectives is based on IEG observations.

6.2 **Project development objectives should be specific and measurable.** The overall development objective in this project was too generalized and the results had to be based on sub-objectives, which were effectively proxies for the overall objective. This

detracted from clarity on what the project was seeking to achieve and how well the project goals were met.

**6.3 Large-scale resettlement is a complex operation that needs considerable planning, adequate provision of time, good negotiation skills, and strong capacity to implement successfully.** At the time of appraisal, the scale of the Mumbai Urban Transport Project was unprecedented in an urban context in India. Not all groups being displaced were alike and initially there were insufficient opportunities for grievances to be heard empathetically. Poor inter-agency coordination and too many implementing agencies can also become a serious obstacle to the implementation of the key activities of such a project.

**6.4 A lack of adequate synchronization of resettlement activities with civil works can cause significant time and cost overruns.** This project demonstrates that civil works began prematurely before all the resettlement issues were resolved, especially those businesses and households affected by road links. This led to dissatisfied project affected groups appealing to the Inspection Panel for assistance and this delayed project progress significantly. Prior to the commencement of civil works, substantial land acquisition and resettlement should always be completed.

**6.5 Transition from an administrative compensation approach to a win-win negotiated approach can resolve seemingly intractable problems with project-affected groups.** There is a need to understand the nature of peoples' grievances in a transparent way. In this project the state government went beyond normal procedures and was flexible in negotiating the resolution of some extremely contentious resettlement issues.

**6.6 Introducing entitlements and market-based solutions was a major contributor to resettlement success.** Provision of free, alternative housing with title has had an empowering effect on the project-affected households, which have acquired new social status and gained wider access to employment in the formal sector. The market solution of offering transfer of development rights as a tradable benefit in lieu of land compensation proved to be an attractive form of compensation to the legal owners for allowing resettlement on part of their land.

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## Appendix A Basic Data Sheet

### India: Mumbai Urban Transport Project (IBRD Loan 46650 and IDA Credit 36620)

#### Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	945	1,128	119
Loan amount	463	369	80
Credit amount	79	83	105
Cancellation	-	102	-

#### Cumulative Estimated and Actual Disbursements

	<i>FY03</i>	<i>FY04</i>	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>	<i>FY12</i>	<i>FY13</i>
Appraisal estimate (US\$M)	12.5	21.2	23.7	26.2	30.0	21.7	0	0	0	0	0
Actual (US\$M)	0	4.6	8.6	9.7	2.5	12.4	12.1	18.7	9.4	0	-20,5
Actual as % of appraisal	0	21.6	36.2	37.0	8.3	57.1	-	-	-	-	-
Date of final disbursement: September 1, 2012											

#### Project Dates

	Original	Actual
Negotiations	10/20/2000	05/06/2002
Board approval	12/28/2000	06/18/2002
Signing		08/05/2002
Mid-term review		10/17/2005
Restructurings (level 2)		06/17/2008
Level 1		09/30/2008
Level 2		12/30/2009
Level 2		06/15/2010
Level 2		04/27/2011
Closing date	06/30/2008	06/15/2011

**Staff Inputs (staff weeks)**

Stage of Project Cycle		Staff Time and Cost (Bank Budget Only)	
		No. of staff weeks	US\$Thousands (including travel and consultant costs)
<b>Lending</b>	FY98	0	49.15
	FY99	0	143.98
	FY00	58	302.82
	FY01	42	188.00
	FY02	79	256.67
<b>Supervision/ICR</b>	FY03	66	204.05
	FY04	55	169.19
	FY05	72	207.34
	FY06	90	400.07
	FY07	98	368.40
	FY08	102	455.26
	FY09	68	343.08
	FY10	82	314.00
	FY11	51	114.00
	FY12	22	0.00
<b>Total</b>		1,369	3,516.01

