Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: 59888-IN

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF
US$975.0 MILLION

TO THE REPUBLIC OF INDIA

IN SUPPORT OF THE

FIRST PHASE OF THE

ADAPTABLE PROGRAM LOAN (APL) FOR THE

EASTERN DEDICATED FREIGHT CORRIDOR PROJECT

(APL 1)

May 4, 2011

Sustainable Development Department
India Country Management Unit
South Asia Regional Office

CURRENCY EQUIVALENTS
(Exchange Rate Effective March 21, 2011)

Currency Unit	=	INR.
INR 1.0	=	US$0.022
US$1.0	=	INR. 45.0

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

APL	Adaptable Program Lending	IGBT	Insulated Gate Bipolar Transistor
ARTC	Australian Rail Track Corporation	IHHA	International Heavy Haul Association
CAS	Country Assistance Strategy	IR	Indian Railways
CIL	Coal India Limited	IT	Information Technology
CGFA	Corp. Gov. and Financial Accountability	IUFR	Interim Unaudited Financial Report
CONCOR	Container Corporation of India Ltd.	JICA	Japan International Cooperation Agency
CPAR	Country Procurement Assessment Report	LA	Land Acquisition
CPM	Chief Project Manager	LRDSS	Long Range Decision Support System
CPSU	Central Public Sector Undertaking	M&E	Monitoring and Evaluation
CR	China Railways	MMD	Maximum Moving Dimensions
CW&T	Civil Works and Track	MOEF	Ministry of Environment and Forests
CVO	Chief Vigilance Officer	MOR	Ministry of Railways
DFC	Dedicated Freight Corridor	MOU	Memorandum of Understanding
DFCCIL	Dedicated Freight Corridor Corp.	NRRP	National Rehabilitation & Resettlement Policy
DIR	Detailed Implementation Review	NGO	Non Government Organization
DPC	Dedicated Passenger Corridor	PAD	Project Appraisal Document
DPE	Department of Public Enterprises	PAP	Project Affected Person
EA	Environmental Assessment	PIO	Public Information Officer
ELI	Existing Line Improvement	PS	Performance Specifications
EMF	Environmental Management Framework	PP	Procurement Plan
ERR	Economic Rate of Return	PPPs	Public Private Partnerships
ERP	Enterprise Resource Planning	PWD	Public Works Department
FIRR	Financial Internal Rate of Return	QSAC	Quality and Safety Audit Consultant
ERP	Enterprise Resource Planning	RAA	Railway Amendment Act, 2008
FIRR	Financial Internal Rate of Return	RAP	Resettlement Action Plan
GAAP	Governance and Accountability Action Plan	RDSO	Research, Designs and Standards Org.
GBS	General Budgetary Support	RFP	Request for Proposal
GDP	Gross Domestic Product	RPF	Resettlement Policy Framework
GGM	Group General Manager	ROBs	Road Over Bridges
GHG	Greenhouse Gas	RS	Rolling Stock
GM	General Manager	RTIA	Right to Information Act
GOI	Government of India	SEMU	Social and Environment Mgt Unit
GPN	General Procurement Notice	SESMRC	Social & Environment Safeguards Monitoring and Review Consultants
GQ	Golden Quadrilateral	SHE	Safety, Health and Environment
HR	Human Resources	SIA	Social Impact Assessment
HHC	Heavy Haul Committee	SPN	Specific Procurement Notice
IDC	Interest During Construction	ToR	Terms of Reference

Vice President:	Isabel M. Guerrero
Country Director:	N. Roberto Zagha
Sector Director :	John H. Stein
Sector Manager:	Michel Audigé
Task Team Leader:	Ben L. J. Eijbergen
Co-Task Team Leader(s):	Atul Agarwal/Nupur Gupta

INDIA
Eastern Dedicated Freight Corridor Project (APL 1)

Page

Contents

INDIA

EASTERN DEDICATED FREIGHT CORRIDOR - I

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

SASDT

Date: May 4, 2011	Team Leader: Ben L. J. Eijbergen
Country Director: N. Roberto Zagha	Sectors: Railways (100%)
Sector Director: John H. Stein	Themes: Infrastructure services for private sector development (P); Other public sector governance (S)
Sector Manager: Michel Audigé	
Project ID: P114338	Environmental category: Full Assessment
Lending Instrument: Adaptable Program Loan	Joint IFC:
	Joint Level:

Project Financing Data

[X] Loan [ ] Credit [ ] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total Bank financing (US$m): 975.00
Proposed terms:

Financing Plan (US$m)

Source	Local	Foreign	Total
Borrower:			
APL 1 Khurja - Kanpur	483.44	0.00	483.44
APL 2 Kanpur - Mughal Sarai	538.00	0.00	538.00
APL 3 Ludhiana - Khurja	365.00	0.00	365.00
International Bank for Reconstruction and Development:			
APL 1 Khurja - Kanpur	0.00	975.00	975.00
APL 2 Kanpur - Mughal Sarai	0.00	1,050.00	1,050.00
APL 3 Ludhiana - Khurja	0.00	700.00	700.00
Total:	1,386.44	2,725.00	4,111.44

Borrower: Republic of India
Responsible Agency:
Dedicated Freight Corridor Corporation of India Ltd.
5th Floor, Pragati Maidan Bldg Complex
Pragati Maidan
New Delhi 110001, INDIA
Tel: (91-11) 2345-4601 Fax: (91-11) 2345-4701
md@dfcc.in

Estimated disbursements for APL 1 (Bank FY/US$m)

FY	FY12	FY13	FY14	FY15	FY16	FY17			
Annual	50.0	150.0	200.0	250.0	200.0	125.0			
Cumulative	50.0	200.0	400.0	650.0	850.0	975.0			

Project implementation period: Start: June 1, 2011 End: June 30, 2017

Expected effectiveness date: August 31, 2011 Expected closing date: June 30, 2017

Does the project depart from the CAS in content or other significant respects? ***Ref. PAD I.C.***	[ ]Yes [X] No
Does the project require any exceptions from Bank policies? ***Ref. PAD IV.G.*** Have these been approved by Bank management? Is approval for any policy exception sought from the Board?	 [ ]Yes [X] No [ ]Yes [ ] No [ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? ***Ref. PAD III.E.*** Financial Management and Procurement	[X]Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation? ***Ref. PAD IV.G.***	[X]Yes [ ] No

Project development objective ***Ref. PAD II.C., Technical Annex 3***

The development objectives of the Project are to: (a) provide additional rail transport capacity, improved service quality and higher freight throughput on the 343 km Khurja – Kanpur section of the Eastern rail corridor; and (b) develop the institutional capacity of DFCCIL to build and maintain the DFC infrastructure network.

Project description ***Ref. PAD II.D., Technical Annex 4***

(i) Design, construction and commissioning of the 343 km Khurja – Kanpur section (US$1403 million);

(ii) Institutional development to assist DFCCIL and MOR to develop their capabilities to best utilize heavy haul freight systems (US$50 million).

Which safeguard policies are triggered, if any? ***Ref. PAD IV.F., Technical Annex 10***

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[ ]	[X]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Indigenous Peoples (OP/BP 4.10)	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

Significant, non-standard conditions, if any, for:
Ref. PAD III.F.
Covenants applicable to project implementation:

A. To facilitate the carrying out of the Project by DFCCIL, the Borrower shall make the proceeds of the Loan available to DFCCIL under a subsidiary agreement between the Borrower, through MOR, and DFCCIL, satisfactory to the Bank (the "Subsidiary Loan Agreement"). The Borrower shall, through MOR, provide its counterpart contribution as required by the Project to DFCCIL in a timely and adequate manner. The Borrower shall protect the interests of the Borrower and the Bank to accomplish the purposes of the Loan.

B. The Borrower shall ensure that not later than September 30, 2011, MOR and DFCCIL enter into a concession agreement (the "Concession Agreement) and that DFCCIL and MOR, prior to the commissioning of the facilities financed by the Loan, update the Concession Agreement to incorporate relevant schedules into the Track Access Agreement (as a part of the Concession Agreement), both under terms and conditions satisfactory to the Bank.

C. The Borrower shall ensure that an Empowered Committee (EC) is established and maintained throughout the period of Project implementation to address inter-ministerial and state-level issues related to the Project.

D. With respect to the road over bridges to be built in the State of Uttar Pradesh linked to the Project as detailed in the Project Implementation Manual (the "Linked Activities"), which may be updated from time to time, the Borrower, through MOR, shall take all necessary measures to ensure that:

(a) prior to the commencement of any civil works under the Linked Activities, that: (i) a resettlement action plan, acceptable to the Bank, is prepared in accordance with the guidelines and procedures set forth in the RPF, and thereafter said resettlement action plan is implemented, in a form and substance satisfactory to the Bank; (ii) an environmental management plan, acceptable to the Bank, is prepared in accordance with the guidelines and procedures set forth in the EMF, and thereafter said environmental management plan is implemented in a form and substance satisfactory to the Bank;

(b) the provisions of the resettlement action plan and the environmental management plan referred to in sub-paragraph (a) above are not amended, revised, or waived without the prior agreement of the Bank; and

(c) not later than December 31 of each year, starting December 31, 2011, an annual work program of the Linked Activities is submitted to the Bank for its review and comments and that said annual work program is implemented taking into account the Bank's comments thereon, if any.

E. Throughout Project implementation, DFCCIL shall:

(a) have the overall responsibility for day-to-day Project implementation and appoint and maintain, suitably qualified personnel in adequate numbers, to carry out the functions of procurement, contract management, financial management, social and environmental management, and general Project oversight, monitoring and reporting;

(b) maintain social and environmental management units at the DFCCIL headquarters and its field offices, with functions, powers, staff and resources necessary and appropriate

for: (i) implementing social and environmental safeguards measures required under the RAP, the RPF and the EMP, and (ii) in the event of any major alteration in alignment under the Project, prior to issuance of the request for proposals under the altered alignment, ensuring that the EMP and the RAP shall be updated and approved by the Bank, and that necessary and required social and environmental clearances are obtained from the Borrower's relevant authorities; and

(c) engage quality and safety audit consultant (QSAC), with qualifications and experience, and under terms of reference acceptable to the Bank, to provide the DFCCIL and the Bank quarterly monitoring reports throughout the Project's construction period.

F. Prior to award of any civil works or track contracts, DFCCIL shall ensure that:

(a) construction sites under a given stretch of railways as specified in proposed construction contracts between DFCCIL and its contractors, shall be available encumbrance free to contractors for construction activities under the Project; and

(b) all required and necessary environmental clearances for track alignment approved by DFCCIL shall have been issued by the Borrower's relevant authorities.

G. Prior to award of any contract for electrical, signaling and telecommunications works, DFCCIL shall have:

(a) agreed with all civil works and track contractors partial/phased plans for the installation of electrical, signaling and telecommunications systems under the Project to enable contractors to complete their work in accordance with the agreed work program; and

(b) agreed with a respective and relevant local authority and/or utilities on a system interconnection and relocation plan to enable contractors to complete their work.

H. To address grievances related to or arising out of implementation of the RAP and the RPF, DFCCIL shall, not later than September 30, 2011, constitute or appoint, as the case may be, district-level grievance redressal committees; a senior level grievance committee, and an Ombudsman, with powers, functions, capacity, and resources appropriate to fulfill their respective functions under the Project and thereafter maintain them until the Closing Date of the Project.

I. DFCCIL shall, by December 31 of each year, starting December 31, 2012, undertake an annual review of the results and experiences in implementing the RAP and the RPF, and thereafter promptly submit the review results to the Bank for comments and update the RAP and the RPF, if required, satisfactory to the Bank; and thereafter implement the updated RAP and the updated RPF.

J. DFCCIL shall, not later than December 31, 2015, provide to the Borrower and Bank, an initial impact study of the Project conducted under terms of reference satisfactory to the Bank, and within six (6) months of commissioning the facilities to be financed under the Project, provide to the Borrower and the Bank a final impact study of the Project conducted under terms of reference satisfactory to the Bank.

K. DFCCIL shall submit to the Bank, not later than June 30 of each year starting June 30, 2012, an annual progress report on the implementation of the GAAP and thereafter implement the GAAP taking into account the Bank's comments on said progress reports, if any.

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)
Adaptable Program Loan

I. STRATEGIC CONTEXT AND RATIONALE

A. Country and Sector Issues

1. India's economy now ranks fourth in the world on a purchasing power parity basis, and is the world's second fastest growing economy. To sustain recent high GDP growth rates, India's Planning Commission estimates that investments in infrastructure will have to be substantially augmented. According to Government estimates, India would need about US$320 billion in investments (at 2006 prices) in the infrastructure sectors during the Eleventh Five Year Plan (2007-12). In the Twelfth Five Year Plan (2013-2018), the Government has set an infrastructure investment target of US$1 trillion. This is 9-10 percent of expected GDP. Augmentation of transport systems, particularly of the rail network, will play a crucial role in this infrastructure development. Rail traffic levels in the main corridors are already severely congested.

2. **The recovery of the Indian economy from the global financial crisis seems to be robust**. GDP growth (at factor cost) reached close to 9 percent in the first half (April to September 2010) of FY2010-11, compared with 8 percent in fiscal year (FY) 2009-10. On the expenditure side, a resurgence of investment contributed to the recovery, but private consumption growth is now also picking up. On the production side, the agricultural sector surprised analysts with a positive growth rate in FY2009-10 despite the monsoon failure, while a strong rebound in the first half of FY2010-11 materialized as expected. The industrial sector registered double-digit growth for the three most recent quarters.

3. **Over the medium term, strong economic growth is likely to be sustained in India.** GDP growth for FY2011-12 is likely to be around 9 percent. The onset of the benefits of demographic transition, and high savings rates augur well for a high-growth path over the medium- to long-term, but challenges are substantial, in particular in agriculture, education and infrastructure. The government of India is well aware of these challenges and has established a track record of reforms that help to maintain the growth momentum.

4. **The fiscal consolidation targeted in the Union Budget for the FY2011-12 and beyond has to take place in an environment of rising demand for government services and infrastructure financing.** With the buoyancy in tax revenue so far, the central government deficit target is likely to be achieved despite the additional spending bills in 2010-11. Important reforms of fertilizer and fuel pricing should reduce the burden of subsidies going forward. Requirement of food subsidies may increase depending on how the contours of the proposed new food security bill finally develops. Apart from reforms to subsidies and under-recoveries of costs of provision of services, improved efficiency in service delivery is needed to free up resources for an "expansionary consolidation" as envisaged by the 13th Finance Commission. The government's fiscal consolidation effort during FY2010-11 is expected to result in a deficit of 5.1 percent of GDP, against a target of 5.5 percent. The government's budget for 2011-12 targets a fiscal deficit of 4.6 percent of GDP. The Government has, in the Medium Term Fiscal Policy Statement laid before Parliament on 28th February, 2011, announced its intention to carry on fiscal consolidation to target a fiscal deficit of 4.1 percent of GDP in FY2012-13 and 3.5 percent in FY 2013-14.

5. **While the debt-to-GDP ratio has traditionally been high in India, it is projected to decline significantly over the next few years.** India has never faced debt distress despite high debt

compared with its peers. This is partly because of external public debt is only about 5 percent of GDP and high statutory reserve requirements provide a captive market for government securities.

India's Railway System

6. Indian Railways (IR) operates a national rail network of about 64,000 route kilometers. In 2009, it carried over 6,900 million passengers and 833 million freight tons. It is the fourth busiest railway in the world in terms of total traffic unit kilometers carried[1]. IR's main service delivery institutions are the Zonal Railways (regional divisions) of the Indian Railway Board, the executive arm of the Ministry of Railways (MOR). The Zonal Railways are vertically integrated infrastructure and train operations entities.

7. India is a country of long distances and several commodities have a long transportation lead. Railways are the most economical means of transport for medium and long distance transport of goods. IR has, however, been losing market share in freight transport over the years to road transport mainly due to lack of capacity and in some cases due to poor service quality. Assuming an economic growth rate of 8 percent and an elasticity of transport demand to GDP of 1.25, freight traffic demand is projected to grow at 10 percent. IR has not been able to create additional capacity over the past two decades to keep pace with the increasing demand. During 1991-2002 the rail freight growth was about 4 percent against demand growth of about 7 percent. During 2003-2010, the rail freight traffic growth was about 7 percent against a demand growth of 10 percent. Continuing inadequate rail freight capacity is forcing freight to move by uneconomic alternative modes of transport which imposes high avoidable cost on the Indian economy and increased environmental impact as alternative modes are less energy efficient than rail.

8. Over the last decade IR has initiated measures to improve the operational and commercial performance of its rail freight operations. These have included: increasing the permissible axle-loading for major commodities; improving wagon utilization by raising train speeds together with incentives to customers to consign full rakes of wagons, cutting out the need for marshalling en route; rationalizing train examination procedures to reduce service delays; improving tracking and management of wagons; revising and simplifying the tariff system to better reflect 'pricing to market' of bulk commodities; and gradually rationalizing staff functions and numbers which, together with traffic growth, has seen labor productivity double over a decade.

9. Since 2005 IR has been generating an operating surplus, which in 2007 reached about US$5 billion, with an operating ratio[2] of 78 percent. This achievement has been recognized internationally as a major turnaround of Indian Railways. The surplus declined in FY09 due to the recession and a large salary increase (about 20 percent) awarded to government employees by the Sixth Pay Commission in that year. In the financial year ending March 2011, as per IR budget, the operating ratio was 92.1 percent. Subsequent improvements can only be tapped through further investments in capacity. Annex 1 provides additional details and comparative data on IR's performance.

10. Indian Railways passenger tariffs remain extremely low, the lowest relative to freight tariffs among the world's 21 largest railways (ref. annex 1). There is no policy or system of explicit payments for loss-making passenger Public Service Obligations in Indian Railways. But there is substantial internal cross-subsidy of train operations within the passenger sector itself, and between different ZRs; the aggregate burden of infrastructure costs also falls almost entirely on freight customers. In other words, MOR has adopted internal cross-subsidy of passenger services and an

[1] Traffic-kms are passenger-kms plus freight ton-kms.
[2] Ratio of operating expenses including depreciation to revenues.

implicit tax on freight rather than direct subsidy as its preferred means of funding passenger service obligations.

The Dedicated Freight Corridor (DFC) Program

11. As a result of heavy passenger use and the rapid growth of IR's freight traffic (by almost 50 percent over the last five years), capacity utilization on IR's most heavily used routes exceeds 100 percent of nominal capacity by a significant margin. The four routes that form a Golden Quadrilateral connecting Delhi, Mumbai, Chennai and Kolkata account for 16 percent of the railway network's route length, but they carry more than 60 percent of India's total rail freight. With freight traffic projected to grow at more than 7 percent annually, IR urgently needs to add capacity to these routes. Government has approved an IR proposal to establish dedicated freight-only lines, paralleling the existing Golden Quadrilateral routes to ease the congestion choking the railway system and constraining economic growth. The relief of the passenger lines will allow passenger trains to run faster and more reliably and the supply of both passenger and freight trains can be expanded to meet unsatisfied demand and make room for growth. Total corridor capacity will be more than doubled.

12. The DFC program will be built in stages. The first covers the Western Corridor (Rewari/Dadri-Jawaharlal Nehru Port Trust (JNPT), and the Eastern Corridor (Dankuni-Khurja-Ludhiana, Khurja-Dadri). The Western Corridor is being financed by JICA for a total length of 1,534 km. Improvement of the Eastern corridor, which the proposed APL would support, would also contribute to the development of the proposed Trans-Asian Railway involving infrastructure investments in India, Bangladesh, and other countries further east. The Kolkata–Dhaka link is a possibility with enormous trade benefits for both countries and would use the Padma Bridge, which is being built with IDA financing.

13. The main customers of freight trains in the Eastern corridor are power plants in the national capital area and Uttar Pradesh. Today the power sector is struggling to keep up with rapidly growing demand for electricity; black-outs are widespread and frequent. The increase in freight capacity in the Eastern corridor will help the power sector to close the gap between demand and supply for electricity, which is central to the government's strategy for economic development.

14. The Western DFC will mainly serve containerized traffic, both imports and exports, some of which will also use the Eastern Corridor.

Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL)

15. Additional line capacity could have been provided and justified as a conventional track duplication project, but the Government's approval was aimed at fundamental shift in the traditional IR approach to new railway infrastructure. The institutional approach mandated for this new freight network entrusting its construction and maintenance to a corporation at arm's length from IR. It follows the innovative departure from traditional public services exemplified by the Container Corporation of India (known as CONCOR) in which container operations were devolved in 1988 to a specialized company (ref Annex 1) and the Rail Vikas Nigam Ltd (RVNL) in 2003 for creation of fixed rail infrastructure.