**Task Team Members****Lending**

Names	Title	Unit
A.K.Swaminathan	Task Team Leaders	SASEI
Edward Dotson	Task Team Leader	EASTR
K Mukundan	Sr. Urban Specialist	SASEI
Arnab Bondyopadhyay	Highway Engineer	SASEI
Jit Sondhi	Consultant	SASEI
Sameer Akbar	Environment Specialist	SASES
Bilal Rahill	Environment Specialist	SASES
I.U.B.Reddy	Social Development Specialist	SASES
Reidar Kvam	Resettlement and Rehabilitation Specialist	SASES
Ellen Schaengold	Resettlement and Rehabilitation Specialist	SASES
Alok Bansal	Transport Economics	SASIN
Arun Mokashi	Consultant	SASIN
Gladys Stevens	Program Assistant	SASIN
Sangeeta Anand	Team Assistant	SASIN
Christopher Hoban	Operations Advisor	SACIN
Sumir Lal	Communications Specialist	SAREX
Rajat Narula	Financial Management Specialist	SARFM
N Raman	Procurement Specialist	SARPS
P Illangovan	Environment Specialist	ASTEN
Zhi Liu	Transport Economist	SASEI

Richard Podolski	Urban Transport	ECSIN
Raj Soopramanien	Legal Counsel	LEGAf
John Flora	Transport Economist	TWUTD
Lou Thompson	Railway Adviser	TWUTD
John Cracknell	Consultant	TWUTD

### Supervision/ICR

Names	Title	Unit
Atul Agarwal	Sr. Transport Specialist	SASDT
Hubert Nove-Josserand	Operations Advisor	SASDT
Binyam Reja	Sr. Urban Transport Specialist	SASDT
Arnab Bandyopadhyay	Sr. Transport Engineer	SASDT
Shigeyuki Sakaki	Sr. Urban Transport Specialist	SASDT
Jorge Rebelo	Lead Transport Specialist /Consultant	SASDT
Bogdan Filip Popescu	E T Temporary	SASDT
Sujit Das	Consultant	SASDT
Krishnan Srinivasan	Consultant	SASDT
A.K. Swaminathan	Consultant	SASDT
Sangeeta Anand	Sr. Program Assistant	SASDE
Sonia Chand Sandhu	Sr. Environmental Specialist	SASDI
Gaurav D. Joshi	Environmental Specialist	SASDI
Vaideeswaran Sankaran	Consultant	SASDI
Ritu Sharma	Program Assistant	SASDO
Gizella Díaz	Program Assistant	SASDO
I. U. B. Reddy	Sr. Social Development Specialist	SASDS
Satya N. Mishra	Social Development Specialist	SASDS
Sudip Mozumder	Sr. Communications Officer	SAREX
Ramola Bhuyan	Sr. Financial Management Specialist	SARFM
Priya Goel	Sr. Financial Management Specialist	SARFM
Manmohan Singh Bajaj	Sr. Procurement Specialist	SARPS
Jitendra Sondhi	Consultant	AFTEG
Rakhi Basu	Transport Specialist	EASIN
Frederick Edmund Brusberg	Consultant	ECSS4
Sumir Lal	Manager	EXTOC
Sally L. Burningham	Operations Adviser	LCSDE
Guang Zhe Chen	Sector Manager	LCSUW
Stephen F. Lintner	Sr. Adviser	OPCQC
Qays Hamad	Sr. Operations Officer	OPCQC
Marc Jean-Claude Pierre Davy	Sr. Urban Transport Spec.	TWITR

**Other Project Data****Borrower/Executing Agency: India: Mumbai Railway Vikas Corporation Ltd.****Follow-on Operations**

<i>Operation</i>	<i>Loan no.</i>	<i>Amount (US\$million)</i>	<i>Board date</i>
Mumbai Urban Transport Project – 2A	79410	430.00	June 29, 2010

## **Appendix B List of Persons Met**

### **World Bank Country Office, New Delhi, India**

Atul Agarwal	MUTP TTL and Senior Transport Specialist
Guarav Joshi	Senior Environmental Specialist
Shanker Lal	Senior Procurement Specialist
Atin Rastogi	Procurement Specialist
Shanker Lal	Senior Procurement Specialist
Geeta Shivdasani	Procurement Analyst
Tanuj Mathur	Senior Financial Management Specialist
Barjor Mehta	Lead Urban Specialist
Satya Mishna	Social Development Specialist
Monica Bhatnagar	Supervisor – Travel and VMSU Services

### **India Department of Economic Affairs, Ministry of Finance**

Bhaskar Dasgupta	Director, Department of Economic Affairs
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### **Mumbai Metropolitan Regional Development Authority**

Urvinder Madan	Metropolitan Commissioner
Vishram Patil	Chief, Social Development Cell

### **Mumbai Railway Vikas Corporation Ltd**

Prabhat Sahai	Chairman and Managing Director
Ravi Agarwal	Executive Director Planning
RS Khurana	Director Projects
Smriti Verma	Financial Advisor and Chief Accounts Officer

### **Municipal Corporation of Greater Mumbai**

Ajay Mehta	Municipal Commissioner
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### **Tata Institute of Social Sciences**

Payal Tiwari	Researcher
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## Appendix C Project Performance Indicators at Closing

### (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
<b>Indicator 1 :</b>	To reduce peak hour overcrowding, average loads in trains reduced			
Value quantitative or Qualitative)	4,500	3,500	3,600	4,016
Date achieved	11/06/2002	06/30/2008	06/15/2011	06/15/2011
Comments (incl. % achievement)	Partially Achieved (the reasons include increased ridership than projected).			
<b>Indicator 2 :</b>	To reduce incidence and severity of pedestrian road traffic accidents in areas where facilities are proposed			
Value quantitative or Qualitative)	100%	90%	Deleted as part of the restructuring	
Date achieved	11/06/2002	06/30/2008		
Comments (incl. % achievement)	Some of the subcomponents were undertaken: 2 PGSS were implemented within the project, & MMRDA undertook the construction of numerous skyways outside the project.			
<b>Indicator 3 :</b>	To increase peak hour average frequency for train services.			
Value quantitative or Qualitative)	13	15	16	16.1
Date achieved	11/06/2002	06/30/2008	06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved			
<b>Indicator 4 :</b>	To increase train availability at peak			
Value quantitative or Qualitative)	91%	94%		91.5%
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Not Achieved (Some of the old train sets are still operating in the system requiring more maintenance. The value should improve once these are replaced by new trainsets being procured under MUTP2A).			
<b>Indicator 5 :</b>	To reduce journey times by road on JVLR (from WEH to EEH).			
Value quantitative or Qualitative)	30 Minutes	24 Minutes		28 minutes
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Not Achieved. The reasons include; (a) actual traffic was three times higher than the forecast, and (b) some of the resettlement work was still underway at the time of evaluation.			
<b>Indicator 6 :</b>	To reduce journey times by road on SCLR (from WEH & EEH).			

Value quantitative or Qualitative)	20 Minutes	16 Minutes		36 minutes
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Not Achieved because the construction works were not completed.			
<b>Indicator 7 :</b>	To reduce delays at ATC controlled junctions			
Value quantitative or Qualitative)	617 PCU hours/ hour (phase I:53 nodes)2,900 PCU hrs/ hour (phase II: 200 nodes)	85 PCU hours/per hour	Reduction by 10% PCU hours/per hour	Average reduction by 23.4% at 116 intersections where new adaptive traffic control system is functioning
Date achieved	11/06/2002	06/30/2008	06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved. The base line was originally set at 100 pcu hours/hour and revised as part of the restructuring.			
<b>Indicator 8 :</b>	To reduce working ratio (costs/incomes) of rail services.			
Value quantitative or Qualitative)	0.88	0.85		0.88
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Not Achieved due to no changes in fare and significant increase in the operating cost.			
<b>Indicator 9 :</b>	To increase cost recovery (income/costs) of bus services.			
Value quantitative or Qualitative)	<0.9	>1		0.74
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Not Achieved due to (a) delay of depot commercialization, (b) unexpected popularity of bus passes, and (c) increases in dearness allowance (due to inflation) and Voluntary Retirement Scheme payments for the abolished 530 posts.			
<b>Indicator 10 :</b>	To increase % of PAH living in houses of at least 225 square feet.			
Value quantitative or Qualitative)	9%	100%		99.97 %
Date achieved	11/06/2002	12/31/2007		06/15/2011
Comments (incl. % achievement)	Achieved			
<b>Indicator 11 :</b>	To increase % of PAH having access to individual tap water and toilets.			
Value quantitative or Qualitative)	1%	100%		99.97%
Date achieved	11/06/2002	12/31/2007		06/15/2011
Comments (incl. % achievement)	Achieved			