16. Government therefore set up DFCCIL on October 30, 2006, under the Companies Act of 1956 as a Special Purpose Vehicle wholly owned by MOR. It required that this new rail infrastructure company should be market-focused; and that while not operating commercial freight train services itself, it should offer non-discriminatory access to IR and other 'qualified operators'. The responsibility for qualification remains with MOR.

17. The relationship between IR and DFCCIL will be governed by a concession agreement between MOR and DFCCIL: IR will pay DFCCIL track access charges for use of DFC tracks by the Zonal Railways' freight trains. Since most of these would be from/to points outside the DFCs, i.e., on the IR network, the concession agreement and the traffic coordination implied therein are crucial. Work has started on upgrading about 3,000 km of IR feeder lines to handle the heavier trains that will operate on the DFCs. The concession obliges MOR to publish criteria for qualification of operators and to provide non-discriminatory access to them.

18. The DFC lines will provide higher quality freight service, more reliably, at greater efficiency and at lower cost, thereby enabling the railways to serve shippers better. This will enable railways recapture market share lost to a very competitive trucking sector, which has among the lowest road freight tariffs in the world.

19. To deliver the program, DFCCIL is required to employ more effective procurement methods. IR construction procurement has traditionally relied on item-rate contracts which have been prone to delays and cost overruns. Government has stipulated that the contracting arrangements should not be the traditional ones, and new approaches such as Public Private Partnerships or lump-sum Engineer-Procure-Construct type contracts should be used. Eventually a modified contract type, Design-Build Lump Sum contract, was chosen based on assessments by an international panel of experts on the appropriateness of contract types. This method allows introduction of international best practices, and provides incentives to contain costs and speed up construction.

20. Implementation of the DFC program will provide India the opportunity to create one of the world's largest heavy-haul freight operations[3], adopting proven international technologies and approaches which can progressively be extended to other important freight routes throughout the network. DFCCIL's Business Plan sets out to achieve world class performance by benchmarking its staffing and productivity of assets against international comparators. DFC's 25-ton axle-load standard will enable IR to introduce new rolling stock (locomotives and wagons) as well as newer energy saving locomotive technologies that will reduce the carbon intensity of India's transport sector (15 percent reduction for Eastern DFC)[4].

B. Rationale for Bank Involvement

21. Bank support for the DFC program supports the Bank's ongoing dialogue with Indian Railways on improvements in a number of areas such as construction efficiency, infrastructure productivity and commercial operations. The DFC Program would increase the railways share of the national freight market, which matches the Bank's goal of promoting environment-friendly infrastructure, in particular reducing greenhouse gas emissions[5]. In addition, the Bank loan would bridge a crucial funding gap (complementing the support offered by other donors[6]) for the large, lumpy and critical infrastructure investment for which commercial loans are not readily available with the necessary long tenors,. The proposed program is aligned with the Bank's Country Assistance Strategy for India (2009-2012), in particular the objectives of "achieving rapid inclusive growth" and "help remove infrastructure constraints". A progress report on the CAS was discussed by the Board on January 22, 2011.

---

[3] A heavy-haul railway is typically one operating unit or combined trains of at least 5,000 tons with equipment with axle loadings of 25 tons or more.
[4] Eastern DFC Greenhouse Gas Reduction Study, prepared for DFCC by Ernst & Young, Delhi, May 2010.
[5] Clean, Safe, Affordable Transport, World Bank, 2007.
[6] Government of Japan has offered 450 billion yen (US$4.5 billion) to build the Delhi-Mumbai Western DFC.

C. Higher Level Objectives

22. The Delhi-Kolkata corridor serves the lower Ganges basin, one of India's most densely populated areas and home to many of its poorest citizens, who rely heavily on rail for affordable travel over medium and longer distances. The increase in capacity and shorter trip times that the project will trigger will allow IR to serve this large passenger market better.

23. By better integrating these states into the national economy, the project would expand their markets and improve access to social services. The program would also remove constraints to growth in the industrial heartland of Punjab and Haryana which lie at the northern end of the corridor.

II. PROGRAM AND PROJECT DESCRIPTION

A. Lending Instrument

24. The proposed lending instrument for Bank support to the Government's program to construct the Eastern DFC Corridor is an Adaptable Program Loan, an IBRD Specific Investment Loan. The program would support the construction of the Eastern Corridor from Ludhiana in Punjab to Mughal Sarai in Uttar Pradesh, which includes the most heavily congested sections of this corridor, and connects ports and coal mining areas in the east to consumption centers in the north-west of the country. Table 1 below shows the sections of the Eastern DFC proposed for World Bank support under the proposed APL.

Table 1: Eastern DFC Program

	Section	Length (Km)	Number of Tracks	Cost (US$ m)
1	Khurja- Kanpur	343	Double	1,453
2	Kanpur- Mughal Sarai	390	Double	1, 588
3	Ludhiana- Khurja	397	Single	1,065

B. Program Objectives, Phasing and Triggers

Program Development Objectives

25. The development objectives of the Eastern DFC Program are to meet growing freight and passenger demand on the eastern corridor (Ludhiana-Delhi-Kolkata) with an improved level of service, and develop institutional capacities of DFCCIL and IR to build and operate the DFC network.

APL Phasing and Triggers

26. It is proposed that Bank financing for the Eastern DFC Program would be provided under an Adaptable Program Loan (APL) in three phases. Each phase of the APL would be comprised of a loan for one of the three sections and a continuing program of technical assistance for IR and DFCCIL. The sequence of the loans is envisaged to be: APL1 for Khurja – Kanpur; APL2 for Kanpur-Mughal Sarai; and APL3 for Ludhiana – Khurja, with about a one year lag between these APL phases.

27. APL triggers based on which subsequent phases (APL2 and APL3) would be initiated are linked to DFCCIL's performance and enabling environment for the implementation of the program and subject to World Bank Board approval for APL2 and APL3. The following triggers are proposed for APL2 and APL3:

	APL2	APL3
Trigger 1: Implementation Progress	Civil Works contracts awarded for APL1.	Civil Works contracts awarded for APL2.
	SIA, RAP, EIA, EMP completed for APL2.	SIA, RAP, EIA, EMP completed for APL3.
	50 percent land acquisition complete for APL2.	50 percent land acquisition complete for APL3.
Trigger 2: Institutional	Staff requirement met as per HRD Plan	Staff requirement met as per HRD Plan
	Appoint DFCCIL independent directors.	Appoint DFCCIL independent directors.
	MIS system integration contract awarded.	MIS substantially implemented for construction phase.
		Locomotive and 25ton axle load high capacity Wagon Specifications and requirements for year 2017 finalized and procurement strategy in place.
	Online complaint handling system in place.	Assessment of the approaches to non-discriminatory access by qualified operators to the DFC system completed by MOR.
	PPP Options Study for DFC completed.	DFCCIL MoU (with MOR) Rating is ' Good' or higher.
		Development of a Marketing Plan for DFC by MOR
		Methodology for establishing Track Access Charges (TAC) established for MOR
		Development of long term heavy haul strategy and implementation plan.

C. Project Development Objectives and Key Indicators

28. The development objectives of the Project are to: (a) provide additional rail transport capacity, improved service quality and higher freight throughput on the 343 km Khurja to Kanpur section of the Eastern rail corridor; and (b) develop the institutional capacity of DFCCIL to build and maintain the DFC infrastructure network.

29. Outcome indicators of the project are: (a) number of additional train paths produced on the DFC; (b) volume of freight carried; (c) number of express passenger trains run on the existing corridor; and (d) improved institutional capacity of DFCCIL. The Results Framework for the project is in Annex 4.

D. Project Components

30. The proposed APL Phase 1 Project consists of two components:

(a) Design, construction and commissioning of the Khurja–Kanpur section. This component will construct 343 km of double track electrified railway capable of freight train operation with 25 ton axle loads at 100 km/h.

(b) Institutional development to assist DFCCIL and MOR to develop their capabilities to best utilize heavy haul freight systems.

31. Table 2 provides the project cost and financing plan by component. See Annexes 4 and 5 for additional details.

Table 2: Summary of Project Components, Costs and Financing (US$ Million)

Project Component	IBRD	GOI	Total
(a) Design, Construction and Commissioning of the 343 km Khurja – Kanpur Section	919.56	483.44	1,403
(b) Institutional Development Component	50		50
Refund of Preparation Advance	3		3
Front End Fee	2.44	-	2.44
Total Financing Required	975	483.44	1,458.44

E. Lessons Learned and Reflected in Project Design

32. The project builds on the Bank's recent experience with a large portfolio in the highway sector and the Mumbai Urban Transport Project (which has a rail component), as well as lessons from the Bank's long and on-going experience with railway projects in China.

33. **Reform in the rail sector.** Reform in the rail sector has been intermittent. The project has therefore adopted a two pronged approach of (a) developing DFCCIL into a world class infrastructure service provider with demonstration value for the sector; and (b) gradual modernization of Indian Railways by focusing on its heavy haul business.

34. **Reliance on Parallel Investment.** Needed parallel investments must be assured. The Bank has received assurances from IR that the needed upgrading of feeder routes to carry 25t axle load trains (which are specified in the concession agreement between MOR and DFCCIL) has been initiated and would be completed in time.

35. **Implementation Capacity.** Technical design and project implementation must be handled by qualified officials. DFCCIL will be staffed by qualified and experienced managers and engineers, and will be supported by a "General Consultant" for technical advice in the design of the project, who will also assist in project management and quality control. The General Consultant will also perform the function of "Engineer" as required under FIDIC contracts.

36. **Social and Environmental Safeguards.** Commitment to the Bank's safeguard policies and procedures, and the capacity to implement them, is essential. Social safeguard guidelines followed by IR are quite close to Bank requirements, and have been augmented for this project to fully comply with Bank requirements. A Social and Environment Management Unit (SEMU) has been established with adequate capacity to carry out the LA, R&R and Environmental Management activities in a timely manner.

37. **Survey and Design.** The accuracy of survey data and the quality of engineering design has often been an issue. The project has therefore adopted the following specific approaches: (a) Design-Build Lump Sum contracts, with an in-built incentive for the contractor to ensure the accuracy of surveys and the quality of design; (b) employing a Design Review Consultant to review preliminary designs against international good practice, as well as conduct value engineering; (c) engaging a Civil Engineering Proof Consultant to verify the accuracy of surveys, quantities, material sources and cost estimates for civil and track works on a sample basis; and (d) inclusion of new products available internationally in bidding documents after their assessment and approval by the IR Research, Design and Standards Organization (RDSO).

38. **Pre-Construction Activities**. Delays in handing over the site to the contractor have been a recurrent problem. The project has adopted stringent requirements with respect to the extent of encumbrance free site available at the time of contract award.

39. **Mobilization and Equipment Advances.** Diversion of cash advances to unintended uses, particularly when there are delays in site availability, has often resulted in contractor cash flow problems affecting the progress of work. Adequate provisions will be made in the contract design to reduce such problems.

40. **Staffing of the Employer Organization.** Inadequate staff strength, particularly for non-engineering activities, has often posed a challenge. DFCCIL will develop and adhere to a comprehensive Human Resources Development Plan, linked closely with the DFC construction and subsequent operations program.

41. **Contractor Capacity and Performance.** Construction industry capacity in India is presently overstretched. The project includes a Quality and Safety Audit Consultant (QSAC) to assist DFCCIL to monitor construction quality, and the implementation of safety plans during project implementation.

F. Alternatives Considered and Reasons for Rejection

42. **SIL versus APL Lending Instrument.** After years of World Bank absence in the sector, this APL develops a framework for sustained rail sector improvements and corresponding engagement between GOI, MOR/IR, DFCCIL and the Bank. The APL allows the setting of some strategic sector milestones to evaluate how successful the engagement has been. Furthermore, this APL allows GOI to set key medium term policy and implementation benchmarks which otherwise GOI would not be able to put in place and monitor effectively.

43. **Public Private Partnership.** A PPP approach was considered by MOR, but was not taken up for the initial phases of the DFC program as the complex operational, safety and economic interfaces between IR and DFC are still in the early stages of establishment. However, PPP approaches may be considered for future.

44. **Dedicated Freight or Passenger Corridor or Improved Existing Corridor.** The following alternatives were considered besides the Dedicated Freight Corridor (DFC):

- Dedicated Passenger Corridor (DPC). Such a line will need to be laid very close to urban centers to provide easy access to passengers, and land acquisition would be difficult and costly, and the project would have larger negative social and environmental impacts. The benefit of higher axle load for freight would also be lost. DPC cost was estimated to be about 40 percent more than that of DFC.
- Existing Line Improvement (ELI). Several measures could be taken to increase the capacity of the existing corridor without additional land requirements. A comparison of line capacity versus projected demand for 2016-17, 2021-22, and 2031-32 demonstrated that ELI line capacity would not be sufficient to accommodate demand projected even for 2016-17.

45. **Alternative alignments of the track.** The alignment chosen runs parallel to the existing railway for about 237 km in order to maximize use of the existing right of way, and detours about 106 km onto green-field alignments to avoid urban and built-up areas. This alignment was chosen based on multiple criteria, including connections with the existing rail network, ease of land acquisition/resettlement, and environmental impacts.

46. **Phased Expansion Single/Double track.** The option of constructing a single track initially and a second track later was rejected since the number of freight trains in the first year of operation would exceed 50 pairs, while the maximum capacity on a single line is only 35 - 40 pairs.

47. **Diesel/Electric Traction.** Electric traction, which results in lower unit Operations and Maintenance cost when traffic volume is relatively high, was chosen based on the estimated traffic

volume in the first year of operation (2016-17) and projections for 2021-22. Most feeder lines are (or will be) electrified, thus providing for a seamless operation.

III. IMPLEMENTATION

A. Partnership Arrangements

48. The Japan International Cooperation Agency (JICA) is funding the development of the Western DFC. While there is no formal partnership arrangement, the Bank has been working with JICA on the harmonization of safeguard policies. Organizational arrangements for the implementation of major contracts have also been aligned.

B. Institutional and Implementation Arrangements

49. DFCCIL will have overall responsibility for implementation of the project. The organization is headed by a Managing Director who reports to the DFCCIL Board comprising the Chairman, two full time Directors, four independent directors, and two government nominees. DFCCIL has its Head Quarters in Delhi, with field based organizations for the Eastern and Western Corridors. A new full time Managing Director is expected to be appointed in mid April 2011. Each section of the Eastern Corridor is the responsibility of a Chief Project Manager (CPM); for the Khurja-Kanpur section the CPM and his staff have established offices at Kanpur. The Quality and Safety Audit Consultant (QSAC) located at DFCCIL headquarters would provide oversight of the technical quality of works and implementation of the safety plan during project implementation. (Additional organizational details are in Annex 5.)

50. DFCCIL envisages an overall staff strength of around 900 during the construction phase, with 30 staff in each field office. An MOU between DFCCIL and IR specifies assistance by MOR in deputing IR officials to DFCCIL. DFCCIL is supported by a General Consultant.

51. DFCCIL has set up a Social and Environment Management Unit (SEMU) headed by a General Manager, to oversee the implementation of the environmental management plan (EMP) and the resettlement action plan (RAP). The General Manager will be assisted by two Additional General Mangers for land acquisition and resettlement, a Deputy General Manager to deal with grievances and two environment and social specialists. At the field level, the Chief Project Manager (CPM) will be assisted by LA consultant, Assistant Project Managers (Social) one for each contract, one Assistant Project Manager (Environment), one APM designate for Environment in each contract and will be supported by NGOs. In addition, environmental and social safeguard staff will be deployed by the Project Management Consultants (PMC). Contractors for each package will also have environmental professionals for implementing construction management related actions of the EMP. A two-stage grievance redress mechanism will be established with two grievance committees operating at the field and DFCCIL levels, and with an Ombudsman at the top. Safeguard quality monitoring shall be carried out by third party consultants.

C. Monitoring and Evaluation of Outcomes/Results

52. The Results Framework developed for the Project is presented in Annex 3. An Impact study, to be initiated during project implementation, would establish the pre-commissioning status against which impacts of the DFC infrastructure would be assessed. The Impact Study would also establish an Evaluation system for the overall DFC Program.

D. Sustainability

53. Large infrastructure projects in India are prone to over-runs in both cost and time, and around the world many railway projects fail to reach their traffic targets. However, the project is robust to variations in capital costs and assumptions about traffic transfer rates and avoided

investment. The underlying reason is that the existing lines are extremely congested while there is continuing growth in freight traffic. Without the project, capacity could only be provided at slower speeds and higher costs, and at a lower level of service.

54. In terms of IR's overall investment, DFC, while substantial, is by no means the dominant project. DFCCIL's main source of revenue will be track access charges for the provision of infrastructure to IR trains and to other qualified operators. It would have a fixed and variable component, and be sufficient to cover DFCCIL costs and provide an adequate return. This approach is outlined in the DFCCIL Business Plan, as well as the Concession and Track Access Agreement.

55. The project also supports social sustainability by fostering stakeholder ownership, through strategic participation by PAPs in project design, implementation, monitoring and evaluation. The project communication strategy and monthly stakeholder meetings will promote regular exchange of project related information among stakeholders.

E. Critical Risks and Possible Controversial Aspects

56. The residual risks entailed in the Eastern DFC Program have been assessed as "Substantial" (see Table 3 below) assuming the mitigation measures incorporated into the preparation, design and implementation of the project are effective. Table 3 below details the risks and their mitigation measures. No controversial issues have emerged during the preparation of the project.

Table 3: Critical Risks and Mitigation Measures

Description of risk	*Mitigation measures*	*Residual Risk Rating*[a]
Sector Governance, Policies and Institutions		
(a) Lack of modern freight technologies, operational and commercial systems, and high quality freight services. (b) Shortage of qualified key staff for contract management. (c) Weak implementing agency capacity for reviewing designs and surveys. (d) Inadequate mechanisms for traffic allocation to DFCCIL. (e) Lack of an 'arms length' relationship between MOR and DFCCIL.	(a) Support to IR Heavy Haul Committee in enhancing freight business with a range of technical assistance. (b) Support for development and implementation of specific HR Development Plan for DFCCIL. (c) Design Review and Civil Engineering Proof Consultants to review designs, surveys and costs. (d) Concession and Track Access Agreements will ensure adequate traffic allocation. (e) Concession Agreement ensures clarity of roles and responsibilities; provision for an independent permanent cadre of DFCCIL employees; independent members in DFCCIL Board.	L
Operation Specific Risks		
(a) The financial crisis presently affecting global financial markets could affect access to credit for contractors and suppliers.	(a) Mobilization and equipment advances have safeguards against diversion of funds by requiring advances to be deposited in a special account jointly operated by the employer and the contractor.	L

Description of risk	*Mitigation measures*	*Residual Risk Rating*[a]
Technical Design (a) Poor technical design results in high costs, failures and delays.	(a) Independent Design Review and Value Engineering Review of technical design. Design-Build contracts and Two Stage Bidding to achieve international best practice.	N
Implementation Capacity and Sustainability (a) DFCCIL does not have in-house capacity to manage a project of this magnitude. (b) Sustainability will partly depend on the Concession Agreement between IR and DFCCIL and its provisions to run the business as a commercial enterprise.	(a) General Consultant (Owner's Engineer) will provide design and project management capacity during preparation, implementation and commissioning. (b) Concession and Track Access Agreements based on an incentive framework to ensure that appropriate incentives are embedded in the institutional and financial arrangements.	M
Financial Management (a) Current FM staff does not have experience of large turn-key projects under Lump Sum Design-Build contracts.	(a) Experienced finance professionals on deputation from IR are establishing the budgeting, accounting and reporting systems. Staff has undergone training in FIDIC and contract management principles and further training and capacity building will be carried out in a planned manner.	S
Procurement and Construction Management (a) Delays in award of the large complex contracts. (b) Weak contractor capacity.	(a) Two stage bid process allows early resolution of problems. Specialized Legal Advisor will assist in contract document preparation and in dispute resolution mechanisms. (b) Appropriate pre-qualification of contractors.	H
Land Acquisition and Resettlement (a) Slow land acquisition (LA) process and delays in implementation of RAP which is dependent on the cooperation of local authorities. (b) Opposition from the affected people to the process of land acquisition and resettlement.	(a) Land Acquisition and resettlement requirements have been reduced by re-adjusting alignments in order to reduce impact on agricultural land. (b) The Railway Amendment Act (RAA), 2008 prescribes resettlement and rehabilitation assistance over and above compensation for land and assets as per the National Resettlement and Rehabilitation Policy (NRRP, 2007). It includes R&R assistance to non-title holders, subsistence assistance to vulnerable persons and those who lose houses, and livelihood assistance to small and marginal farmers.	S
	(c) MOR has recently updated the Entitlement Matrix providing the flexibility to allow compensation of land as per State Government notification in lieu of compensation determined as per RAA 2008. This is to provide benefit to the land loser in case the state government provides a higher compensation.	

Description of risk	*Mitigation measures*	*Residual Risk Rating*[a]
	(d) The LA and R&R process will be reviewed annually from December 2012 and the Entitlement Matrix and the RPF will be updated, if required, to address unanticipated future difficulties in light of implementation experience in collaboration with stakeholders. (e) Stakeholder consultations will be held on a monthly basis in a culturally sensitive manner to identify any issues as they emerge during the implementation period.	
Environment Risk (a) Absence of local environmental regulations and institutional capacity to plan and implement safeguard management measures for Railway Projects either at Indian Railways and/or DFCCIL.	(a) An Environmental Assessment for the Khurja – Kanpur section (APL 1) has been completed and a specific EMP has been prepared to address the issues of environmental safeguards. An Environmental Management Framework has been agreed for future projects and for any changes in the proposed APL. (b) The Social and Environment Management Unit (SEMU) will deploy environment professionals to monitor and supervise implementation of environment safeguards. (c) DFCCIL has also initiated EA studies for the next two phases of the APL. An Environmental Management Framework has also been prepared to provide guidance on environmental management in all phases of the project.	M
Safeguards Compliance (a) Compliance with EMP and social safeguards may vary by contractors and sub-contractors.	(a) Social and Environment Safeguards Monitoring and Review Consultants (SESMRC) will monitor compliance with all safeguards. (b) Impact evaluation will gather stakeholder perspective of safeguard compliance. (c) Monthly stakeholder meetings during the entire implementation period will provide opportunity for direct reporting of compliance issues.	M
Other Risks Identified from Health Sector DIR		
(a) Fraud and corruption related to project design and implementation.	(a) Governance and Accountability Action Plan (GAAP) provides for improved information disclosure, public consultation, grievance redressal, and third party monitoring	M
(b) Deficient financial management and records.	(c) Mitigation measures as in the FM section above.	M
(d) Supervision is delegated to the Borrower and their excessive reliance on government produced administrative data.	(c) QSAC reports provide continuous third party monitoring of quality standards and work safety compliance. Payments linked to certification of invoices by FIDIC Owner's Engineer.	L
(e) Supervision does not involve comprehensive site visits or physical inspection, and when inspections occur they are not too detailed.	(d) Bank teams will visit the project twice a year during implementation. It will be complemented by visits by various consultants.	L
(e) Supervision aide-memoires negotiated with the Borrower are opaque, lack details, and are not acted upon.	(e) Quarterly Project Report to be reviewed by Bank team, and annual Portfolio reviews with DEA would highlight overdue issues.	L

Description of risk	*Mitigation measures*	*Residual Risk Rating*[a]
Overall Risk (Including Reputational Risks)		**Substantial**
[a] Rating of risks on a four-point scale – High, Substantial, Moderate, Low – according to the likelihood of occurrence and magnitude of potential adverse impact.		

F. Readiness Filters for Project and Major Contracts

57. Invitation for bids for the three Civil Works and Track (CW&T) contracts is planned for May 2011, and the contracts are planned to be awarded in December 2011; the Systems contract (the remaining large contract) will follow a year later. The readiness filter for land acquisition (30 percent of the total land required for the project) has been met.

58. Readiness criteria for CW&T contract awards are: (a) 80 percent of the site available encumbrance free, of which at least 40 percent of the encumbrance free route length is in blocks of minimum 20 km each with adequate provision for contractor access, and the balance 20 percent will be handed over in a reasonable time frame as defined in the bid documents; (b) Civil Engineering Proof Consultant has verified the accuracy of surveys, bill of quantities and cost estimates; (c) the alignment has been set out by the General Consultant and approved by DFCCIL; (d) environmental and forestry clearances have been received; and (e) agreements are in place with U.P. State PWD for the construction of critical Road Over Bridges (ROBs). Readiness requirements for the Systems contract are: (a) all three CW&T Contractors have agreed on partial/phased access plans for their sites for the installation of systems; and (b) system interconnection plans agreed with concerned local authorities or utilities.

G Loan Conditions and Covenants

59. **Implementation Stage.** In addition to the standard covenants for financial management, reporting and auditing, the following loan covenants are included in the legal agreements. During project implementation, DFCCIL and/or MOR shall:

A. To facilitate the carrying out of the Project by DFCCIL, the Borrower shall make the proceeds of the Loan available to DFCCIL under a subsidiary agreement between the Borrower, through MOR, and DFCCIL, satisfactory to the Bank (the "Subsidiary Loan Agreement"). The Borrower shall, through MOR, provide its counterpart contribution as required by the Project to DFCCIL in a timely and adequate manner. The Borrower shall protect the interests of the Borrower and the Bank to accomplish the purposes of the Loan.

B. The Borrower shall ensure that not later than September 30, 2011, MOR and DFCCIL enter into a concession agreement (the "Concession Agreement) and that DFCCIL and MOR, prior to the commissioning of the facilities financed by the Loan, update the Concession Agreement to incorporate relevant schedules into the Track Access Agreement (as a part of the Concession Agreement), both under terms and conditions satisfactory to the Bank.

C. The Borrower shall ensure that an Empowered Committee (EC) is established and maintained throughout the period of Project implementation to address inter-ministerial and state-level issues related to the Project.

D. With respect to the road over bridges to be built in the State of Uttar Pradesh linked to the Project as detailed in the Project Implementation Manual (the "Linked Activities"), which may be updated from time to time, the Borrower, through MOR, shall take all necessary measures to ensure that:

(a) prior to the commencement of any civil works under the Linked Activities, that: (i) a resettlement action plan, acceptable to the Bank, is prepared in accordance with the guidelines and procedures set forth in the RPF, and thereafter said resettlement action plan is implemented, in a form and substance satisfactory to the Bank; (ii) an environmental management plan, acceptable to the Bank, is prepared in accordance with the guidelines and procedures set forth in the EMF, and thereafter said environmental management plan is implemented in a form and substance satisfactory to the Bank;

(b) the provisions of the resettlement action plan and the environmental management plan referred to in sub-paragraph (a) above are not amended, revised, or waived without the prior agreement of the Bank; and

(c) not later than December 31 of each year, starting December 31, 2011, an annual work program of the Linked Activities is submitted to the Bank for its review and comments and that said annual work program is implemented taking into account the Bank's comments thereon, if any.

E. Throughout Project implementation, DFCCIL shall:

(a) have the overall responsibility for day-to-day Project implementation and appoint and maintain, suitably qualified personnel in adequate numbers, to carry out the functions of procurement, contract management, financial management, social and environmental management, and general Project oversight, monitoring and reporting;

(b) maintain social and environmental management units at the DFCCIL headquarters and its field offices, with functions, powers, staff and resources necessary and appropriate for: (i) implementing social and environmental safeguards measures required under the RAP, the RPF and the EMP; and (ii) in the event of any major alteration in alignment under the Project, prior to issuance of the request for proposals under the altered alignment, ensuring that the EMP and the RAP shall be updated and approved by the Bank, and that necessary and required social and environmental clearances are obtained from the Borrower's relevant authorities; and

(c) engage quality and safety audit consultant (QSAC), with qualifications and experience, and under terms of reference acceptable to the Bank, to provide the DFCCIL and the Bank quarterly monitoring reports throughout the Project's construction period.

F. Prior to award of any civil works or track contracts, DFCCIL shall ensure that:

(a) construction sites under a given stretch of railways as specified in proposed construction contracts between DFCCIL and its contractors, shall be available encumbrance free to contractors for construction activities under the Project; and

(b) all required and necessary environmental clearances for track alignment approved by DFCCIL shall have been issued by the Borrower's relevant authorities.

G. Prior to award of any contract for electrical, signaling and telecommunications works, DFCCIL shall have:

(a) agreed with all civil works and track contractors partial/phased plans for the installation of electrical, signaling and telecommunications systems under the

Project to enable contractors to complete their work in accordance with the agreed work program; and

(b) agreed with a respective and relevant local authority and/or utilities on a system interconnection and relocation plan to enable contractors to complete their work.

H. To address grievances related to or arising out of implementation of the RAP and the RPF, DFCCIL shall, not later than September 30, 2011, constitute or appoint, as the case may be, district-level grievance redressal committees; a senior level grievance committee, and an Ombudsman, with powers, functions, capacity, and resources appropriate to fulfill their respective functions under the Project and thereafter maintain them until the Closing Date of the Project.

I. DFCCIL shall, by December 31 of each year, starting December 31, 2012, undertake an annual review of the results and experiences in implementing the RAP and the RPF, and thereafter promptly submit the review results to the Bank for comments and update the RAP and the RPF, if required, satisfactory to the Bank; and thereafter implement the updated RAP and the updated RPF.

J. DFCCIL shall, not later than December 31, 2015, provide to the Borrower and Bank, an initial impact study of the Project conducted under terms of reference satisfactory to the Bank, and within six (6) months of commissioning the facilities to be financed under the Project, provide to the Borrower and the Bank a final impact study of the Project conducted under terms of reference satisfactory to the Bank.

K. DFCCIL shall submit to the Bank, not later than June 30 of each year starting June 30, 2012, an annual progress report on the implementation of the GAAP and thereafter implement the GAAP taking into account the Bank's comments on said progress reports, if any.

H. Supervision Strategy

60. Intensive supervision will be necessary during the first and second year of the project. The Bank team would be supported by specialized consultants, who will provide continuous monitoring of technical quality and safeguards implementation. Safeguards supervision will focus on: (a) safety during construction; (b) silicosis safeguards; (c) progress on land acquisition and resettlement in compliance with the EM; (d) grievance redress; (e) community participation and inclusion; (f) income restoration; and (g) transparency and accountability.

61. *An enhanced Supervision budget* will be provided to ensure adequate supervision of this important and complex project.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analyses

Economic Analysis

62. The main beneficiaries of the Eastern DFC are the owners and consumers of bulk commodities strategic to the region's economy. Accordingly, the main benefits of the Project are expected to be: (a) the economic advantages of transporting large quantities of strategic bulk freight that otherwise could not be carried (generated traffic), or would have to be sent by road at high cost and damage to the environment (diverted traffic); (b) savings in IR operating costs due to improved efficiency of the DFC track (existing freight and passenger traffic); and (c) savings in travel time of passengers due to faster movement of trains on the existing track. Additionally, some benefits derive from savings in carbon emissions. Benefits were estimated for the various categories of

traffic (existing, diverted and generated), and also for savings in carbon emissions and passenger service operating costs. The costs and benefits were shadow priced to border prices. The largest benefits derive from the efficiency gains of freight movements, followed by benefits from diverting high-value freight from road to rail. An additional benefit is the improvement in safety from passengers and freight moving by rail rather than on the congested road networks.

63. **ERR, NPV and Sensitivity Analysis.** The overall program has a good Net Present Value and Economic Rate of Return as shown in Table 4 below. Sensitivity analysis shows that project returns are robust.

Table 4: Estimated EIRR (constant prices)

	EIRR (%)	NPV (Rs. bn)
Base		
Phase 1	22	98
Phase 1+2	22	208
Phase 1+2+3	23	316
Sensitivity tests (on 1+2+3)		
Construction costs increased 30%	19	269
Transfer rate to DFC reduced to 75% from 85%	22	277
DFC above-rail cost savings reduced from 25% to 15%	22	274
IR construction avoided reduced 50%	21	263
No diverted traffic	19	174

Financial Analysis

64. The FIRR to IR and DFCCIL is attractive at 17 percent. The project is also robust to variations in capital costs and assumptions about transfer rates and avoided investment. However, the ability to attract generated traffic (i.e., high-value container traffic that would otherwise travel by road) has a significant impact on the FIRR and emphasises the need for IR and DFCCIL to maximise the new traffic opportunities provided by the project.

Table 5 Estimated FIRR (constant prices)[(1)]

	FIRR
Base	
Phase 1	14
Phase 1+2	16
Phase 1+2+3	17
Sensitivity tests *(on 1+2+3)*	
Construction costs increased 30%	14
Transfer rate to DFC reduced to 75%	16
DFC above-rail cost savings reduced from 25% to 15%	15
IR construction avoided reduced 50%	15
No diverted traffic	15

[1]FIRR in constant prices approximated by removing inflation of 6 percent p.a. from current FIRR.

65. DFCCIL's main source of revenue will be track access charges for the provision of infrastructure to IR trains and to other qualified operators. These would have a fixed and variable component, and be sufficient to cover DFCCIL costs. The policy of access charges covering full costs is expected to enable DFCCIL to breakeven throughout the period.

66. **Fiscal Impact on IR.** In terms of IR's overall investment, DFC, while substantial, is by no means the dominant project. The projected IR investment program during the next few years is around Rs 400-500 billion per annum, with DFC constituting around Rs 50 billion per annum, i.e., about 10 percent of total planned expenditure. The principal determinant of whether DFC will squeeze out other investment is the overall volume of investment funds available, which is primarily determined by the working surplus on IR operations. This is, in turn, a direct function of the tariff policy.

B. Technical

67. The section on alternatives considered discussed issues relating to double tracking and electric traction (the chosen options). The project has adopted the following specific approaches to improve cost estimation and efficiency: (a) Design-Build Lump Sum contracts, with an in-built incentive for the contractor to ensure the accuracy of surveys and the quality of design; (b) employing a Design Review Consultant to check preliminary designs against international good practice, as well as conduct value engineering; (c) engaging a Civil Engineering Proof Consultant to check the accuracy of surveys, quantities, material sources for civil and track works and cost estimates on a sample basis; and (d) use of new products available internationally, subject to RDSO approval. The project has also adopted stringent requirements with respect to the extent of encumbrance free site available at the time of the contract award.

68. **Alignment.** The alignment chosen runs parallel to the existing railway for about 237 km in order to maximize use of the existing right of way and detours about 106 km onto green-field alignments to avoid urban and built-up areas. This alignment was chosen based on multiple criteria, including connections with the existing rail network, ease of land acquisition/resettlement, and environmental impacts.

69. **Axle load.** Two possible design axle loads (25 ton and 32.5 ton) were considered. Feeder lines to the Eastern DFC (about 3,000 route km) are generally capable of 21.3 ton and 22.9 ton axle loads, and would need to be upgraded. Maximum Moving Dimensions (MMD) needed for the 32.5t axle load would require costly changes to adjacent structures, and hence only the 25 ton axle load was found to be feasible. However, in the long term some important feeder lines, as well as new feeder lines may have 32.5 ton axle load capability, and hence the bridges and sub-grade, which last around 100 years, would be built for 32.5 ton axle loads.

70. **Level Crossings and ROBs.** On the parallel track sections, of the existing 71 level crossings (LCs), 11 LCs have relatively high traffic (exceeding 300,000 TVU) and would be replaced by ROBs spanning the new, as well as the existing, IR tracks. Out of these, three are already under construction. All these ROBs would be constructed under separate contract(s), which would be co-ordinated with the U.P. State PWD. The remaining LCs would be improved and protected by automatic signals to ensure safety of the public using them. The alignment will be fenced at critical locations to keep people and cattle off the track. No level crossings are planned on the detour sections and 184 over/underpasses will provide road connectivity across the new tracks.

Cost Estimate and Financing

56. The total cost of the Phase 1 Program including interest during construction (IDC) is estimated to be about US$1.458.44 billion). This does not include the cost of land acquisition and Resettlement and Rehabilitation (R&R), which is borne by IR. The cost of civil works includes all related works including but not limited to GC, PMC, cost of implementation of EMP. The breakdown of costs is provided in the Table below. Civil and track works cost estimates were independently reviewed by a Civil Engineering Proof Consultant. Annex 5 contains the overall cost

estimate for the Eastern DFC program whose total cost is estimated to be US$3.6 billion. IR would fund about 1/3rd of the cost as equity, and the World Bank would cover the entire debt portion.

Table 6: Cost Estimate for 343 km Khurja – Kanpur Section (1 US$ = 45.0 INR)

S. No.	Description	INR (Crore)	US$ m
1	Civil Works	3,288	731
2	Electricals	691	154
3	S & T	513	114
4	Price contingencies @5.4% per year	388	86
5	Working Capital (1.85% of item 1 to 4)	90	20
6	Insurance (7% of item 1 to 4)	342	76
7	Physical contingency (5%)	244	54
8	TA	225	50
9	IDC	756	168
10	**Total Project Cost**	**6,537**	**1,453**
11	Preparation Advance		3
12	Front End Fee		2.44
	Total Financing Required		**1,458.44**

C. Financial Management

71. A Corporate Governance and Financial Accountability (CGFA) assessment has been carried out for DFCCIL The project draws on a number of strengths in the FM area, in particular: the presence of experienced finance professionals on deputation from IR to help establish the budgeting, accounting and reporting systems modeled on IR systems, but tailored to the requirements of DFCCIL as a company under the Companies Act; and that DFCCIL, as a Central Public Sector Undertaking (CPSU) under the purview of the Department of Public Enterprises (DPE), is subject to the DPE's code on corporate governance. DFCCIL has not received an IBRD loan in the past (except a small Project Preparation Facility) and thus has limited experience of the Bank's FM policies and procedures. The FM risk for this project is rated as Substantial.

72. An action plan to enhance corporate governance, financial accountability and financial management has been agreed, which includes: appointing the remaining independent directors to the Board; strengthening internal audit to ensure organization-wide coverage of both financial and technical aspects; development/updating of requisite FM and internal audit manuals and guidelines; and implementing enterprise risk management systems and an Enterprise Resource Planning (ERP) system.

73. **Arrangements for oversight and accountability**. The audit committee has been reconstituted with the formal induction of two independent directors. The existing FM systems of DFCCIL, as upgraded, will be used to generate the financial and other progress reports until the implementation of an ERP package. The Project Implementation Manual describes the detailed FM arrangements, structure, procedures/ controls, Interim Unaudited Financial Reporting (IUFR) formats, and internal and annual project audit TORs, and will be finalized after incorporating Bank comments, if any.

74. **Funds Flow[7].** Funds for the project would flow from the consolidated fund of India through MOF to MOR, and thereafter will flow to DFCCIL. The funds will flow on back-to-back basis in accordance with IBRD lending terms. The substantial counterpart funds required for implementing the project will be provided to DFCCIL by MOR in the form of equity, on the basis of periodical

[7] MOR funding of DFCCIL is through MOR equity. Currently funds flow to DFCCIL from the Government in the form of General Budgetary Support (GBS) under Plan Head 62 which implies equity funding.

budget based assessments of DFCCIL. DFCCIL would open a separate bank account to receive project funds, and could also seek direct payments by IBRD to suppliers/contractors based on duly authorized bills and documents.

75. **Disbursements.** Disbursements would be made in the form of reimbursement on the basis of quarterly IUFRs[8] which would provide expenditure incurred till date. Option for direct payment/ special commitment will also be available to DFCCIL.

76. On implementation of the agreed action plan, the FM arrangements of DFCCIL would be adequate to account for and report on usage of project resources and provide the required fiduciary assurance.

D. Procurement Assessment

77. Procurement for the Eastern Dedicated Freight Corridor will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 (Procurement Guidelines); "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 (Consultant Guidelines); and the provisions stipulated in the Loan Agreement (LA). A General Procurement Notice (GPN) has been published on February 8, 2010 in UNDB on-line and in its printed version, as well as in DgMarket online. Specific Procurement Notices (SPN) will be published for all ICB procurement and Consulting contracts valued at more than US$200,000, as the corresponding bidding documents and RFPs become available.

78. **Contracting Capacity.** A Country Procurement Assessment Report (CPAR) was prepared in 2003, and a Detailed Implementation Review (DIR) was carried out in 2008. An assessment of DFCCIL's procurement capacity was carried out as part of project appraisal and the procurement risk was rated "High". The key findings were: (a) limited procurement staff, with no prior experience in Bank projects; (b) there are no standard bidding documents for the recommended Design-Build contracting strategy; (c) the weak procurement management system could potentially result in procurement delays (especially for ICB contracts), failed bidding processes, including mis-procurement, delays or continuous disputes with contractors; and (d) the inadequate role envisaged for the GC in the original terms of reference to support DFCCIL in contract management.

79. To address the above, the Project includes the following corrective measures:

- Creation of a Procurement Cell with qualified staff to coordinate procurement activities with the support of a General Consultant, a Legal Advisor, and a Project Management Consultant (PMC) to advice on procurement and contract management.
- DFCCIL's General Consultant (GC) will provide legal advice in counseling DFCCIL during the bid clarification process, the contract award period, and implementation of the construction contracts. The PMC will have delegated authority to supervise the performance of the contractor(s) in the Design, Construction and Completion Phases.
- A Third Party monitoring firm (QSAC) will be employed to monitor, *inter alia*, the quality and safety of works.

80. **Contracting Strategy.** Project procurement will comprise three separate contracts for civil works and track, and a single Project-wide Rail Systems contract (electrification, signaling and telecommunications). These four contracts will be bid as Design-Build Lump Sum.