<b>Indicator 12 :</b>	To increase the technical capacity of the Traffic Management Unit (TMU) in MCGM.			
Value quantitative or Qualitative)	No TMU.	Fully functional TMU.	Training Completed	Training Completed
Date achieved	11/06/2002	06/30/2008	06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved			
<b>Indicator 13 :</b>	To increase the technical capacity of transport planning, road maintenance and road safety so that new procedures to develop and implement the programs for which they are responsible are in place.			
Value quantitative or Qualitative)	Limited capacity	New procedures in place, to develop and implement programs	Procedures in place for transportation planning and road safety. Road maintenance study completed and recommendation accepted	15 qualified full time professionals and technical assistance consultancies in place. Road Maintenance Management System installed.
Date achieved	11/06/2002	06/30/2008	06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved. The indicator was revised as part of the restructuring.			
<b>Indicator 14 :</b>	To strengthen the ambient air quality monitoring and reporting system.			
Value quantitative or Qualitative)	No reliable reports	Plan implemented as per study recommendations		Three monitoring stations being installed.
Date achieved	11/06/2002	12/31/2004		06/15/2011
Comments (incl. % achievement)	Achieved			
<b>Indicator 15 :</b>	To develop capacity for management of resettlement implementation			
Value quantitative or Qualitative)	Project R&R Unit created with few staff in MMRDA		Reasonably well functional R&R division in MMRDA with procedures in place. Various implementation procedures are adopted for non-MUTP projects.	MMRDA has established capacity to manage urban resettlement with rules and procedures in place; has been identified as the nodal agency for R&R in Mumbai.
Date achieved	11/06/2002		06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved. The indicator was added as part of the restructuring.			
<b>Indicator 16 :</b>	To strengthen capacity for environmental management in urban infrastructure projects.			
			Staffed trained	Joint Project Director

Value quantitative or Qualitative)	No reliable reports.		in environmental management with procedures in place.	in charge of environment is in place, working on MUTP and other MMRDA
				infrastructure projects. Other qualified staff is also intermittently available for environmental
Date achieved	11/06/2002		06/15/2011	06/15/2011
Comments (incl. % achievement)	Partially Achieved. The indicator was added as part of the restructuring.			

**(b) Outputs**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Complete DC to AC conversion of 645 line km. of suburban rail system.			
Value (quantitative or	0	645 line km		645 line km
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Achieved. Despite the completion of the work, some sections cannot be commissioned on AC traction because of non-availability of dual voltage AC-DC EMU rakes.			
<b>Indicator 2 :</b>	Increase size of train fleet by 251 x 9-car rakes.			
Value (quantitative or	200 x 9-car rakes (EMUs)	251 x 9-car rakes (EMUs)		285 x 9-car rakes (EMUs)
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Achieved.			

<b>Indicator 3 :</b>	Equip junctions with Area Traffic Control (ATC).			
Value (quantitative or Qualitative)	No junctions equipped.	250 junctions equipped.		250 junctions equipped.
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	Achieved.			