[8] DFCC would have the flexibility of furnishing reports earlier (say on a monthly basis) to seek early replenishments.

81. **Procurement Plan.** DFCCIL has developed an initial Procurement Plan (PP) for the entire project consistent with the implementation plan, which provides information on procurement packages, methods and Bank review method. The procurement plan for first 18 months of the project will be agreed with the Bank at Negotiations. It will be available at the implementing agency's project database and on the Bank's external website. The PP will be updated in agreement with the Bank semi-annually (or as required) to reflect implementation progress and improvements in the implementing agency institutional capacity.

E. Governance Framework[9]

82. A detailed Governance and Accountability Action Plan (GAAP)[10] has been developed for the project. The GAAP is based on assessments of the governance risks during each of the three phases: pre-construction; procurement; and contract management. There is an ongoing CVC investigation into alleged irregularities on three prior contracts awarded by DFCCIL with Government funds, two on the eastern and one on the western corridor. As and when the investigation is complete and the report formalized, DFCCIL/MOR will, in consultation with the Bank, incorporate as appropriate additional governance measures in the GAAP to address any systemic deficiencies/procedural lacunae.

83. DFCCIL's General Manager (Risk Management) is the nodal official responsible for the implementation of the GAAP. In addition, DFCCIL's GM (IT) has been nominated as the Complaint Handling Officer (CHO), who will establish and monitor a centralized system for registering, assigning and tracking of all complaints. Also, the Public Information Officer (PIO) is responsible for the implementation of the Right to Information Act (RTIA), 2005 and its various provisions regarding *suo-moto* disclosure, record keeping, and responding to individual requests for information.

F. Environment

84. **Environmental Impacts.** The EA identified the following potential impacts associated with the project: (a) acquisition of small parcels of forest land in seven locations, amounting to a total of 3.23 hectares; (b) cutting of about 1,966 trees; (c) about 17 million m^3 of earth work in embankment and 1.35 million m^3 of quarry material; (d) increased noise and vibration levels in about 37 sensitive receptors situated close to the alignment; (e) impacts on 22 cultural properties; and (f) health and safety issues associated with construction activities.

85. Based on the inputs from the assessment a number of alignment alternatives were considered to avoid potentially significant environmental impacts and the final alignment chosen avoids impacts on major towns/villages, sensitive geological and forest areas, direct impacts on major cultural properties. The specific design measures implemented in the project include: (a) detours at 5 locations to avoid impacts on major settlements and cultural properties; (b) minimization of right of way requirements to avoid impacts on communities residing close to the alignment and on forest areas; (c) provision of 5 major bridges and adequate cross drainage works to avoid impacts on local drainage; and (d) provision of Rail Over Bridges and Pedestrian over passes to facilitate safe movement of local traffic.

86. **Environmental Assessment (EA).** The project triggers two environmental safeguard policies, environmental assessment (OP/BP 4.01) and physical cultural resources (OP/BP 4.11). DFCCIL conducted a detailed environmental assessment for a 272 km section of the project; a

[9] The project is not subject to the new ORAF requirements since the PCN was done prior to July 2009.
[10] Annex 11

separate EA for the rest of the 71 km (Tundla detour) is being prepared. The EA carried out: (a) detailed mapping of environmental profile of the project area in the form of strip maps; (b) base line environmental monitoring for two critical seasons (winter and summer); (c) detailed investigations to assess noise and vibration impacts; (d) detailed assessment / analyses to identify potential environmental impacts; (e) an analysis of 'Project' and 'No Project' scenarios, and alternative alignment options at various locations; (f) an inventory of cultural properties that could be affected, trees to be cut for the project; (g) a series of community consultations (both formal and informal) at various locations to understand and integrate community concerns; and (h) disclosure of information concerning the proposed project and its potential environmental and social impacts and proposed measures for their avoidance or mitigation.

87. **Environmental Management Plan.** The EA includes a comprehensive Environmental Management Plan (EMP) with specific mitigation measures, including: (a) afforestation to compensate loss of forest land and tree cover; (b) avenue plantation at 10 trees per km along the alignment; (c) rehabilitation plan for the borrow areas; (d) noise barriers in four critical locations affected by high noise levels, and mitigation measures for the management of increased noise levels in other sensitive locations; (e) cultural properties rehabilitation plan for all affected properties; and (f) specific construction safety and environmental management measures for the construction phase.

88. **Silicosis Reduction Strategies.** In view of the large quantities of quarry material handled in the project, the EMP includes silicosis reduction strategies to be integrated in the bid documents for implementation by project contractors.

89. **Environmental Management Framework (EMF).** An Environmental Management Framework (EMF) has been prepared to provide detailed guidance on the formulation of environment management strategies for the subsequent phases (APL 2 and APL 3) and also sets out policies and procedures to be followed by the agency in managing environmental safeguards of the Eastern DFC Program.

90. **GHG Emission Analysis.** A Study conducted by DFCCIL on GHG emissions due to the development of the project estimates that the eastern corridor would generate about 10.48 million tons of GHG emissions during the forecast period up to 2041-42, under the "with project" scenario, as against 23.29 million tons of GHG emissions in the "without project" scenario - a reduction of about 55 percent.

G. Social Safeguards

91. The **Social Impact Assessment** (SIA) has been completed for the 272 km (out of the total 343 km) of the Phase-I (Khurja–Kanpur) and the SIA for the remaining 71 km is underway. According to the SIA completed for 272 km, the Project will cause loss of land for a number of farmers (8,126 households) and cause loss of land and structures for 386 families. The land acquisition (LA) requirement for the 272 km stretch is 1,182 hectares (ha) including 999 ha of private land and 183 ha of public land. About half the affected land owners will lose a linear strip of land (less than 0.15 ha) from their respective holdings. About 75 percent of them will become small, marginal, landless farmers due to land acquisition; majority of them are already in the small and marginal category. Some 63 percent of the affected families live below the poverty line. Some 15000 persons are considered "vulnerable population" as per the NRRP 2007. About 74 percent people are literate and majority of them are engaged in farm related activities, where male members are the main bread earners. The 343 stretch is divided into three work packages and SIA has been fully completed for packages 1 and 3 and partially for the package 2 (for 30 km out of 101 km). The alignment for the Tundla stretch (71 km) in Firozabad and Agra districts was changed in the later stages of preparation in order to minimize land acquisition requirements. Earlier the alignment in

this stretch involved a single long detour of 71 km passing through pre-dominantly green field areas. This has been replaced with three smaller detours bringing down the land acquisition requirements significantly. The social impact assessment for this realigned stretch is being updated and is expected to be complete by the end of May 2011. Based on the SIA findings, a RAP will be prepared and implemented in line with the Resettlement Policy Framework (RPF). The table below summarizes the impacts.

Table 7: Land acquisition and resettlement impacts

Work package	Length (in Km)	No. of Villages affected	LA required (in ha)	No. of Affected land owners	% land owners losing a linear strip (< 0.15 ha)	No. of Displaced families	No. of affected community prosperities	Status of Safeguard Planning Measures
I	135	104	570	3,566	57.00	88	6	SIA & RAP prepared
II	101	27	93	1,841	38.00	58	1	SIA+RAP done for 30 km; RPF done and SIA under way for 71 km
III	107	98	519	2,719	52.00	240	15	SIA and RAP prepared
Total	**343**	**229**	**1182**	**8,126**	**51.00**	**386**	**22**	

92. **Safeguard Policies and Instruments.** The World Bank *Operational Policy 4.12 (Involuntary Resettlement)* has been triggered and safeguard measures have been agreed accordingly. A *Resettlement Action Plan* (RAP) has been prepared for 272 km where the SIA has been completed and a Resettlement Policy Framework (RPF) has been prepared for the re-aligned stretch of 71 km where the SIA is being updated. The RPF will apply in case of any future alteration in alignment during implementation and for the future APLs. The borrower has approved an Entitlement Matrix for providing compensation at replacement cost and R&R assistance for loss of land, assets, and livelihoods to the eligible PAPs fulfilling the requirements of OP 4.12. The borrower has enacted a special legislation - the Railway Amendment Act (RAA) 2008 for carrying out land acquisition, which includes provisions for giving R&R assistance to the eligible PAPs as per the progressive National Rehabilitation and Resettlement Policy (NRRP) 2007. The R&R assistance offered include ex gratia payment to all affected land owners, livelihood assistance to those becoming small, marginal, or landless farmers, subsistence allowances to all house losers and vulnerable people, structure compensation and housing allowance to the squatters, allowances for relocation and transition, etc. The Indian Railways (IR) has recently updated the Entitlement Matrix to include an additional provision for offering higher compensation rates based on any Act or Notifications issued or procedure established by the concerned state Government. The RPF has been prepared for stretches where impacts are not yet identified. The RPF outlines the principles and procedures for: (a) assessing social impact with a terms of reference (TOR); (b) preparing the RAP before awarding work; (c) overall legal and institutional framework; (d) entitlement matrix; and (e) implementation arrangements (including disbursement of compensation and rehabilitation benefits, grievance redress mechanisms, stakeholder consultation, NGO participation for facilitating community mobilization and livelihood restoration, site hand over for civil work, monitoring and evaluation and an indicative budget). Details are provided in the Annex-10.

93. **Operational Policy 4.10 (Indigenous Peoples).** The SIA study completed for the 272 km has confirmed that no tribal communities are present in that stretch of the eastern corridor. The total number of tribal families affected by the Project is eight, dispersed along the corridor of impact.

These eight affected tribal families do not have separate social and cultural institutions and are socially a part of the mainstream population. No Tribal Development Plan (TDP) has therefore been prepared as per OP 4.10. However, in view of special protection provided by the Indian constitution to the scheduled tribes, the Entitlement Matrix offers additional assistance for the tribal people affected by the Project. This is aimed to minimize and mitigate any negative impacts and to ensure that no irreversible harm will be caused due to the project to the tribal people. This approach is consistent with the Bank Policy and NRRP 2007. If the SIA for Tundla stretch of 71 km or proposed investments for APL-II and APL-III indicate impact on tribal communities, a TDP shall be prepared and implemented as mandated in the RPF.

94. **Institutional Arrangements.** The DFCCIL will implement land acquisition and R&R activities in coordination with the concerned state administrations. The Indian Railways (IR) shall legally undertake the task with the DFCCIL's assistance. The RPF/RAP lay out systems and capacity for safeguards management. DFCCIL has established a Social and Environment Management Unit (SEMU) led by a General Manager with social and environment specialists to oversee the overall safeguard management process. The field level operations for land acquisition and R&R will be managed by the Chief Project Manager (CPM). The CPM will be supported three APMs (Social) in managing and coordinating LA and R&R activities on the ground. The state revenue officers have been appointed as Competent Authorities and Arbitrators for carrying out land acquisition as per RAA, 2008. DFCCIL will hire a Social and Environment Safeguards Monitoring and Review Consultant (SESMRC) for third party **monitoring and quality audit** of the safeguards management including land acquisition, R&R and EMP. The SESMRC will provide *quarterly progress reports (QPR) and yearly Safeguard Review Reports*. DFCCIL will hire NGOs to assist in community participation, income restoration, and grievance resolution. There shall be a two stage **Grievance Redress Mechanism** with clear procedures for handling PAP grievances and complaints at the district and DFCCIL levels. In respect of land acquisition, the Competent Authority will hear and resolve objections/grievances, and those seeking higher compensation could appeal to the Independent Arbitrators for hearing their grievance. The grievance redress committee at district level will have representatives from state government, civil society and district elected local body. The senior level grievance committee will operate at the DFCCIL level with representatives from the Railways, DFCCIL, and civil society. In addition, the Indian Railway will appoint an **Ombudsman** to deal with unresolved grievances. Details are provided in the Annex-10.

95. **Consultations and Disclosure.** Public consultations were held with affected people during SIA and EIA studies in the form of focus groups discussions at several locations and formal consultations at 12 key locations. These included 227 focus group discussions (FGD) at the village level; 54 FGDs at the Tahsil or Taluk level; and 18 FGDs at the district levels. In addition to this, consultations were held at 18 locations to discuss the potential environmental impacts of the project. Key issues discussed during these consultations included: (a) employment opportunities; (b) vibration impacts on structures close to the rail tracks; (c) compensation amount for loss of land and assets; (d) loss of common properties and their reconstruction; (e) accident risks at a few locations; (f) relocation of utilities, etc. The draft RPF and RAP, and EA were prepared, incorporating issues raised during the first round of consultations and these documents (RAP/RPF and EMP) were finalized based on inputs received from follow-up consultations at 12 key locations for RAP/RPF and at 8 locations for EA/EMP during 2010. The draft RAP and RPF and EA/EMP were disclosed on the DFCCIL website inviting feedback prior to their disclosure in the Bank Info shop in January, 2011. These documents in hard copies were also disclosed at the field project office and the district administration. DFCCIL has updated the RAP for 272 km incorporating the Bank's comments and will re-disclose the final RAP. It will disclose the list of eligible PAPs and procedure for grievance

redress at the local level. DFCCIL has prepared a Communication Strategy in which NGOs will play a key role in community level information sharing. Details are given in the Annex-10.

96. **Risks and Mitigation Measures.** The Project affects a large number of farmers (8,126 families, 44,500 people), of which 75 percent are or will become small, marginal or landless farmers. Some 300 large farmers will lose more than one Ha of land. While the losses caused due to land acquisition are expected to be mitigated with the land acquisition and R&R benefits, the large/ middle farmers who see land as a symbol of status and influence may respond differently. Experience in India shows that despite R&R benefits offered, the relocation of structures (residences and shops) may encounter difficulties due to a combination of factors including changing local dynamics which cannot be anticipated in advance. In order to deal with such challenges, it has been agreed with the borrower that the Entitlement Matrix shall be reviewed and updated, if necessary, a year after the Project becomes effective based on an independent review of safeguards management.

97. **Supervision Strategy.** In order to meet the implementation challenges and ensure that safeguard issues are managed to the satisfaction of the Bank, DFCCIL will strengthen its capacity by: (a) hiring an experienced social safeguard specialist, NGOs, and safeguard monitoring and review consultants; (b) expand field staff if necessary; (c) provide safeguard training to the implementing staff. The Bank supervision strategy will involve intensive follow up during implementation along with technical support, (including help of consultants).

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[ ]	[X]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Indigenous Peoples (OP/BP 4.10)*	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

*OP/BP 4.10 has not been triggered based on SIA results for APL-I. This may be triggered if the SIA findings indicate impact on tribal communities.

H. Policy Exceptions and Readiness

98. No exceptions from Bank policies or guidelines are needed. The Regional readiness criteria established have been met, and the project specific readiness criteria (see paragraphs 57 and 58) will have been met prior to the award of any of the works contracts.

Annex 1: Country and Sector Background

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

A. Economic Developments and Macroeconomic Outlook

1. **The Eleventh Five-Year Plan (2007-2012)** - with its emphasis, *inter alia*, on inclusive, sustainable growth and delivery of public services - provides the overall strategic thrust for economic policy for the next two years. Adjustments in macroeconomic management policies and targets that addressed the effects of the global crisis were consistent with this framework. The 2010-11 budget has reinforced the inclusive growth orientation of the Government. It emphasizes restoration of GDP growth to 9 percent while making growth more broad based and ensuring that supply-demand imbalances are better managed.

2. **India's macroeconomic policy framework has been adequate to respond to the global financial crisis and set the stage for a return to high growth rates.** Monetary policy was eased significantly after the collapse of Lehman Brothers in September 2008 with a reduction in policy rates by more than 400 basis points, and liquidity injections through lower prudential ratios and open market operations. The fiscal policy stance was widened by 3.5 percent of GDP through tax reductions and expenditure increases in FY2008-09 compared with the previous year, and some further expansion in FY2009-10. Strength of government demand supported GDP growth in the second half of FY2008-09, when private demand slumped.

3. **The fiscal consolidation targeted in the Union Budget for the FY2011-12 and beyond has to take place in an environment of rising demand for government services and infrastructure financing.** With the buoyancy in tax revenue so far, the central government deficit target is likely to be achieved despite the additional spending bills in 2010-11. Important reforms of fertilizer and fuel pricing should reduce the burden of subsidies going forward. Requirement of food subsidies may increase depending on how the contours of the proposed new food security bill finally develops. Apart from reforms to subsidies and under-recoveries of costs of provision of services, improved efficiency in service delivery is needed to free up resources for an "expansionary consolidation" as envisaged by the 13th Finance Commission. The government's fiscal consolidation effort during FY2010-11 is expected to result in a deficit of 5.1 percent of GDP, against a target of 5.5 percent. The government's budget for 2011-12 targets a fiscal deficit of 4.6 percent of GDP. The Government has, in the Medium Term Fiscal Policy Statement laid before Parliament on 28th February, 2011, announced its intention to carry on fiscal consolidation to target a fiscal deficit of 4.1 percent of GDP in FY2012-13 and 3.5 percent in FY 2013-14.

4. **Barring further supply shocks, overall inflation is expected to moderate.** WPI inflation is projected to fall to 5-6 percent by the end of FY2011-12. The slow disinflation increases risks that core inflation will become entrenched as it spills over into wage settlements. A renewed increase in international food and energy commodity prices could also lead to a renewed price spiral in India, similar to what was observed in FY2007-08.

B. Indian Government's Strategic Emphasis on Expanding Infrastructure

5. Spurred by economic liberalization and the basic restructuring of the financial sector, the Indian economy has witnessed a sharp upturn, represented by a 7.5 to 9.5 percent growth of GDP, while exports have grown by more than 20 percent per year. This, in turn, has given rise to an accelerated demand for land transport services, growing by about 12 percent per year and doubling in six years. Such rapid growth is without precedent for India: over the five decades following Independence, GDP rarely grew faster than 2-3 percent per year.

6. Accordingly, the Government of India has asked the World Bank, in its Country Assistance Strategy for India for 2009-2012, to focus on developing the infrastructure needed to support this economic growth, and to help the seven poorest states, out of the country's 29 states, achieve higher standards of living for their people.

7. **Infrastructure.** If India's rapid economic growth is to be sustained, major investments in power, transport, water, and urban development are needed. Inadequate power supply remains a critical constraint to growth. While GDP has been growing at an average of about 8 percent a year since 2003, electricity generation has grown at less than 5 percent, constrained by capacity shortages. Bringing more power plants into use has been hobbled by lack of railway capacity to keep them supplied with coal - the main commodity to be carried on the Eastern DFC. Meanwhile India has become the world's fifth largest producer of steel. The steel industry itself as well as major steel consumers such as the makers of motor vehicles and a widening array of consumer products, are generating fast-growing demand for surface transportation between factories, ports, and the major cities, which are the domestic centers of consumption and growth centers for entrepreneurship. Likewise, inadequate urban infrastructure is hampering the efficient functioning of the cities and their expansion.

8. **Focus on poorest states.** The new strategy devotes more resources to engaging with India's seven low-income states - Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh - which are home to more than half of India's population. Here, the Bank will focus on poverty reduction and on achieving the Millennium Development Goals. Five of these states will benefit directly from the proposed project, because they are either major coal producers or the recipients of the investments planned under the project.

C. Transport Sector Development Strategy

9. The Indian government continues to view rail transport as the primary option for long-distance overland transport, while road transport is seen as serving shorter-distance trips. Priority in the allocation of investment funds has gone to building secondary and tertiary roads to link villages to market towns and state capitals.

10. **Roads.** The above helps explain why the national and state highway networks have not kept pace with demand: more than half are in poor condition, only about a third of state highways are full two-lane width, and even the few 4-lane divided highways lack access control; animal-drawn carts mingle with high-speed motor vehicles, making road travel slow and dangerous. Notwithstanding these handicaps, road transport has followed the worldwide pattern in being more responsive to demand than rail, and has captured a growing share of the land transport market, estimated at 65 percent for inter-urban freight and about 90 percent for passenger-km – in this case predominantly for shorter distances. Notwithstanding the priority given in the past to rural connectivity, the ambitious National Highways Development Program seeks to connect the main metros, its diagonals and its connecting links to State capitals, ports and other important places.

11. **Railways.** The corollary to the above is that the railways have been somewhat protected from competition. They retain about 10 percent of inter-urban passenger travel and a substantial share of commuter travel in major cities, as well as about 35 percent of inter-urban freight movements. Like the road network, the rail network has suffered from chronic low level of investment in infrastructure renewal and expansion, leaving it overloaded and forced to set priorities as to which traffic to accept and which to turn away. Recently, the advantages of rail over road transport have come to be better appreciated, not least because of the concern about energy security (India imports about 70 percent of its petroleum requirements) but also from the viewpoint of limiting carbon emissions and placing greater reliance on renewable energy sources.

12. **Civil aviation.** For business travel between India's major cities distances favor air transport, with flight times of 1-2 hours whereas rail requires 8-12 hours, often overnight. As part of the liberalization of the economy, the domestic civil aviation market has been opened to private airlines since deregulation of air transport in 2000. This has allowed it to capture a significant share of business travel between the largest cities. This trend is expected to continue and even intensify as low cost carriers, who have recently entered the aviation sector, compete with road and rail services for the higher revenue segments of their markets.

13. **Ports.** The capacity of India's ports has also been expanded substantially through the ending of state monopolies in owning and operating the ports. Several new ports specializing in container operations under private management have been brought into use in the past decade. There are also a few multi-purpose private ports handling containers and bulk cargoes which have expanded rapidly in the last decade or so, primarily in the state of Gujarat. Most of these are on the west coast, where the coastline allows more deep-water sites and international shipping lines plying between Europe, Singapore and East Asia can readily make calls – not the case for Kolkata and the east coast. A strategic priority related to this is to upgrade the inland corridors linking the deepwater container ports to the national capital region and other major cities and industrial poles. Also a priority is the upgrading of inland links to and from major bulk ports to handle exports of iron ore (mainly east coast), and imports of coal to supply the mega-power plants planned along both coasts.

14. **Public–Private Partnerships.** The Government of India has adopted PPPs as a major form of financing to develop physical infrastructure. Large scale flows of private capital have occurred in the areas of roads and highways, ports, energy and airports in the past few years.

D. Railway Development Strategy

15. The IR system primarily serves passengers. Passenger traffic (expressed in passenger-km) accounts for about 60 percent of total traffic (adding passenger-km and freight ton-km) and also about 60 percent of total operating expenditures. However, passenger services have traditionally been run at a loss as a matter of government social policy, contributing only about 30 percent of total revenues. Freight on the other hand has been very profitable. However, analysis suggests that IR is better off running many of these passenger services as they more than recover the avoidable cost (variable cost) of running these services. In recent years, as traffic has boomed, IR's financial situation has improved notably, such that in 2008-9 it achieved an operating ratio (operating costs including depreciation to revenues) of 78 percent[11]. Freight contributed 67 percent of total revenues.

16. **Traffic priorities.** Over the long-term there has been a steady decline in railways' share in the land transportation market, from over 80 percent in the 1950s to less than 30 percent today. Faced with a congested network, IR has been obliged – by government mandate -to give priority to passenger services. As regards freight, IR made the important policy shift of accepting only shipments large enough to fill a whole train from a single origin to a single destination. This allowed the elimination of marshalling operations en route. As a result, IR now concentrates on coal for power plants; coal, coke, iron ore and limestone for steel plants; food grains, fertilizers, oil and chemicals, and cement; and fast-growing container traffic (see more below). Coal represented the largest commodity group at 37 percent of all IR traffic in 2008. Demand for coal is mainly

[11] Both the operating ratio and the operating surplus include pensions and exclude arrears associated with the VIth Central Pay Commission. Converted at Rs50 = US$1

driven by domestic production of power and steel. Considerable volumes of bulks and break-bulk traffic normally sold in smaller shipments are left to be carried by road transport, even over long distances - which is costlier and less friendly to the environment and land use.

17. Through its earlier lending to Indian Railways in the 1970s and '80s, the Bank hoped to encourage a move away from the traditional public-service culture toward a more commercial approach. The lengthy hiatus since the last Bank loan to IR in the mid-90s reflects the lack of explicit change in the Government's railway policy. The present request signals important shifts in policy with an emphasis on greater reliance on the private sector (turn-key contracts and eventually PPPs), and a commercial orientation requiring investments to be made through arms-length subsidiaries organized as companies under the Companies Act, with performance bonuses for managers meeting agreed targets.

18. **Improved financial performance.** IR's financial results have undergone profound improvement over the past 15 years, taking advantage of the growth in demand, adjustments to key operating policies**,** astute simplification and increases in its freight tariffs, and changes in the mix of passenger trains in favor of higher-quality – and higher-revenue- services. Besides the ending of marshalling operations, the operating changes have included raising axle-load limits, routinely loading coal and other wagons more fully within their existing limits, adding extra coaches to passenger trains, and raising train speeds. The changes individually were not always large, but collectively improved efficiency, lowered unit costs of operation, and raised revenues. Between 1991 and 2008 freight volume doubled while the average revenue per ton-km tripled; the combined effect was to multiply total freight revenue 5-6 times. These developments have moved IR away from break-even (the operating ratio in 2001 was 99 percent) to substantial financial surpluses (operating ratio in 2008-9 of 78 percent), enabling it to contemplate major investments in new capacity.

19. **Spinning off container operations to the private sector.** One notable policy change applies to the transport of containers, where IR has opted to limit its involvement to train operations – the part it does best – and to devolve container marketing, consolidation and loading to the private sector. As an innovative departure from the traditional notion of Indian public service, container operations were devolved in 1988 to a specialized company, the Container Corporation of India (known as CONCOR), 37 percent of whose capital was private. CONCOR also took over management of IR's inland container depots. The line-of-business restructuring by CONCOR has proved highly successful, first in improving the quality of container handling services, thereby greatly extending use of container transport in India; and second, by proving its profitability.

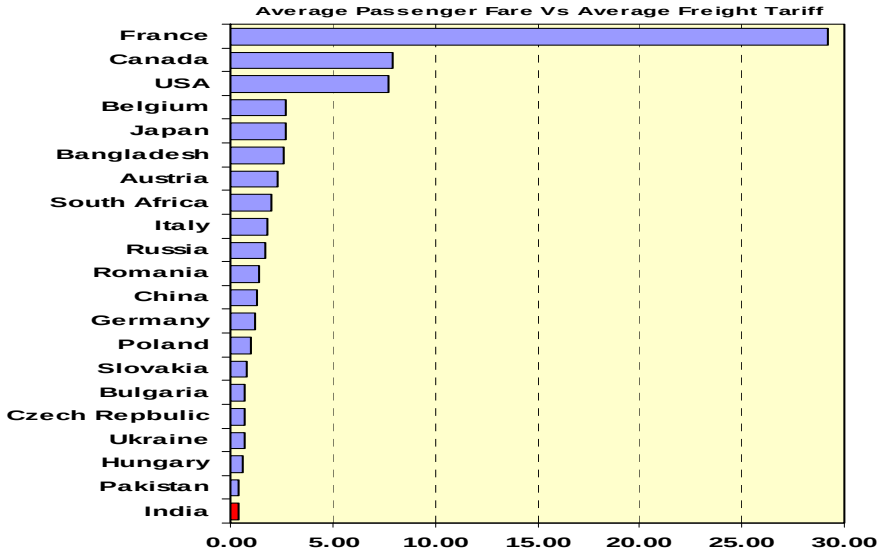
20. Of potentially greater significance was the decision in 2007-8 to further open up the rail-based market for container transport by selling licenses to 14 private logistics companies authorized to market container-train capacity. Several of these companies are already operating. They own or lease their own flat wagons and assemble container trains that are then hauled by IR locomotives and crew, under what is called the 'hook and haul' regime. By April 2009 they had added at least an additional 120 container trains per day, as compared with CONCOR's current 148, constituting an increase in capacity of more than 80 percent.

21. In short, the growing business volume has allowed IR to take full advantage of the economies of scale inherent in the rail network. Since most costs are substantially fixed, marginal costs are low, causing large losses when traffic declines but large surpluses when it grows –as is currently the case.

22. **IR's network performance.** One of the world's largest rail networks under a single management, IR is spread over more than 63,300 route-km. This puts it third after USA Class 1

railroads and Russia. The density of its traffic per route-km (20 million traffic units per km per year) is exceeded only by China (41 million) and Russia (30 million). These other systems have the advantage of carrying mostly freight. India is second only to Japan in the total number of passengers carried, while in passenger-km of travel it is second only to China. Its passenger coach productivity is second only to China's. The average passenger fare in India is almost the lowest in the world (only Ukraine is lower), while India has the lowest ratio of passenger fares to freight rates. In labor productivity (traffic units per employee) it is near the middle of the range of the world's twenty largest railways – about the same as France and Italy. (Railways that concentrate on freight do better on this indicator.) In fact IR's staff productivity increased by a factor of three between 1990 and 2007 (see figure below). IR's network combines broad, meter and narrow-gauge lines, though 85 percent of it is broad gauge (5ft 6in or 1.676m) and the share of narrower-gauge lines is dwindling, as almost all new lines are built to broad gauge and some meter-gauge lines are being converted.

23. Indian Railways' tariffs are generally lower than found on other railways. Of the 21 largest railways, India's freight prices, as measured by US$ per net-ton-kilometer, are fourth from the lowest; for passenger traffic (as measured by US$ per passenger-kilometer), they are second from lowest. The chart below shows the ratio of average passenger fares (US$/PKM) to average freight tariffs (US$/TKM), a typical measure of relative pricing.



24. On this measure, Indian Railways passenger tariffs are extremely low, the lowest relative to freight tariffs among the world's 21 largest railways. There is no policy or system of explicit payments for loss-making passenger Public Service Obligations in Indian Railways. But there is substantial internal cross-subsidy of train operations within the passenger sector itself, and between different ZRs; the aggregate burden of infrastructure costs also falls almost entirely on freight customers. In other words, the MOR has adopted internal cross-subsidy of passenger services and an implicit tax on freight rather than direct subsidy as its preferred means of funding passenger service obligations.

25. **Future development plans.** The Indian Railways' trunk routes link the four metropolitan cities of Delhi, Mumbai, Chennai and Kolkata, termed the Golden Quadrilateral, while the Delhi-Chennai and Mumbai-Kolkata diagonals constitute the principal rail routes of the country. These routes add up to a little over 10,000 km (about 16 percent of the total rail network), and annually

carry more than 3 billion passengers and earn 55 to 60 percent of IR's revenue from freight. This is the core network.

26. Besides carrying the heaviest streams of passenger flows in the country, these routes serve the core sectors of the Indian economy by carrying raw materials to centers of production, finished goods to centers of consumption, agricultural inputs and produce (mainly food grains) to all parts of the country, and most of the country's foreign trade traffic from plants to ports and vice versa. Barring a few other lines dedicated to mineral traffic, these routes also have the greatest potential for the future growth of rail-borne freight traffic.

27. IR intends to sustain and improve upon its recent positive performance by taking new initiatives to upgrade rail transport technology, improve asset utilization, enhance productivity, and further reduce unit costs of operation. However, the predominance of passenger traffic and the continuing precedence given to passenger trains, together with complete saturation of line capacity on virtually the entire length of the principal routes, continues to deter the free flow of freight traffic and constrains its expansion. Freight trains are subject to frequent detentions, having to stop and wait for passenger trains to pass them. The effect of such an operating environment is reflected in an average freight train speed (even on broad-gauge electrified lines) of only 26 km per hour, engine-km per engine day of a mere 474 km, and wagon-km per wagon day of only 231 km, which are far from satisfactory.

28. **IR Vision 2020.** IR presented a vision statement in December 2009 that focuses on plans over the next 10 years. Its intention is to break away from the path of incremental change to one of rapid growth in sector development. Its objective is to reverse the erosion of freight modal share to road transport, greatly improve the quality of passenger services, and embark on the construction of selected dedicated freight as well as high-speed passenger railway routes.

29. The strategy includes measures that would, over the ten years to 2020, improve infrastructure to a greater extent than has been attained in the last 60 years. Vision 2020 would expand the network by 25,000 km (around a 40 percent increase); increase the extent of double and multiple track line from the current 18,000 to 30,000 km; increase maximum passenger train speeds on segregated passenger lines from a range of 110-130 km/h to 170-200 km/h; virtually complete gauge-conversion across India; increase electrified route from 14,000 to 30,000 km; complete the two main dedicated freight rail corridors; and implement at least four high-speed rail corridors up to 350km/h using PPP structures for delivery.

30. Vision 2020 though does not consider the option of railway privatization, but proposes to enhance the 'effectiveness and accountability' of IR through 'necessary reforms at all levels', particularly internal corporatization and commercialization of activities. Public Private Partnership (PPP) structures are to play a greater role in the future railway industry in areas such as station development, rolling stock manufacturing, logistics hubs, high-speed corridors, fiber-optic networks using railway right-of-way, and major new infrastructure projects such as the High-Speed Rail lines and Dedicated Freight Corridors mentioned above. Also, reducing the railways carbon footprint is an integral part of Vision 2020 and the introduction of modern high energy efficiency rolling stock is seen as a high impact contribution.

31. The Strategy estimates that around two-thirds of the necessary investment of over US$300 billion would be mobilized from internal surpluses earned in high-growth passenger and freight markets and from PPPs; and the remaining third would require a special new government rail development fund. However, so far a clear PPP Policy has not yet been adopted, and the Government has made no commitment to establishing the development fund. Therefore at this stage Vision 2020 will need significant amounts of additional funding.

32. **Dedicated freight corridors.** Taking these factors into consideration, and recognizing the need for a quantum leap in the railways' transportation capacity for ensuring the sustainable growth of the national economy, the Ministry of Railways has embarked on a long-term plan to build high-capacity, higher-speed dedicated freight corridors along the Golden Quadrilateral and its diagonals. Capacity will be increased by raising the axle-load limit from 22.9 to 25 tons and installing modern signaling and telecommunications that allow speeds of up to 100 km/hr. The proposed first phase is the construction of two dedicated freight corridors spanning the Mumbai-Delhi and Ludhiana-Delhi-Kolkata legs of the Quadrilateral. Covering a total length of nearly 3,373 km, the two corridors have been planned as follows:

- *Western Corridor*. A double-track dedicated freight corridor (DFC) from Jawaharlal Nehru Port in Navi Mumbai to Delhi (actually to Dadri, a container yard east of the capital), over a route length of 1,534 km. Its main line of business will be containers moving between West Coast ports and the industrial centers of northern India.
- *Eastern Corridor*. A dedicated freight corridor with a route length of 1,839 km consisting of two distinct segments: an electrified double-track segment of 1,427 km between Dankuni and Khurja- Dadri (Delhi), and an electrified single-track segment of 412 km between Khurja and Ludhiana (Dhandarikalan) in the north-central plain. Its main line of business will be transport of coal between the eastern coalfields and power plants and steel plants in the north-west region.

33. The twin aims of the DFC project are (a) to increase line capacity, thereby attracting more freight traffic to the rail mode, and (b) to reduce the unit costs of operations, savings which can then be passed on to customers.

E. The Demand for Transport of Coal: Prospects and Risks

34. **Overview.** The dominant traffic expected on the eastern Dedicated Freight Corridor is coal. Today coal accounts for about 70 percent of freight on the existing line between Delhi and Kolkata, and it is expected to keep about this share over at least the coming decade. For this reason it is important to evaluate the present and future demand for coal – mostly for power generation at plants located along the Ganges plain and to the north of Delhi - and the present and future supply of coal – mostly from mines in the four states to the west of Kolkata at the southeastern end of the Project line. These states are among India's poorest and are targeted by the current CAS.

35. **Demand for electric power, present and future.** The energy intensity of India's economy has been falling and is low by world standards. Currently it consumes 0.16 kg of oil equivalent (kgoe) per dollar of GDP expressed in purchasing power parity terms. This is lower than the 0.23 kgoe of China, 0.22 of the USA and a world average of 0.21 kgoe, even marginally lower than Germany's 0.17. On the other hand, the economies of the UK, Japan and Brazil are slightly less energy-intensive than India's. Agriculture consumes 25-30 percent of Indian electricity, industry 25-35 percent, and residential and commercial the remaining 35-50 percent. In the coming years, as GDP is expected to continue growing at 8-9 percent per year, demand for electricity is expected to grow at 5-6 percent. That is, the elasticity of electricity demand to GDP is about 0.6-0.7.

36. However, power supply lags behind demand, by 16-17 percent in peak capacity and 10 percent in energy, causing black-outs that lead consumers to install back-up capacity using stand-by generators. Compared to centrally supplied electricity such generators are inefficient in energy conversion, deliver electricity at least twice the cost per kWh - about US$0.20 compared to US$0.10, already high by international standards - and are highly polluting.

37. International research has suggested that the cost to the economy of electricity expected but not delivered can be as much as ten times greater than the regular cost of production, because of the disruption to business caused by unscheduled power cuts, and the inefficiency (in terms of energy conversion) of small back-up generators. The economic cost of India's power shortages has been estimated at 7 percent of GDP.

38. It is therefore a national priority to expand power supply faster than demand growth, in order to catch up and eliminate the deficit. The target is to raise total capacity from 146 GW in 2008 to 200 GW by 2012, implying an average annual growth of 8 percent. Coal-fired plants make up 53 percent of the 2008 total (77 GW) and as they are used for base load, they contribute about 80 percent of total generation. The Planning Commission's Integrated Energy Policy foresees that coal will remain India's primary energy source. How far it remains so will depend on the policies pursued to reduce GHG emissions and on success in implementing them. That is, 25 years hence (in 2035) coal may account for about 42 percent of total energy consumption in the case of a low-carbon-growth trajectory, or up to 65 percent in the case of mostly coal-based electricity generation.

39. Many major power-consuming industries are located along the western corridor between Mumbai and Delhi. The Ludhiana-Delhi-Kolkata corridor, also densely populated throughout its length, is the site of many of India's largest power plants. Construction of new plants is planned, including so-called 'ultra-mega' plants with 4,000 MW capacity or more; and old plants will be rehabilitated to add to their output and enhance their efficiency.

40. However, achievement of this goal has been hampered by institutional weaknesses in the power sector, as well as constraints on the development of alternative sources of energy, on the expansion of coal output and on coal transport from the mines to the power plants. Accordingly, the Government of India is taking action on all four fronts.

41. **Institutional reform in the power sector.** Major structural reforms of the sector have been carried out, unbundling generation from transmission and distribution, and opening power markets to private participation and commercial disciplines. These reforms have had the desired effect of attracting private finance into the expansion of capacity and of introducing commercial discipline in the sector – notably the right of generators and the national transmission grid company to withhold power from non-paying distribution companies. The Bank has actively supported these reforms.

42. **Alternative energy sources.** Among renewable energy sources, India has tapped part of the hydropower potential of the rivers coming down from the Himalayas, notably in Himachal Pradesh (with World Bank financing). Hydro plants are to deliver about 20 percent of the planned new capacity - though a smaller share of energy generated. Major new dams are under consideration on the upper Brahmaputra in Assam, but they will be remote from India's consumption centers. Accordingly, the option has been mooted of trading electricity with Bangladesh in exchange for natural gas, deposits of which are located further west, in areas adjoining West Bengal. Joint exploration and exploitation is also a possibility. Purchase of natural gas from Iran is also being considered. However, it would require construction of a pipeline crossing Pakistan and possibly Afghanistan too.

43. Nuclear power, today contributing only about 3 percent of India's electricity, is to be expanded, following the 2008 agreement with the USA. However, delivery of significant extra nuclear generation will take many years, and is not expected to contribute more than 4 percent of the 11th Plan increment in output.

44. Wind power is also to be developed, but starting from a small base, its contribution within the 11th Plan period will also be small.

45. Conservation is being practiced through reduced losses and more appropriate pricing. Two-part tariffs (availability and consumption) have been introduced, strengthening commercial incentives for efficiency. Subsidized tariffs to agricultural consumers are being reduced. Efforts are being made to strengthen metering and billing, to reduce technical and commercial losses. New long-distance transmission lines are being put in place (also supported by World Bank financing) at 400 kV and 765 kV, allowing better balancing of loads within the network and reducing transmission losses.

46. **Expanding coal supply.** Despite the above initiatives, the Indian power sector remains heavily dependent on coal. Domestic reserves of other fuels are small and hydro involves difficult environmental and social issues, whereas proven coal reserves within India offer an abundant supply at relatively low cost, making it the default option for the foreseeable future. Today coal accounts for some 70 percent of total generation and is expected to continue at about that level over the coming decade.

47. Proven reserves amount to 92 billion tons of non-coking coal and 5 billion tons of prime coking coal (total 96-99 BT). The reserves are concentrated in the following states (in declining order of proved resources): Jharkhand 36 billion tons (west of Kolkata, south of Varanasi and Patna); Orissa 17 billion tons (southwest of Kolkata), West Bengal 11 billion tons, and Chhattisgarh 10 billion tons (southwest of Jharkhand). Thus these four contiguous states, all relatively close to the eastern end of the DFC corridor, have proven reserves of about 74 billion tons, or more than three quarters of the national total.

48. At a growth rate of 5 percent in domestic production, currently extractable coal resources will be exhausted in about 45 years. This is slower than current government targets, so the resources may be exhausted sooner; but this refers only to the firmest category of exploration. Less certain resources are estimated at about 160 billion tons.