<b>Indicator 4 :</b>	Increase length of urban arterial roads.			
Value (quantitative or Qualitative)	1. JVLR (only 4 lane road) 2. SCLR (portion not existing)	Additional 45 lane kms constructed		1. Additional 43 lane kms constructed. 2. Works in progress
Date achieved	11/06/2002	06/30/2008		06/15/2011
Comments (incl. % achievement)	1. Achieved. 2. Not Yet Achieved.			

<b>Indicator 5 :</b>	Provide permanent housing with adequate physical amenities to 19,200 PAHs.			
Value	N/A.	19,200 PAHs	Total	1. 17,566 or 99.97%

(quantitative or Qualitative)			19,394 PAHs 1. 17,572 households 2. 1,822 shops including 566 large or medium size shops	families permanently re-housed. 2. 1,782 (97.8%) shops including 555 large or medium size shops.
Date achieved	11/06/2002	12/31/2004	06/15/2011	06/15/2011
Comments (incl. % achievement)	Achieved.			

## Appendix D Resettlement and Rehabilitation Post Project

*Land acquisition and resettlement and rehabilitation (R&R) are dominant issues in Indian cities:* A large share of the Indian urban population (50 percent in Mumbai) live in slums that often encroach on unutilized land and in the past this has been a major impediment to developing the infrastructure networks. In this context, MUTP is a landmark project as it was the first attempt to resettle such a large number of people in an urban area. MUTP was the largest urban R&R project undertaken by the Bank and the largest in India at appraisal. The project involved the displacement of 19,394 households, and about 100,000 people (PAPs).

*Long-term benefits and impacts:* This resettlement translated into positive impacts in the form of secured housing with title and improved basic amenities, which in turn has improved the overall living standards of the PAPs in the form of better housing, access to running water, separate sanitation facilities, etc. One of the long-term impacts was the increased expenditure on recurring costs of maintenance and municipal services for housing cooperative societies. To offset this, the implementing agency contributed INR 20,000 (US\$500) for each household as a Maintenance Fund and the interest earned on this amount was used for payment of taxes and maintenance. The shifting of a large number of affected people away from the railway tracks had a significant impact in the form of increased speed and frequency of the local trains in Mumbai, besides reducing rail-related accidents and improving personal safety.

*Quantification of resettlement benefits:* PAPs were provided at no cost with a house or shop of up to 225 sq. ft., and cash assistance towards one-time maintenance charges, relocation costs and a contribution towards a community revolving fund, to be managed by the respective cooperative societies. In the absence of land cost, ready reckoner rates<sup>23</sup> used for registering a property when a sale transition took place were used to estimate the costs involved for each household resettled under the project. The data indicates that the project incurred expenditure between INR 333,000 and INR 785,000 (US\$6,800 - US\$16,000) for each residential household, consisting of alternative accommodation, cash assistance and technical assistance for different sites. In the case of commercial households, the expenditure incurred varied between INR 506,000 and INR 1,714,000 (US\$10,300 - US\$35,000) for a unit size of 225 sq. ft. for each commercial household, consisting of an alternative shop, cash assistance and technical assistance for different sites.

*Resettlement of shopkeepers:* A shopping mall (the Powai Plaza shopping complex) was developed in order to offer a more attractive resettlement option to the shopkeepers along Jogeshwari-Vikhroli Link Road, many of whom had owned shops on private land with formal or informal land title and therefore refused to be treated in the same way as the squatters on public land. This shopping complex contains high quality shops that were provided to some of the affected shopkeepers to reestablish their businesses. A private developer undertook the construction in exchange for development rights.