49. India's total coal consumption in 2008 was about 450 million tons (MT). Annual tonnage currently mined is 404 MT, the rest being imported from Indonesia, South Africa and Australia (in declining order). Coal India Limited (CIL) produced 83 percent of India's production (380 MT). In the past decade control over coal reserves has been liberalized and blocks have been offered to private investors, but environmental regulations have held up the start of their exploitation for 7-8 years. The pricing of coal is also being liberalized. These policy reforms are aimed at speeding up the expansion of coal production, but so far they have had only limited effect. GOI's forecast of demand in 2008 was 10 percent more, but it was not met for several reasons. Its target for domestic coal output for the year 2011-12 is 680 MT and for imported coal is 51 MT (that is, 93 percent domestic and 7 percent imported).

50. More than 70 percent of Indian coal is burned to generate electricity (73 percent in 2008). Coal accounts for 69 percent of FY08-12 proposed power capacity addition. Indian coal is mostly of low grade (high ash and moisture content, low thermal value – but low sulfur). Imported coal is the opposite: low ash, low moisture, high thermal value, but higher sulfur. Its substitutability is therefore limited. Existing power plants can mix some imported coal in with domestic coal, but not more than 15 percent. Proposed power capacity addition for FY08-12 will use domestic coal for 50 GW and imported coal for 4 GW (coal total 54 GW) out of total new power capacity of 79 GW.

51. The coal mines in Jharkhand, Orissa, and Chhattisgarh have ample reserves to keep producing over the next 20-25 years and many years beyond. About one seventh of current output comes from underground mines and the rest from open-cast operations. The latter's production cost is far less; their share of total output will grow. Jharkhand is suffering some law and order

problems which may prolong the time it takes to acquire land and environmental permits, but they are not otherwise expected to block production.

52. The cost of mining coal averages US$16 per ton. The delivered price during 2008 was US$48-64, including US$28-44 for freight and handling, i.e., substantially more than the cost of mining.

53. Most mines operate within the framework of long-term contracts with specific power plants, covering the plant's expected lifetime. Likewise, the generators enter into 20-25-year service contracts with the transmission grid and 15-20 year contracts with distribution companies. Since electricity tariffs allow power companies to pass through the cost of coal, utilities do not have any incentive to accurately measure coal quality and quantity at the power plant end. If this is changed, it may create incentives for more efficient use, including washing of coal at source that would slow the growth in demand somewhat. Recent auctions of the right to build new power plants have been bundled with the development of new coal mines, the award going to the bidder promising the lowest power tariff delivered.

54. **Transport of coal.** Of all coal transported today, 53 percent goes by rail, 17 percent by road, 24 percent by merry-go-round –a dedicated rail loop between a mine and a nearby power plant. Wagons are tippers (tip to one side) or hoppers (open the gates at the bottom), so unloading is efficient. Some consideration is being given to transporting more coal by inland waterways, but these are only in the lower reaches of the Ganges plain.

55. Coal supply contracts generally make the mine responsible for transportation to the power plant. Power plants aim to maintain stockpiles of 30 days coal requirement. However, for lack of transport capacity on IR's part, most plants currently have no more than a week's supply. A shorter requirement than 30 days may be optimal, provided that deliveries are more reliable.

56. Provisional forecasts for the DFC (East) are for 70-90 million tons of coal to be transported in 2016-17, shortly after opening, and 85-100 million tons in 2021-22, of which two-thirds will travel over the Khurja-Mughalsarai section. This corresponds to 50-60 trains each way each day by 2021-22, of which 35-40 will be on the Khurja-Mughalsarai section. (See Annex 8 for more detail on traffic and resulting rail line capacity utilization.)

57. **Demand uncertainty and risks.** Demand for electricity – and hence also for coal- peaks in December-March. This coincides with the annual peak for several other railway-friendly commodities, notably fertilizer and food grains, adding to the pressures on IR. However, thanks to growing demand for air conditioning in the residential and commercial sectors, the winter peak is becoming less marked and may shift to the summer months.

58. In future various factors may modify the demand/supply balance of coal transport in the corridor. Tighter controls over the quality of coal delivered, filtering out rock and below-grade coal, may reduce the volume of coal to be transported. Coal that is too lumpy may be slowing down unloading; fixing the problem would reduce wagon turnaround time somewhat, increasing the line capacity a little. Off-setting these are factors that would ease the supply constraint, a greater degree of mechanical handling at pits –likely to happen over time-- will increase their production.

59. A few major power producers have signed a model Fuel Transport Agreement that sets out rights and obligations. Under such agreements IR could charge a premium for guaranteed delivery but would pay liquidated damages for failure to deliver.

60. **Imported coal.** The GOI's Integrated Energy Policy foresees that coastal power plants may be built to burn imported coal, creating competitive pressure on the domestic coal industry. However, imported coal currently costs about US$100 per ton, some three times more than

domestic coal, even after allowing for the difference in calorific value. Considering also that many major consumption centers are far inland (often more than 1,000 km), this option will be of interest mainly in southern India, where there are few coal deposits.

F. Fiscal Impact

61. The central budget currently contributes about one third of IR's investment, and nothing to its operating budget. Losses on passengers are covered by cash surpluses on freight. IR passengers (as a whole) are not subsidized from the central budget today, nor will they be in the future as long as IR continues to apply the expected pricing policies and to raise labor productivity, while keeping a rein on wage increases.

62. As shown in Annex 9 (Financial Evaluation), DFC investment will average only about 10 percent of IR's total investment budget during the next few years. So even a large construction cost over-run or traffic shortfall on the DFC would not necessarily trigger larger claims on the central budget. On the contrary, by easing congestion for both freight and passengers, the DFC program - once operating- will allow IR to continue to serve rapidly growing traffic volumes paying rates substantially in excess of variable costs, at the same time as unit operating costs are reduced through efficiency gains. The risk of a negative fiscal impact would be highest during the construction phase. Thereafter the financial projections are robust and may allow IR to reduce its claims on the central investment budget.

63. **Passenger fare levels.** IR's tariffs are uniform throughout India for comparable services, so IR will not automatically reduce fares linked to lowered operating costs due to the DFC. Any system-wide decision to adjust the balance between freight rates and passenger fares is outside the scope of this project.

64. **Possible impact on future fuel prices.** Recent increases in fuel prices are a cause for concern. Once the DFC network comes into operation, it is expected to have a favorable impact on national fuel consumption and imports, as it will take traffic off the roads and improve the energy efficiency of Indian Railways' operations in these corridors.

65. **Downside risk from a macro-economic shock.** A macro-economic shock would cause some slowing of demand for rail travel, both freight and passengers. However, India's economy is somewhat protected from external economic shocks, in so far as it is relatively self-sufficient (trade is not a large share of GDP). Furthermore, the need for the DFC program is a product of both today's capacity shortages and tomorrow's growth. It would have to be a profound shock for IR demand to shrink to the point that this need would be voided.

Annex 2: Major Related Projects Financed by the Bank and Other Agencies

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

Issue	**Project**	**Latest Supervision (ISR) Ratings (Bank-financed projects only)**	
Bank-financed, completed or on-going	**Implementation Progress**	**PDO**	
Capacity expansion of commuter rails, urban roads and bus services, and institutional strengthening of concerned agencies	Mumbai Urban Transport Project (Ln.4665-IN; Cr.3662-IN)	MS	MS
Capacity expansion of national highways and institutional strengthening of MOSRTH and NHAI	Third National Highways Project (Ln.4559-IN),	Completed	MS
	Grand Trunk Road Improvement Project (Ln.4622-IN)	Completed	MS
	Allahabad Bypass Project (Ln.4719-IN)	Completed	S
	Lucknow Muzaffarpur National Highway Project (Ln. 4764-IN)	MU	MU
Capacity expansion and maintenance of state highways and institutional development of state road agencies	Andhra Pradesh State Highway Project (Ln. 2490-IN)	Completed	S
	Gujarat State Highway Project (Ln.4577-IN)	Completed	S
	Karnataka State Highways Improvement Project (Ln.4606-IN)	Completed	S
	Kerala State Transport Project (Ln.4563-IN)	Completed	MS
	Mizoram State Roads Project (Ln.3618-IN)	Completed	S
	Uttar Pradesh State Roads Project (Ln.4685-IN)	Completed	MS
	Tamil Nadu Road Sector Project (Ln.4706-IN)	S	S
	Himachal Pradesh State Roads Project (Ln.4860-IN)	MS	MS
	Punjab State Road Project (Ln. 4843-IN)	MS	S
	Orissa State Road Project (Ln. 7577-0-IN)	MU	U
Economic Reforms	TA for Economic Reforms (US$45 million; Cr. N045-IN; closed in December 2007)	MU	S
Improvements of road infrastructure in a commercial format	Support to Infrastructure Leasing and Financial Services (Ln.3992-IN; Cr.2838-IN)	S	S
Municipal reforms and investments (including improvements of urban road infrastructure)	Karnataka Municipal Reforms Project (Ln. 4818-IN)	MS	S
Improvements of urban transport infrastructure	Tamil Nadu Urban Development Project (Ln.4798-IN)	MS	S
Improvement of NHAI management and operations efficiency	NHAI Technical Assistance Project	N/A	N/A
Strengthening of the systems and processes of the national PMGSY rural roads program	PMGSY Project	N/A	N/A

Ratings: HS (Highly Satisfactory), S (Satisfactory), MS (Moderately Satisfactory), U (Unsatisfactory), MU (Moderately Unsatisfactory), HU (Highly Unsatisfactory)

Railway Projects in China

Name of the Project	Loan Size (US$ m)	Approval Date	Status
Hajia Railway	300	N. A.	Pipeline
NanGuang Railway Project	300	June 24, 2009	Active
Guiyang Guangzhou Railway	300	April 16, 2009	Active
ShiZheng Railway Project	300	June 24, 2008	Active
Third National Railway Project	200	January 23, 2007	Active
Second National Railways Project (Zhe-Gan Line)	200	June 24, 2004	Closed
National Railway Project	160	Jan 29, 2002	Closed
Railway Project (07)	400	June 1, 1995	Closed
Railway Project (06)	420	March 25, 1993	Closed
Railway Project (05)	330	September 24, 1991	Closed
Inner Mongolia Local Railway Project	150	May 12, 1989	Closed
Railway Project (04)	200	June 23, 1988	Closed
Railway Project (03)	230	April 15, 1986	Closed
Railway Project (02)	235	May 14, 1985	Closed
Railway Project (01)	220	March 27, 1984	Closed

Annex 3: Results Framework, Indicators and Logframe

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

Project Development Objectives and Key Indicators

1. The development objectives of the Project are to: (i) provide additional rail transport capacity, improved service quality and higher freight throughput on the 343 km Khurja to Kanpur section of the Eastern rail corridor; and (ii) develop the institutional capacity of IR and DFCCIL to build and operate the DFC network. Achievement of the development objective will be measured by outcome indicators consisting of: the number of additional train paths produced; the average commercial speeds of freight trains and freight volumes carried; the number of express passenger trains on the existing tracks; and improved institutional capacity of DFCCIL.

2. Outcome indicators chosen depend to some extent on factors outside the direct control of the project. Project design seeks to address this issue as follows:

a. Average commercial speed of freight trains on the new corridor depends on the train scheduling put in place by DFCCIL, the characteristics of the rolling stock bought by IR, and the reliability and efficiency of IR train operations. While these are not under the control of the project, various Technical Assistance components of the project to improve IR's freight operations are intended to assist in this regard. The Results Framework consequently includes indicators on locomotive and wagon acquisition schedules even though they are not financed by the project.

b. Increased number of express passenger trains on the existing corridor, as a consequence of shifting freight traffic onto the new corridor, is an opportunity but it can be realized only if IR will design and operate a new train schedule on the existing corridor taking this possibility into consideration.

Project Development Objective	Project Outcome Indicators	Use of Outcome Information
1. Provide additional rail transport capacity, improve service quality and increase freight throughput on the 343 km Khurja to Kanpur section of the Delhi-Kolkata rail corridor.	1a. Additional freight train paths available on DFC. 1b. Increased commercial speed of freight trains on DFC and number of express passenger services on existing railway. 1c. Increased freight throughput.	Feed into the evaluation of the overall Indian Railways Eastern Dedicated Freight Corridor program.
2. Develop the institutional capacity of DFCCIL to build and maintain the DFC infrastructure network.	2. DFCCIL Institutional capacity developed in line with expanding needs. 2a. DFCCIL HR Development Plan implementation progress. 2b. DFCCIL overall Performance as per MoU with line ministry. 2c. DFCCIL Performance in Contract Award and Management.	Future APL Phases (2 and 3) will be conditional on DFCCIL satisfactory performance on institutional development and program execution.

3. Specific indicators for the project are presented below.

Results Indicators[12]

	Base-line	Projections and Targets (Calendar Year)						Data Collection and Reporting	
Project Outcome Indicators	**2010**	**2011**	**2012**	**2013**	**2014**	**2016-17**	**2021 -22**	**Frequency of Reports**	**Responsibility**
Additional freight train paths on DFC. (pairs/day)	0	0	0	0	0	100	100		MOR
Average speed of freight train on DFC (KM/hr)	*25*	*25*	*25*	*25*	*25*	60	60		
Increased number of express pass. train on section +									
DFC Freight traffic (GTKM bn ton)						36	46.5		
DFC Freight traffic (NTKM bn ton-km)	18					22	29.5		
DFCCIL Staff Strength		380	650	850	2120	6860	9800		DFCCIL
DFCCIL Staff in Officer Cadre (#s)		200	335	445	565	850	1210		
Contract Award/ Mobilization on Schedule			March 2012 3*CW &T	1*Sys Cont.					DFCCIL
DFCCIL MoU (with MoR) Rating.		Good or Higher	Good or Higher	Good or Higher	Good or Higher	Good or Higher	Good or Higher		
MOR and DFCCIL Sign Concession Agreement.		July 2011				TAA Schedules finalized			DFCCIL and IR Board
Locomotive and Wagon Acquisition Program		2013		Specifications and requirements for year 2017 finalized and procurement strategy in place.					
Development of Heavy-Haul systems				Development of long term heavy haul strategy and implementation plan					

[12] Baseline performance is as measured on existing railway line. Figures in italics are for existing line, rests are for DFC. The baseline figures for Freight throughput are for 2007.
+ Baseline to be assessed during implementation.

Eastern Dedicated Freight Corridor

Logical Framework and Impact Study

4. The Logical Framework for the Eastern DFC program links the outcomes of the project with the impacts expected to be achieved. It forms the basis for an Impact Study to be carried out during the project implementation against which the impacts achieved during the operational phase can be assessed. An outline Terms of Reference for the Impact Study is also attached.

Expected Impacts:	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions And Risks
A. Power Sector Coal transport from eastern coal fields to power plants in northern India improved.	Power production in northern India no longer constrained by rail capacity after 2017.	Impact Study during implementation establishes conditions prior to commissioning of the Eastern DFC. Data sources would include: • Ministry of Railways Track capacity utilization data. • Ministry of Power data on Power Plant capacity utilization. • Ministry of Railways traffic statistics. • Ministry of Agriculture commodity price statistics. • Food Corporation of India statistics on logistics costs.	1. Project on time. 2. IR acquires needed rolling stock on time.
B. GHG Emissions Increased rail transport of passengers and goods, which now move by road, reduces GHG emissions in Eastern Transport Corridor.	Increased freight and passenger traffic on the Eastern Transport Corridor.		1. IR successfully markets wagon-load and non-traditional goods services. 2. IR utilizes freed capacity to provide good quality passenger services
C. Agricultural Production: 1. Increased transport of perishables from the Indo-Gangetic plain to national and export markets.	1. Quantity of refrigerated cargo transported by rail on the Eastern Corridor.		Logistics terminals (with reefer facilities) set up on Eastern DFC under PPPs
2. Improved logistics for food grain storage and movements lowers cost of Public Distribution System	2. Reduction in average transport cost for food grains procured in UP, Punjab and Haryana		FCI procurement of transport services efficient and uses least cost modes/routes.

Outcomes	**Performance Targets / Indicators**	**Data Sources / Reporting Mechanisms**	**Assumptions And Risks**
A. Expanded rail capacity for freight transport in the Eastern Corridor with improved speed and reliability of services	1. Number of train paths produced on EDFC. 2. Average speed of freight trains on EDFC.	DFCCIL records.	Project delivered as planned
B. Rail capacity released on existing routes for improved passenger services.	1. Number of train paths released on existing route and increase in number of express passenger trains. 2. Average speed of fast passenger services.	Relevant Zonal Railway records.	Freight traffic rationally assigned between DFC and existing routes to provide most cost efficient freight services.
C. Infrastructure cost 1. Lowered cost of track infrastructure provision on the Eastern DFC.	1. Lower track operating cost /GTKM on EDFC over IR's existing route	DFCCIL records.	IR acquires appropriate rolling stock on time to utilize DFC capabilities.
D. Energy Efficiency 1. Higher 25 ton axle-load and longer 50 wagon trains reduce energy consumption /GTKM.	1. Average freight train energy consumption drops from 9.0 to 7.0 KWH/1000 GTKM	Ministry of Railways statistics and GHG Study during project preparation.	IR acquires appropriate rolling stock on time to utilize DFC capabilities.
E. DFCCIL Institutional: 1. Organizational capacity developed to efficiently deliver 7000 plus km (Rs 80,000 Cr) DFC program over next 10 years.	1. Annual kilometers of Contracts awarded (target 1000km) with adequate encumbrance free site for each contract.	1. DFCCIL Procurement Cell records.	1. DFCCIL HR policies allow recruitment retention of adequate staff with good incentives to perform well.
2. DFC program built to high technology standards appropriate to Indian conditions.	2. Heavy Haul TA program operational with regular production of technical assessments.	2. DFCCIL records and questionnaire surveys of DFCCIL technical officers	2. IR Board Heavy Haul Committee pro-actively seeks improvements in technology.
3. Social / Environmental impacts of DFC program minimized and effectively managed, meeting all national standards.	3. Grievance Redressal / safeguards mechanisms progressively reduce backlog of cases and complaints/violations.	3. DFCCIL Quality and Social, Environmental Safeguards Monitoring and Review Consultants (SESMRC) records.	3. DFCCIL adequately staffs the safeguards function and gives it the authority needed to carry out its quality mandate.
4. DFCCIL organization practices a strong safety culture in its construction programs and operations.	4. Regular safety audits and efficient follow-up of deficiencies identified	4. DFCCIL Quality and Safety Audit Consultant (QSAC) records.	4. DFCCIL exercises adequate construction management and operations oversight.
5. DFCCIL achieves good corporate governance and fiduciary standards of review and record keeping on financial transactions	5. Timely audits, and audit observations resolved expeditiously. GAAP implementation	5. DFCCIL Finance and Internal Audit records. CVO report on GAAP implementation progress.	5. ERP systems developed and implemented. GAAP receives support of DFCCIL Board.

Indian Railways Eastern Dedicated Freight Corridor
Impact Study

Outline Scope of the Study

1. DFCCIL will engage consultants to undertake an impact study for the purposes of ex-post Evaluation of the project. The study will establish the pre-project conditions of the various indicators mentioned in the Logical Framework.

Composition of Consultant Team

2. The Consultants team would include the following key professionals: Team Leader, with specific experience in M&E methods; Railway Operations specialist, knowledgeable on traffic planning; Railway Management specialist, knowledgeable on institutional and HR development; Transport Economist, knowledgeable on modal choice; Power Sector Specialist, knowledgeable on coal based power plants; Agricultural Economist, knowledgeable on the public distribution system; Social Development Specialist, knowledgeable on resettlement and rehabilitation; and an Environmental Specialist, knowledgeable on carbon emissions assessments. In addition to these key professionals, the consultant team would include support personnel as needed for various elements of the study, including enumerators, statisticians, computerized database developers, etc.

Objective and Scope of Work

3. The M&E Framework for the project is defined by the Logical Framework and the Results Framework, along with their various indicators and timelines. Implementation of these frameworks, and the collection and analysis of the initial data set, is the objective of this study. The scope of work is as follows:

a) Planning and Organization of the Study

   (i) Prepare an inception report which, *inter alia,* sets out a comprehensive data acquisition, compilation, and analysis plan to respond to the various data requirements of the Logical and Results Frameworks for the project.

   (ii) For each major element of data, e.g. railway operations, agricultural production and transport, power sector performance, establish a work plan that takes into account seasonal variations, timing of data availability, and data validation approach/entity.

   (iii) Pro-forma data presentation formats, which summarize the key monitoring and evaluation indicators, should be prepared.

b) Conduct of Study

   (i) Upon completion and approval by DFCCIL of the planning and organization phase, the consultant will mobilize the necessary teams to carry out the various elements of the study. The work will carried out under the direction of the Director Planning, DFCCIL.