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<sup>23</sup> *Ready Reckoner Rates* are used to calculate stamp duty for real estate property

*Income Restoration Measures with a Focus on women:* Mumbai has the highest number of workingwomen in the country. MMRDA nevertheless took several measures to strengthen income restoration and livelihood activities with a special focus on poor resettled women. It established the Livelihood Cell to promote income-generating activities among the resettled women groups. As a result of various initiatives undertaken by the Cell, women have engaged in a number of businesses, which afford them financial independence and secured education for their children. The *Sankalp Mahila Audyogik Sahkari Sanstha*, set up by the Livelihood Cell, runs canteens at many institutions including MMRDA. It produces and sells office stationary, gifts and seasonal items and also offers housekeeping to various public and private organizations. In addition, 64 Self-help Groups and eight Livelihood Groups were formed to enable about 1,000 women to secure sustainable monthly incomes and improve their living standards. The presence of these vulnerable women engaged in gainful economic activities has had a positive influence on other resettled women. In various resettlement sites, over 10,000 women are now enrolled in different group based income activities through Self-help Groups.

*Resettlement of Apartment Owners:* Another highlight of the resettlement process was the resettlement of affected legal owners of residential apartment buildings through Memoranda of Understanding. Under this process, MMRDA constructed the houses for this category of people under a redevelopment scheme close to the affected area and the PAPs were provided with apartment space almost double that of their previous houses. During the transition period of three years or until the houses were built, PAPs were paid a rental allowance (at market rate and inflation adjusted) of about INR 10,000 per month (US\$200). However, retrospectively, MMRDA decided that the use of transit resettlement should be avoided to minimize uncertainties regarding permanent resettlement. A total of 444 households residing in 19 Maharashtra Housing Area Development Authority buildings opted for such private in-situ redevelopment schemes.

*Institutional Capacity:* The implementing agency progressed in addressing these issues, with the active support and advice of the Independent Monitoring Panel. MMRDA developed substantial capacity over the life of the project. It created a permanent unit to manage resettlement impacts of various projects in the city. A Chief Officer reporting to the Additional Metropolitan Commissioner headed the R&R unit in MMRDA. With the increase in work related to post resettlement, a new position, Chief Office (Post Resettlement), was created and a Senior Officer was assigned to it. Two NGOs with long experience of working in the slums of Mumbai provided complementary support for implementation of resettlement activities.

*Independent Monitoring Panel:* In addition to the above arrangements, the Independent Monitoring Panel, headed by a former Metropolitan and Municipal Commissioner and consisting of members from the fields of journalism, the legal profession and academia, regularly met and reviewed progress in key activities and also undertook field visits to assess the extent of improvement in the resettlement communities and to hear from PAPs.

*Grievance redress process:* A two-stage grievance redress process was established at the beginning of project appraisal, which was streamlined during implementation. The Grievance Redress committees (Field Level and Senior Level), handled complaints and grievances from PAPs and were administered by independent persons not associated with

the project implementation. The field level committee heard and resolved 3,704 cases and the senior level committee resolved 902 cases. An independent impact assessment study recorded a high degree of PAP satisfaction with the grievance redress process.

*Post-resettlement Support:* The post-resettlement support in this project is considered by Bank and other social safeguards specialists to be close to best practice. Such support includes assistance with registering PAP cooperative societies; support for Community Management Funds and Maintenance Funds; undertaking building repairs; training in building management and provision of maintenance manuals; allotment of additional locations for common facilities; strengthening of basic services such as community halls, health centers and schools; and establishment of a Livelihood Cell to support and monitor income activities. MMRDA's overall post-resettlement activities were notable in achieving the registration and training of 99 percent of PAP cooperatives and enabling them to responsibly self-manage their affairs.

*Independent Impact Assessments Show Improvements in Living Standards and Remedial Measures:* MMRDA commissioned three independent resettlement impact assessment studies in 2003, 2008, and 2013 respectively. The first two studies were undertaken by the Tata Institute of Social Sciences, and the final assessment by Nirmala Niketan (School of Social Work), Mumbai. Typical sample surveys were of 1,500 project affected households and 30 focus groups. The latest results show 80 percent PAP satisfaction with resettlement buildings, a 50 percent increase in average monthly household incomes and 80 percent job retention among relocated PAPs.