   (ii) All data collected will be rigorously catalogued and sourced so as to make the study results fully replicable and to facilitate its repetition under essentially similar conditions. This is critical to assessing progress over time.

(iii) The data room established for the DFCCIL project will house all data collected. The data should be stored in electronic or physical form so as to be easily retrievable with adequate protocols to prevent loss or corruption of data.

c) Production of Impact Study Reports

4. The DFCCIL M&E Impact Study report should be produced in three volumes as follows:

(i) Volume 1 will be a manual for data collection and analysis, documenting the sources, methods of data collection, analysis and presentation used to prepare Volume 2.

(ii) Volume 2 will be the first of a series of Monitoring and Evaluation reports for the project, presenting the summary of monitoring and evaluation indicators. The first Volume 2 report will be completed well before the commissioning of the Khurja-Kanpur Phase 1 section of the railway.

(iii) Volume 3 will be the second M&E report for the project and will be initiated upon commissioning of Phase 1 (Khurja-Kanpur section) and will be completed within the first six months of operations.

5. While the above covers the Eastern DFC, DFCCIL may decide to expand the consultants' scope of work to cover both the Eastern and Western Corridor.

Annex 4: Detailed Project Description

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

1. The proposed APL Phase 1 Project consists of the following components:

   (i) Design, construction and commissioning of the 343 km Khurja – Kanpur section (US$1403 million);

   (ii) Institutional development to assist DFCCIL and MOR to develop their capabilities to best utilize heavy haul freight systems (US$50 million).

A. Physical Investments Financed

2. Physical investments proposed comprise the construction of a 343 km section of the Delhi-Kolkata Eastern Corridor (1,842 km) from Bhaupur (near Kanpur) to Khurja (near Delhi) in the state of Uttar Pradesh, India. This section will be constructed as a double line track and electrified with 2x25 KV AC, 50 Hz with an overhead Centenary System, capable of operating at a maximum train speed of 100 Km/h, envisaging an initial axle load of 25.0 tons on the track infrastructure and 32.5 tons for supporting structures. It will have automatic block signaling, new telecommunication and implementation of train radio and a SCADA Control Systems. The entire system design will support the DFCCIL's operating requirements and will be in conformity with the Indian Railways' Infrastructure.

3. The route alignment of Bhaupur-Khurja section runs mostly parallel to adjacent existing IR track; however, the alignment is on detour near big cities and town. It has been divided into three slices for Construction of Civil and Track works as shown below.

Slice	From	To	Total length	Characteristics
	RKM	RKM	Km	
101	1040 (Bhaupur Vill).	1170 (Bhatura vill.)	135	Parallel Length – 95 Km Detour Length - 40 Km
102	1170 (Kaist Vill.)	1266 (Birauni Vill.)	102	Parallel Length – 73 Km Detour Length - 29 Km
103	1266 (Jamalnagar)	1368 (Khurja)	106	Parallel Length – 69 Km Detour Length - 37 Km
Total			**343**	

4. On the parallel track section, of the existing 71 level crossings (LCs), 11 that have relatively high traffic (exceeding 300,000 TVU) would be replaced by ROBs/RUBs, spanning new as well as existing tracks. The remaining LCs would be improved by interlocking them with signals and by providing electrically operated booms. Audio-visual warning systems will be installed to ensure safety of pedestrian and vehicles using them Conventional ballasted track laid on concrete sleeper will be used. Some of these would be replaced by ROBs progressively. The alignment will be fenced at critical locations to keep people and cattle off the track. In addition, on the detour section, there will be no level crossing and 184 Road Under Bridges will be provided. The terrain in the subject stretch is generally flat and there is no major river crossing the alignment.

5. **Signaling.** A four-aspect automatic block system will provide trackside signals. A new communication system will be installed for this project with optical fiber cables laid on either side of the track. A GSM-R digital mobile communication system will be adopted for radio communication. Infrared hot box detectors will be installed to maximize safety and automatic train identification equipment will be installed at selected stations. Several measures will be adopted for energy conservation.

.6. **Contract Packaging.** Construction would be carried out through "design-build" contracts: three civil works contracts (sub-grade, bridges and track) of about 120 km each, and one system contract (electrification, signaling and communications) for the entire 343 km. These contracts would be awarded on the basis of 'Performance Specifications' that provide the basic technical parameters for the railway but permit the bidders reasonable freedom to carry out detail design. A two stage bid process will be employed for the award of DB contracts.

7. **Performance and Design Specification.** The "Design- Build" (DB) contracts will be awarded on the basis of Performance Specifications (PS). PS would specify the broad physical and technical parameters for the railway so that the bids received are for a comparable product. The PS would, however, allow the bidders to propose proven and cost effective technologies and innovative designs, as also the freedom to use efficient and cost effective construction methods. The PS will comply with IR existing operational standards and meet the requirements of interoperability over feeder lines, as well as other segments of DFC to be built later. The PS would also ensure that there is "no propriety lock in" for subsequent contracts for the following segments of DFC.

8. **General Consultant/Owner's Engineer.** DFCCIL has engaged a General Consultant/Owner's Engineer (**"GC/OE"**) for the design and procurement of double line electrified track, including all civil engineering structures, earth work / blanketing, track work, bridges, modification of existing Road Over Bridge (ROB), junction arrangements, rail flyovers, buildings, remodeling of existing IR yards, relocation/modification of utilities, 2 x 25 KV electrical overhead line, traction power supply system, SCADA, general power supply system, signaling system, telecommunication works and other related infrastructure to be executed through Design-Build (Lump Sum) contract. The General Consultant will draft the PS, which would then be reviewed by DFCCIL, as well as a Design Review Consultant. Thereafter, it would be included in the draft bid document for securing Bank "no objection'.

9. The PS is based on the design and investigations carried out by DFCCIL through a Consultant, covering following items in respect of different components of civil works:

- Alignment design (including centre line, longitudinal section and quantity of earth work in cutting and filling)/staked alignment
- Land plans of the section
- Preliminary geotechnical investigation data of bridges
- Preliminary General Arrangement Drawing (GAD) for bridges
- Preliminary GAD/Schematic Plan for junction arrangements
- Schematic Plan for Rail Flyovers
- Preliminary sample GAD for modification of existing Road Over Bridge
- Details of utilities to be relocated/modified
- BOQ for the stretch (including item wise analysis of rates)

These have been reviewed and validated by an independent General and Proof Consultant.

10. The PS specifies IR and international standards for equipment to be used on this project.

- International Standards
- European Norms (EN)
- National Standards (BS, AS, JIS, etc)
- Manufactures Proprietary Standards
- Verifiable "best practice" guides

11. The PS includes the key design requirements for various systems of the railway: sub-grade, bridges, track and civil works; signaling system; telecommunication system; traction power supply systems; overhead equipment system; SCADA system; and the Operations Control Center.

12. **Review Consultants.** A "Civil Engineering Proof Consultant" has been appointed for proof checking and validation of field data, estimation of quantities and cost, design calculations, as well as the general arrangement designs.

13. A Design Review Consultant (DRC) has been engaged to review the proposed system design and concept plan as well as the Performance Specifications for the D-B contracts. DRC will suggest changes/alterations that would enhance bidder interest and promote competitive bidding, comment if the technical parameters specified allow reasonable flexibility to bidders to offer innovative cost effective designs while serving the needs for standardization, inter-operability and non-inclusion of proprietary equipment, as well as any changes to enhance cost effectiveness.

14. **Necessary Investments outside the Project.** IR has already approved projects for upgrading about 3,000 km of feeder lines that serve the Eastern DFC to carry 25t axle load trains; these would be completed by year 2015, well before the completion of the project. IR will also procure 10,000 numbers of 25t axle load freight wagons and 178 high power electric locomotives. IR has assured that appropriate rolling stock would be procured in a timely manner and required maintenance facilities would be established. Upgrading of feeder lines and procurement of freight wagons and electric locomotives are being funded by IR outside the project.

B. Institutional Development Component

15. The Institutional Development Component will assist DFCCIL and IR to develop the capabilities, both technical and operational, to best utilize Heavy Haul freight systems. This involves technical assistance for:

- Assisting DFCCIL evolve into an efficient and commercially oriented provider of heavy haul infrastructure services with the requisite capability, both in terms of staff and systems, to deliver this ambitious project.
- Providing Indian Railways access to international technologies, tools and best practices in Heavy-Haul Freight Railway Systems and commercial freight planning.

16. The overall objective of the Program is to increase the technical and managerial capacity of IR to implement heavy-haul freight improvements that will improve the safety, capacity, quality and competitiveness India's rail freight services. The Program Activities are shown in Table 1 below:

Table 1: Scope of Activities

Activities	Scope
a0: Program management	Program analysis, design, presentation, technical and process management, dissemination, reporting, financial monitoring and control, and overall responsibility for deliverables.
a1: Technical studies	International experience and benchmarking studies; market research, technology assessments, network studies, economic and financial feasibility studies, business and management studies, environmental and safety studies.
a2: Study tours	Visits to other heavy-haul railway systems internationally and sites according to specified study tour objectives and targeted dissemination of findings.
a3: Twinning	Long-term learning and supporting relationships with other heavy-haul railways or railway research institutions.
a4: Dissemination	Program website, technical reports, stakeholder consultations, workshops and seminars, including exposure to international peer review.
a5: Staff Training	Management and staff training programs, particularly in regard to application and management of new technologies, management methods, and operating modes and skills for employees.
a6: Support for heavy-haul research capacity	Funding of railway research institute programs or personnel where these can be shown to contribute materially to the objectives of the Program.
a7: Equipment and software procurement	Indicative examples include laboratory, testing equipment, test tracks, driving simulators, management information and control systems.
a8: Project preparation	'Seed' funds for the preparation demonstration projects, e.g., preparation of a logistics centre project on a PPP basis.

17. The three Modules within which activities are to be specified are:
    - m1: DFCCIL institutional strengthening module
    - m2: Technologies research and evaluation module
    - m3: Freight markets and long-term commercial freight planning module

18. A preliminary scoping of the key elements to be included in each module is shown in Table 2.

Table 2: Key elements of modules

Module	Key elements
m1: DFCCIL institutional strengthening	The primary focus of this module will be on developing capacity, and implementing controls and processes for DFFCIL to be able to conduct itself as an efficient, commercially oriented provider of infrastructure services. The module will therefore assist with capacity, skills, process development and systems in areas such as: • Organization and corporate development of the Company, including management and organization structure, human resources planning and development, staff training / study tours, financial management, social and environment systems, governance systems, etc. • . • Project and construction management, for the delivery of major line sections on the planned DFCCIL network. Includes project programming, approvals system for design and construction, document control system, systems for monitoring quality and quantity, mobilization of required resources, database of all contractors and consultants and their performance, safety of workers and others and emergency action plan, database of information frequently sought by stakeholders at project level, complaints-handling system, and public disclosure policy. • Infrastructure operations and maintenance in accordance with best international practices adapted to India's circumstances and cost structures. Sub-systems will include: train control and management; review of train operation performance; identification of factors causing a negative impact on operational performance; preparation of schedules and monitoring of hand over and take-over of trains at junctions with feeder lines; train safety monitoring; liaison with Zonal train

	operators; maintenance of track, signaling, communication, IT, OHE and power supply, any DFCCIL shunting locomotives or maintenance rolling stock; buildings and facilities; performance of electric power and maintenance contracts; accident relief and rescue and accident investigation; preparing the Operations Manual. • Commercial and financial strengthening, including capability in business planning, financial planning, and risk mitigation; track access charge computation and setting; financing new investment projects from domestic and international, public and private sources, including but not limited to PPP approaches. • Health, safety, environment and social management focusing on "steps" to integrate environment and social risk assessment into project preparation and implementation minimizing/ mitigating adverse impacts. • Information needs and IT technology; commercial needs and systems incl. MIS for DFCCIL operations management covering train control and movements, interaction with Zonal railways, safety systems (hot box detection, hanging part detection), compatible with MOR systems.
m2: Freight markets, long-term commercial freight planning.	This module will review, analyze and recommend marketing and commercial strategies to guide reinvention of IR's freight services as envisaged in Vision 2020, and in particular will identify the long-term commercial implementation plan for heavy-haul freight activity: • Segmented market research and analysis, and stakeholder consultations into long-term freight customer needs. • Freight traffic costing, financial contribution analysis and identification of more competitive market-based pricing models and freight tariff policies (including review of any non-competitiveness due to support of passenger service). • Network-based traffic and train movement modeling to help identify optimal heavy-haul train operating strategies, a viable heavy-haul freight sub-network of the total IR railway network, and its use by specific market segments. • Examination of freight service quality, including performance standards; management structures; control systems; seamless service between Zones; integration into longer supply-chains; establishment of reliable cold-chain services for transport of perishables; associated logistics needs etc. • Development of a commercially viable and market-oriented and detailed Heavy-haul Implementation Plan including development of a long-term plan for freight, IR heavy-haul network, (including dedicated DFCCIL routes) train operations, terminals and other necessary components of the plan, a time-frame, investment needs and sources and business organizational needs to ensure market focus and delivery. • Project development for the establishment of logistics centers or other freight facilities alongside DFCCIL routes, either by PPP or other project delivery structures. • Feasibility studies and project development for new DFCCIL routes;
m3: technologies research and evaluation	In accordance with Vision 2020, this module shall review, analyze, recommend the technologies in the following areas: • Infrastructure: track standards and design; switches; power requirements and catenary; bridges; loading gauge (e.g. for double-stack); track inspections; welding methods; rail grinding; maintenance regimes etc). • Rolling-stock: axle-loads; motive power; wagon capacity and design;, draw-gear; train braking systems; distributed motive power, hot-box detection; wheel testing and management, rolling-stock maintenance regimes, etc. • Power supply and energy savings: full fuel cycle analysis of the power supply to reduce reliance

	on fossil fuels; technology assessments for energy efficiency of freight operations; methodologies to assess and certify of carbon savings. • Freight traffic operations: Train-load and train-lengths and infrastructure consequences (e.g. loop lengths, marshalling yards); loading gauge (for double-stack) dispatching and control; train protection with guards; driving methods; MIS. • Terminal operations: loading/unloading methods and rates; required development parameters; equipment needs; modification of existing terminals; etc. • Taking account of the results of the 'markets and commercial applications module' (below), development of system parameters for heavy-haul freight systems suitable for India's markets and circumstances, and individual specifications for key asset components (infrastructure, motive power, wagons and maintenance equipment). • Developing a Research and Design center for Heavy haul railway technology in India.

19. The Contract for this work will be administered by DFCCIL. The technical oversight of Module m1 will be led by a DFCCIL IS Committee of nominated senior managers under the Chairmanship of the Managing Director of DFCCIL. Technical oversight of modules m2 and m3 will be by a Steering Committee consisting of the HHC or a sub-committee so delegated for that purpose under the Chairmanship of the Executive Director Perspective Planning (EDPP).

Annex 5: Cost Estimate

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

(US$1 = INRs.45.0)

SN	Description	Khurja-Kanpur		Ludhiana-Khurja		Kanpur-Mughalsarai		Total	
		In INR (Crore)	In US$ (million)	In INR (Crore)	In US$ (million)	In INR (Crore)	In US$ (million)	In INR (Crore)	In US$ (million)
1.1	Civil Works	3,288	731	2,272	505	3,590	798	9,150	2,034
1.2	Electricals	691	154	653	145	832	185	2,176	484
1.3	S & T	513	114	487	108	663	147	1,663	369
1.4	Price contingencies @5.4% per year	388	86	295	65	439	98	1,122	249
1.5	Working Capital (1.85% of item 1.1 to 1.4)	90	20	69	15	102	23	261	58
1.6	Insurance (7% of item 1.1 to 1.4)	342	76	259	58	387	86	988	220
1.7	Physical contingency (5%)	244	54	185	41	276	61	705	156
1.8	TA	225	50					225	50
1.9	IDC	756	168	574	128	855	190	2,185	486
	Total Project Cost	**6,537**	**1,453**	**4,794**	**1,065**	**7,144**	**1,588**	**18,475**	**4,106**
	Preparation Advance		3						
	Front End Fee		2.44						
	Total Financing Required for Phase 1		**1458.44**						

Annex 6: Implementation Arrangements

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

1. DFCCIL would implement the DFC program, i.e., plan, build and operate the Dedicated Freight Corridors. DFCCIL was registered in October 2006 under the Companies Act of 1956. Presently it is fully owned by MOR; however, sale of a minority of shares to other interested Public Sector Undertakings (PSUs) is permissible.

A. DFCCIL – IR Relationship

2. GOI required that the relationship between MOR and DFCCIL should be set out in a Concession Agreement, based on three principles. DFCCIL should: be commercially independent and at 'arm's length' from IR; be market-focused; and, while not operating commercial freight train services itself, offer non-discriminatory access to 'qualified operators' (the responsibility for qualification remaining with MOR).

3. The proposed concession has three significant 'pivot-points': MOR, as the owner of the concession company, has legitimate majority shareholder rights under the Companies Act; MOR-owned freight trains will be DFCCIL's chief source of income, so that MOR can therefore influence DFCCIL performance through its market power; and, MOR is the legally empowered body to determine the qualification of third-party operators to access DFCCIL assets. These other 'arms' of MOR's influence make it imperative that there be some strong founding agreement between MOR and DFCCIL that captures the government's underlying project objectives, the principles on which the special purpose company model was established, and the specific roles, rights and obligations of the entities that are crucial to project and company success.

4. **Concession Agreement.** The draft Concession Agreement sets out, *inter alia*, the agreed project and concession objectives, the rights and obligations of the parties in achieving those objectives, and an enabling framework to incentivize the parties to provide and use the corridors efficiently and effectively.

5. In addition to clauses that provide the usual legal safeguards of various interests of the parties, the Concession Agreement also reflects the government's specific objectives for this project by: (a) creating management autonomy and independence of DFCCIL and giving market focus to DFCCIL activities with regard to construction and maintenance; and (b) seeking to promote non-discriminatory access to the corridors.

6. In terms of management autonomy, the scope of DFCCIL operations are defined in the Concession Agreement to include procurement of the design, construction, commissioning, operation, train movement control, maintenance and repair of the corridors.

7. Access to other operators is envisaged on a non-discriminatory basis. The only rail freight train operators authorized to use the corridors at opening will be the existing Zonal Railways and other qualified operators. But MOR undertakes that as soon as practicable after completion, if DFCCIL is performing its maintenance and operational obligations under the Concession Agreement, and if it is consistent with the policies of the Indian Government, MOR will publish and make publicly available the qualifications and criteria which must be met by any train operator to qualify as an authorized rail user.

Track Access Agreement

8. A Track Access Agreement is being drafted as an Annexure of the Concession Agreement. It will govern the track access charges paid by MOR, for use of the Corridor. The Agreement also sets out performance targets and conditions of use.

9. Track Access Charges themselves will consist of a fixed capacity charge which will cover all the costs which are fixed in nature and a variable charge component which would be linked to intensity of the usage of the corridor in terms of GTKM moved and the stipulated life of the asset. DFCCIL will be rewarded or penalized for over or under achievement of key performance indicators pre-specified in the agreement to ensure a high level of performance. Both the variable and fixed elements of the Track Access Charges are designed to l provide a significant incentive to DFCCIL to expand throughput and deliver additional train paths from the infrastructure. At this stage it is expected that MOR will negotiate directly with energy companies for electrical power while DFCCIL will charge for the capital and operating costs of the trackside catenary equipment.

10. DFCCIL and Railway Board approved Concession Agreement, including its Schedules, in a form acceptable to the Bank. However, given that the final costs of the project are not yet determined, and the first freight trains will not run for at least five years, there is time for the parties to finalize the details of the Track Access Annexure during project implementation.

B. DFCCIL Organization Structure

11. DFCCIL was registered in October 2006 under the Companies Act, 1956[13]. DFCCIL is a deemed Railway Administration[14] as defined under The Railways Act 1989. The Board of Directors of DFCCIL comprises the Chairman (part-time), Managing Director[15] (MD), four whole time directors – Director Finance, Director Infrastructure, Director Project Planning (PP) and Director Operations and Business Development (OBD); two part-time official Directors[16] and two part-time non-official directors (independent directors)[17]. The current strength of the Board is thus 9 against the maximum strength of 12 as specified in the Articles of Association of the company. There is a three-member Audit Committee with two independent directors and the IR nominated director. There is a company secretary to the Board.

12. The current staff strength is around 350, of which 140 are on deputation from Indian Railways (IR), 31 are in the process of permanent absorption and the balance is outsourced. Staff members on deputation are experienced in the systems, standards and practices of IR. DFCCIL has been entering into annual memorandum of understanding (MOU) with IR in accordance with guidelines issued by the

---

[13] The cumulative expenditure as on March 31 2010 was Rs.117.27 crores (previous year Rs.78 crores) and capital commitment as on that date was Rs.1588.84 crores (previous year Rs.1498 crores).