*Maintenance and Repairs:* The 2008 impact assessment study observed that many resettled PAPs, who earlier lived in slums and paid no levies towards water use and house occupancy, found the payment of property taxes, water and electricity bills a burden. Responding to this, MMRDA ensured concessions in property and water charges levied in order to enable the resettled families to adapt to their new conditions. The majority of building repairs have been completed and MMRDA has prepared an action plan to complete the remaining repair works before a formal exit. The sustainability of building management was probed during the field visits of the IEG mission. Some of the cooperative societies visited revealed that they had issued share certificates to their members, had their financial reports audited and also maintained a substantial reserve fund balance for unforeseen expenditures. They are carrying out minor repairs of the buildings and regularly paying the electricity dues and property taxes, thus helping to ensure the security of the buildings, while maintaining details of the apartment owners.

*Environmental Management:* MMRDA prepared and implemented an action plan to improve environmental management at the resettlement sites with the help of a professional consultant. This involved implementation of a list of site-specific actions for improving environment, health and hygiene in MUDP colonies, which was implemented by MMRDA with the completion of major structural repair works. MMRDA has replaced the drainpipes in the buildings and ensured one-time cleaning of storm drains. To improve waste management, some garbage bins were supplied to the PAP housing societies and arrangements made with MCGM for removal of solid waste from the resettlement sites. MMRDA has also prepared overall environmental management plans for all MUDP sites for the PAP societies to implement.

## **Mumbai Relocated People Respondents (IEG focus group survey) November 10, 2015**

**Respondents:** interviewed by the IEG mission in two groups:

- i) 8 women at a health clinic, and
- ii) 6 men and 2 women at a management committee office

The selection was random, but the respondents were displaced from alongside the rail tracks (not the roads). Persons relocated from the roads projects, according to survey data were better off.

Ages ranged from early twenties to late fifties. All but one household was male headed. On average there were three to four people per household sharing the physical space. Respondents were literate with basic school education.

### **Transport:**

Males: most journeys occur in the peaks (70 percent, local 30 percent): by mode: rail 60 percent; bus 20 percent; taxi 15 percent; walk 5 percent. One person owned a motorcycle, but did not use it for commuting.

Females: journeys mostly off peak: modes: rail 30 percent; bus 20 percent; taxi 20 percent; walk 30 percent. Most women had informal sector jobs before resettlement. Now most have formal sector part time jobs that pay more and in some cases have benefits. Unmet travel needs were mostly to see relatives living elsewhere.

Issues for females were crowded women-only carriages in off peak times, (which was when they traveled), poor and unclean toilet facilities on stations (usually at the far end of the platform, whereas the men's facilities were centrally situated), and poor lighting at intermodal transfer points. Sometimes women got off at an earlier station to hire a taxi to the final destination, either because there were no taxis at the station nearest their intended destination or because of safety reasons. They appreciated the fact that there were now women police on the trains, but thought they could be better trained. Taxi drivers were sometimes abusive or made unwelcome advances. Buses were considered relatively safe, but pedestrian infrastructure was generally lacking or inadequate, except at a few railway stations.

### **Resettlement:**

All respondents' had received resettlement packages and the titles were in the names of both the head of the household and the spouse. They were given the opportunity to attend community consultations, but sometimes only the head of the household attended. Responses were vague on how many meetings occurred. A free bus service was temporarily provided immediately after relocation so that children did not have to change school midway through the academic year.

**Economic Empowerment:**

Most interviewees were former shack dwellers. Those with access to electricity in the former slums (likely illegal connections) had TVs and fridges. After moving to the new apartment many bought furniture and appliances. Prior to relocation income for females was primarily from hawking and informal work as maids. Some men had full time jobs, which they retained. One man had found a full-time job locally. All female respondents had access to small business credit and four had taken up such credit opportunities. Once the first loan is paid off, a slightly larger loan may be taken out. All respondents believed they were better off after the relocation except during the first year when they had, in many cases, to look for new employment. They now had to pay for utility services, but on the other hand their status was improved because they had formal sector jobs.

**General:**

Access to health services and credit has improved. Accommodation was often a great improvement. Each titled apartment, though small, had a separate bathroom and toilet providing privacy. Each resettlement building had space for women's activities, and a pre-school children's center with day care facilities to make it possible for women to engage in productive activities. Management committees were democratically elected and two places were reserved for women in each committee.

The big issue was schools. Their new local schools usually taught in the local language and not in English. They realized, however, that their children would have more opportunities if they were fluent in English. Some of the shack dwellers said their children were taught in English at the school near their previous location. In one case the family continued to send the child (at great expense to the household) back to the former school.

Other complaints concerned insufficient trash removal, and the need to repaint the exterior of the building, which had become discolored after exposure to the polluted Mumbai air. One woman wanted a wall erected around the community to keep out the slum dwellers (they now considered themselves in a class above such people). Class was seen as very important – their daughters could expect to get a better marriage partner now. One negative factor sometimes mentioned was the challenge of adjusting from horizontal community living to high-rise living.

## Appendix E Borrower Comments

### Comments and Observations on IEG Report – India-Mumbai Urban Transport Project – IEG Draft Project Performance Assessment Report.

Annexure

**From:** Ravi Agarwal [<mailto:edmrvc@gmail.com>]  
**Sent:** Monday, June 20, 2016 6:15 AM  
**To:** Peter Nigel Freeman  
**Cc:** Onno Ruhl  
**Subject:** IEG Report - comments & observations

Dear Mr. Freeman,

Comments & observations on IEG Reports are attached herewith.

With regards  
 Ravi Agarwal  
 Executive Director (Planning)  
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IEG Draft Assessment Report has been examined. The report generally reflects the facts on MUTP – I for rail component. Observations are as under -

Page (viii) and 1.3

The average peak hour rail passenger load per train was 4500 prior to MUTP, not 5400 as mentioned (Refer PAD)

- 1.5 Zonal Railway works out separate costing for suburban railway system. The reference of operating plan may be provided. Further separate costing has no linkage with separation of the suburban services from the mainline operation.
- 1.7 (last line) – The same needs to be corrected as – “Project MUTP 2B is funded by Ministry of Railways and State Government.
- 2.12 The suburban rail operation is looked after by Zonal Railway not by Vikas (MRVC)
- 4.3 The sentences needs to be corrected as -

At the end of MUTP, the size of train fleet will be 251 nine car rakes (electrical multiple units). Target exceeded as total rakes was 285 rakes at end of MUTP

4.4. In first line, MUPT to be corrected as MUTP.

Procurement of bogies was a small component of Rolling Stock which was included in 2006/2007 as development project. The contract for 108 no. bogies for 6/9 car Rakes, was placed on M/s Siemens, Austria in August 2008. The testing and trials of prototype bogies could not commence during the currency for the World Bank loan and therefore this was transferred in the follow up project MUTP 2A. However, main objective of inducting 101/9 car EMU Rolling Stock into services was achieved. At present, prototype bogies are not been cleared in testing and therefore no further supply has been made

4.8 The reduction in overcrowding was not only based on induction of new Rolling stock for Mumbai Suburban Railway system under MUTP but also other mode of transports such as Road projects (JVLR, SCLR etc), Metro etc. in the City. As alternate modes of public transport could not be realized as planned during intervening period which resulted the stress on Mumbai Suburban Railway System and therefore crowding could not be reduced as targeted.

5.4 The operation and maintenance of suburban is assigned to Zonal Railway. The data given in the Para is not clear as the maintenance cost of suburban system is much more than what has been mentioned.

5.19 The major delay was in finalization of contract for procurement of propulsion system for 101/9 car EMU rakes.

5.21 Vikus to be corrected as Vikas

The issue of coordination with Zonal Railways for working in Railways premises, are dealt directly by executing agencies i.e. MMRDA, MSRDC etc. For MUTP also, MMRDA and MSRDC were coordinating with Zonal Railways directly and there was no role of MRVC.

# Map of Road and Rail Components