[14] A Railway Administration is a unit of general superintendence and control of a railway system with a defined area over which they exercise jurisdiction. DFCC is a Railway Administration as defined for non-government railways and as a corporate entity is the owner of the railway which is being built for the purpose of public carriage of goods. As a Railway Administration DFCC has among others the power to execute all works necessary for the purpose of constructing or maintaining a railway and is entitled to the protection and authority available to a Railway Administration under the Railways Act 1989.

[15] At present the position of MD is vacant and is expected to be filled by early April 2011by a fresh incumbent. In the meanwhile Director Infrastructure is holding charge of MD.

[16] Adviser Infrastructure IR, Principal Adviser to Dy Chairman Planning Commission

[17] Mr D T Joseph Ex-Secretary, Government of India and Prof. Bhaskar Gupta Department of Electronics and Telecom Engineering, Jadavpur University are part-time non-official Directors on the BOD.

Department of Public Enterprises (DPE). Typically the MOUs have defined construction related parameters to monitor achievement of the targets for appraising the working of DFCCIL.

Institutional Strengthening (IS)

13. An IS Cell headed by the MD, consisting of DFCCIL Directors will be responsible for taking forward the institutional strengthening component for DFCCIL to help develop manpower, systems, and other capabilities of the new organisation. The project includes a technical assistance component to help develop inhouse capacity and expertise in all aspects of Heavy Haul freight technology within IR/ DFCCIL, including the establishment of twinning arrangement between DFCCIL/IR for the transfer of Heavy Haul freight technology. IR will be the lead agency in this activity (although DFCCIL will be the main agency responsible for procurement and contract management aspects). The Committee on Heavy Haul Freight Railways, consituted by the Ministry of Railways, will be the nodal body for implementation.

Human Resource Development

14. The DFCCIL Business Plan refers to the need for preparation of human resource development plan for transition to permanent staffing and covers management, training, recruitment and capacity building of staff. A draft HR Development Plan has been prepared enunciating the vision and strategy for a distinct organizational ethos for DFCCIL and outlining its staffing requirements over the construction and operations phase. The plan provides the road map to attract and retain staff, develop skills and (in time) have in place its own permanent cadre[18].

Communications Strategy

15. DFCCIL intends to: (a) put in place appropriate mechanisms to share information in a transparent, timely and efficient manner; (b) strengthen public understanding and support for the project and create an enabling environment for project implementation; and (c) enable DFCCIL to publicly communicate the activities, impacts and benefits of the Project, especially benefits to its stakeholders and the overall impact on economy.

16. DFCCIL has prepared a draft Communications Plan and has committed to some key actions: (a) setting up of a communications task team led by the Managing Director; (b) hiring of dedicated Communications staff at a senior level, and support from professional communications firms/consultants reporting to the task team; (c) commissioning a Communications Need Assessment Survey at national and local level, leading to finalization of the communications strategy; (d) Website improvement and preparation of information packages; (e) training of field staff for critical dissemination, disclosure, etc.

C. Project Implementation Arrangements

17. Construction of the Eastern DFC Program will to be implemented by DFCCIL's Construction Unit, headed by the Director Project Planning (PP) located at Head Quarters, working through its field

[18] The Memorandum of Understanding between DFCCIL and IR specifies continued assistance by MOR in deputing Indian Railway Officials on tenure basis to work in DFCCIL. The company is authorized by its articles of association to create posts, appoint persons thereto and to remove officers, staff etc, engaged for permanent, temporary or special services; and fix their salaries or emoluments, allowances etc. Thus, sufficient powers for recruitment, remuneration and provisions for deputation from IR are already prescribed for DFCCIL. Based on the learning's of other CPSUs DFCCIL proposes to separately develop a permanent cadre of officers for conserving institutional memory and ensuring organizational sustainability.

units. At the operating level, each field unit is headed by a Chief Project Manager (CPM) reporting to the Director (PP). There are five field units for the Eastern Corridor (of which four units will implement the construction of the IBRD funded project in three phases), and six field units for the Western Corridor. DFCCIL's Business Plan proposes to put in place a matrix organization structure with Functional Directors responsible for technical disciplines, e.g., construction, finance, etc. and operational Executive Directors responsible for operations. The Business Plan envisages an Executive Director responsible for operations on each corridor, including one for the Eastern Corridor. During the construction phase the Project would be under the control of the Director Project Planning, who would hand-over to the Executive Director Eastern Corridor upon the commissioning of a completed section.

18. During the construction phase, DFCCIL envisages an overall staff strength of around 930, with 30 staff in each field office. Figure 1 shows the DFCCIL organization structure.

19. Key personnel are being trained in the Bank's Procurement, Financial Management, Social and Environmental guidelines. A Social and Environmental Management Unit (SEMU) established within DFCCIL would be responsible for the implementation of all social and environmental safeguards. Similarly, a Procurement Cell adequately staffed and trained in Bank procurement has been established. In addition, support will be given by the General Consultant (GC) and a Legal Advisor who would advise on the preparation of bid documents, provide assistance during the bidding process and also coordinate contract management activities once the main contracts have been awarded. Quality and Safety Audit Consultants (QSAC) will carry out quarterly reviews and submit reports to DFCCIL management. This project level organization is shown in Figure 2.

20. For contract management of design-build contracts, the General Consultant (GC) would assist DFCCIL initially during contract design and evaluation, and would either continue as or replaced by Project Management Consultants (PMC) during contract execution. Each field unit under the project will be supported by PMCs represented by a Team Leader and two Resident Engineers. The engineering head of the PMC will be based in DFCCIL HQ in Delhi, where a design cell will also be set up for detailed checking of the designs submitted by the contractors.

Bid Document Preparation and Bidding Process

21. The Pre-qualification process and Bid Document preparation for the initial three Civil Works and Track contracts has been completed and is under Bank review. The Systems Contract is expected to follow with a one year lag from civil works contract however, its duration is expected to be 36 months, whereas the civil works contracts are expected to be of 48 months duration. All four contracts are expected to be completed at about the same time.

22. The Design-Build approach adopted for the project requires a two-stage bidding process, with time allowed for approving innovative and cost saving designs not currently part of IR's available standards. However, this extended time for bidding does mean that bids would not have been received prior to Board Presentation. To achieve some degree of certainty on the cost estimates for the project, a Civil Engineering Proof consultancy has been awarded to review the cost and quantity estimates and provide a higher degree of assurance that these are reasonably accurate.

Employer's Engineer

23. DFCCIL's General Consultant (GC) would provide services throughout the design and bidding process until the bid evaluation report and the contract award. DFCCIL's Legal Advisor would provide legal advice in counseling DFCCIL during the bid clarification process, the contract award period and the implementation of the construction contracts. Prior to awarding the Design-Build contract(s),

DFCCIL would recruit and select the Project Management Consultant (PMC) through international competition. The PMC would supervise the performance of the contractor (s) in the Design, Construction and Completion Phases according to TOR agreed with the Bank.

Third Party Monitoring

24. Quality and Safety Audit Consultants (QSAC) would monitor the technical quality of the constructed works, and the implementation of safety measures. All requests for inspections from the contractor to the General Consultant would automatically be copied to the QSAC, so as to afford the latter an opportunity to witness the tests conducted by the General Consultant on a random basis. The QSAC would produce Quarterly Monitoring Reports which they would submit to the Audit Committee, with a copy to the Bank. QSAC would inform DFCCIL management within 24 hours of being made aware of any development that could threaten project implementation, particularly with regard to safety arrangements.

U.P. State Government's Role

25. The construction of ROBs will need to be agreed and coordinated with the U.P. State PWD, which controls the approach roads. This will be accomplished through the regular consultations between IR and the U.P. Public Works Dept., and in-principle agreement has already been reached during these consultations.

Project Implementation Manual

26. A draft Project Implementation Manual covering Financial Management, Procurement, Contract Management, Social and Environmental Safeguards, and Governance is being prepared by DFCCIL. The Manual will incorporate the Governance and Accountability Action Plan (GAAP) and the Corporate Governance and Financial Accountability (CGFA) plan. Features related to voluntary disclosure of information, grievance redressal mechanisms, internal audits, independent directors and other provisions of the GAAP and CGFA have been incorporated into the project implementation arrangements.

On-Lending IBRD Loan – Subsidiary Loan Agreement

27. A Subsidiary Loan Agreement (SLA) will be executed between MoR and DFCCIL, outlining the project implementation responsibilities and the terms of flow of funds for the Bank loan. The Bank loan will transfer to MOR on IBRD terms on back-to-back basis, and MOR will transfer these funds to DFCCIL on terms which are under finalization. An SLA has already been entered into for the Project Preparation Facility (PPF) which needs to be further elaborated for the project. The Cabinet Note approving the project specifies that the assets created will be owned by DFCCIL. The terms under which DFCCIL will acquire such ownership must also be clarified. The equity funds for the project are the responsibilty of MOR, as specified in the Concession Agreement, and also constitute the counterpart funding for purposes of the Project.

Legal Agreements

28. Legal agreements involving the Bank are the Loan Agreement between the Bank and India, and the Project Agreement between the Bank and DFCCIL. Agreements not involving the Bank but required for this project, would include the following:

(a) *Concession Agreement* between MoR/IR and DFCCIL.

(b) *Subsidiary Loan Agreement* (SLA) between GoI/MoR and DFCCIL covering general project implementation responsibilities and terms for the flow of funds.

(c) *Track Access Agreement (TAA)* between DFCCIL and IR.

Quarterly Progress Reports

29. DFCCIL will furnish Quarterly Progress Reports to the Bank, highlighting progress made on various project activities, including physical and financial progress of civil works, implementation of GAAP, status of various procurements and audits, land acquisition and utility shifting, RAP and EMP implementation, status of various statutory clearances, key issues faced during implementation and status of compliance to various agreed actions during supervision missions and any other reviews. The Quarterly Moniitoring Reports prepared by the QSAC will form the basis for the QPRs, and will include responses by DFCCIL management on any issues raised in the QMR.

Management reporting

30. There is quarterly reporting on progress of work to the Board. Monthly provisional financial statements are being prepared. In addition, there are Monthly Confidential Demi-Official (MCDO) reports to the Chairman Railway Board and half-yearly and annual review report to DPE on MOU performance. DFCCIL may consider carrying out an assessment of reporting requirements to ensure that reports that are needed are generated in the form that facilitates decision-making. The assessment of organization wide reporting requirements could be made part of the proposed ERP implementation and cover reports required by: (a) management; (b) statutory and regulatory authorities; (iii) lending agencies etc.

D. Corporate Governance and Risk Management

31. Central Public Sector Undertakings (CPSUs) have a mandate for adhering to prescribed corporate governance requirements. The Department of Public Enterprises, Government of India has issued a mandatory code of corporate governance for CPSUs irrespective of whether or not they are listed in the stock exchange[19].

32. **Independent directors and audit committee.** Currently DFCCIL Board has two independent directors, who are also members of the audit committee; one of them is the acting chairman of the audit committee. The audit committee's scope of work has been enlarged in accordance with the DPE guidelines. The audit committee meets quarterly.

33. **Risk management.** The CPSU corporate governance framework requires DFCCIL to develop suitable strategies for risk identification, assessment and mitigation. A major risk for DFCCIL is its capacity to implement these very large infrastructure projects, and thereafter operate and maintain them. There are potential risks of delayed land acquisition, time and cost over-runs, high unit cost of operation, in-appropriate contract packaging and contracting options, use of other than the best technology, weak project/ contract management, interface management; funds availability, financial leverage reflected in the fund flow arrangements; timely availability of staff; robustness of institutional arrangements to handle a high rate of growth in activities etc. There is risk of commercial sustainability of DFCCIL itself which will depend on the Concession Agreement being finalized between IR and DFCCIL. In the area of governance, political interference, inadequate financial and functional autonomy are risks.

[19] The aim is to institutionalize good corporate governance practices that are broadly in conformity with SEBI guidelines (clause 49 of the Listing Agreement), in CPSUs as ultimately, these CPSUs would approach the financial markets for its requirements.

34. DFCCIL has prepared a broad structure of risk management which proposes the establishment of a risk management department under GM (Risk Management), initially reporting to Director (Finance). The risk management department would have two functions: (a) risk management; and (b) internal audit, covering both financial and technical aspects. The initial risk management framework proposes the establishment of a risk register that decomposes the construction activities into a set of risk events for assessment and mitigation based on the severity. The framework also lists contract management and insurability of projects as important mitigation measures.

35. DFCCIL has already created a new position of GM (Risk Management) reporting to DF[20] with dedicated resources. GM (RM) is will manage the appointments of DGM (RM) as well as DGM (Internal Audit), and put in place the required systems and procedures with the support of external professionals/ experts, where required. Need based forensic audit is also being considered by DFCCIL as a risk management tool. Monitoring of project GAAP will be the responsibility of GM (RM).

36. A corporate governance and financial accountability action plan has been prepared and discussed with DFCCIL, see Annex 7 Tables 3 and 4.

[20] After the department is set up, GM (RM) would report to the MD.

INDIAN RAILWAYS ORGANIZATION CHART

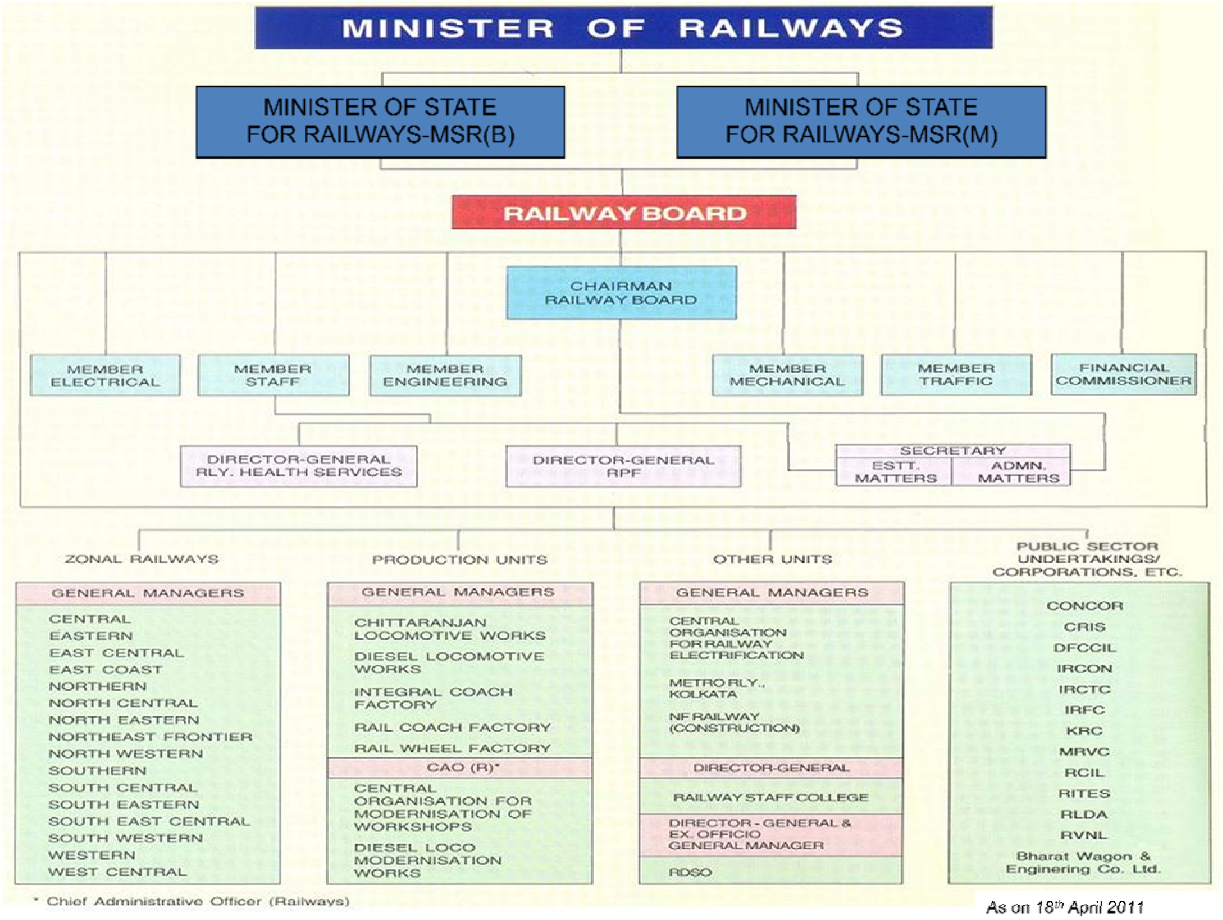
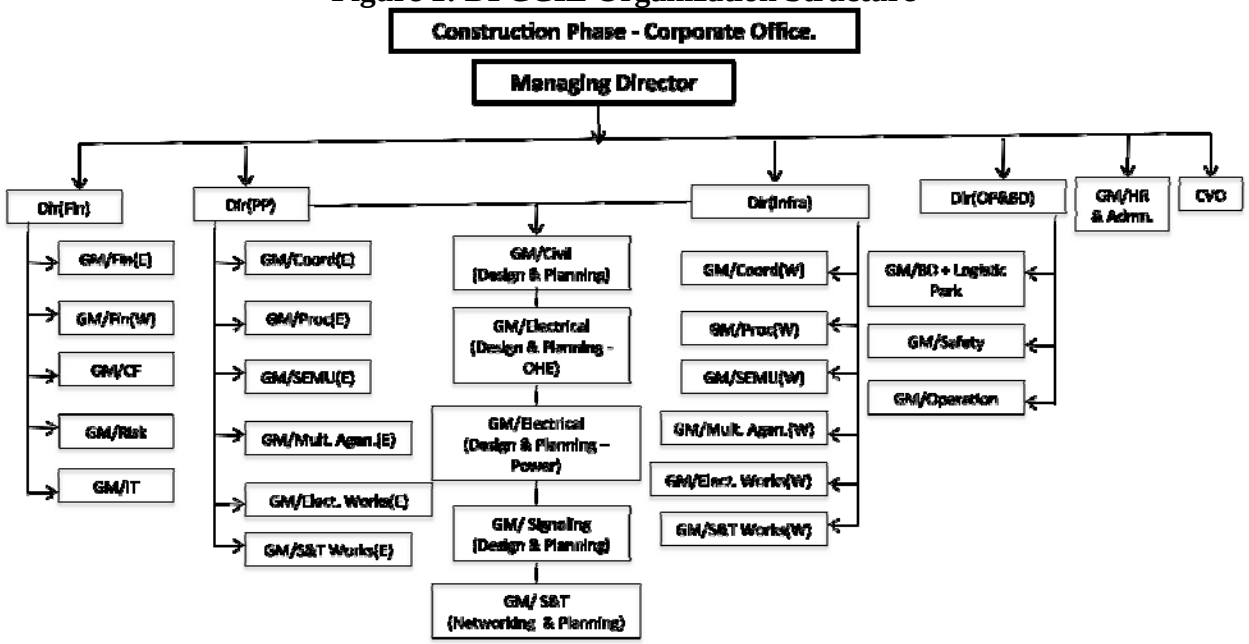
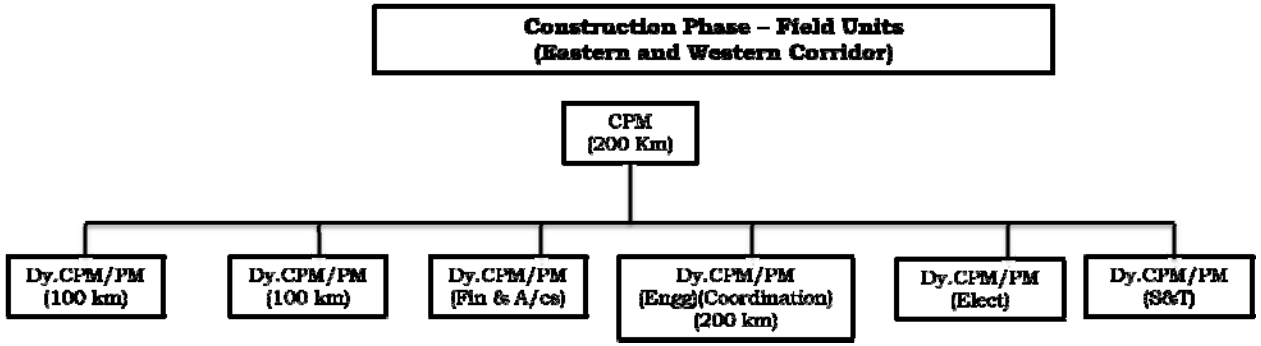


Figure 1: DFCCIL Organization Structure



Organization Chart – DFCCIL Field Units



Operational Phase Chart

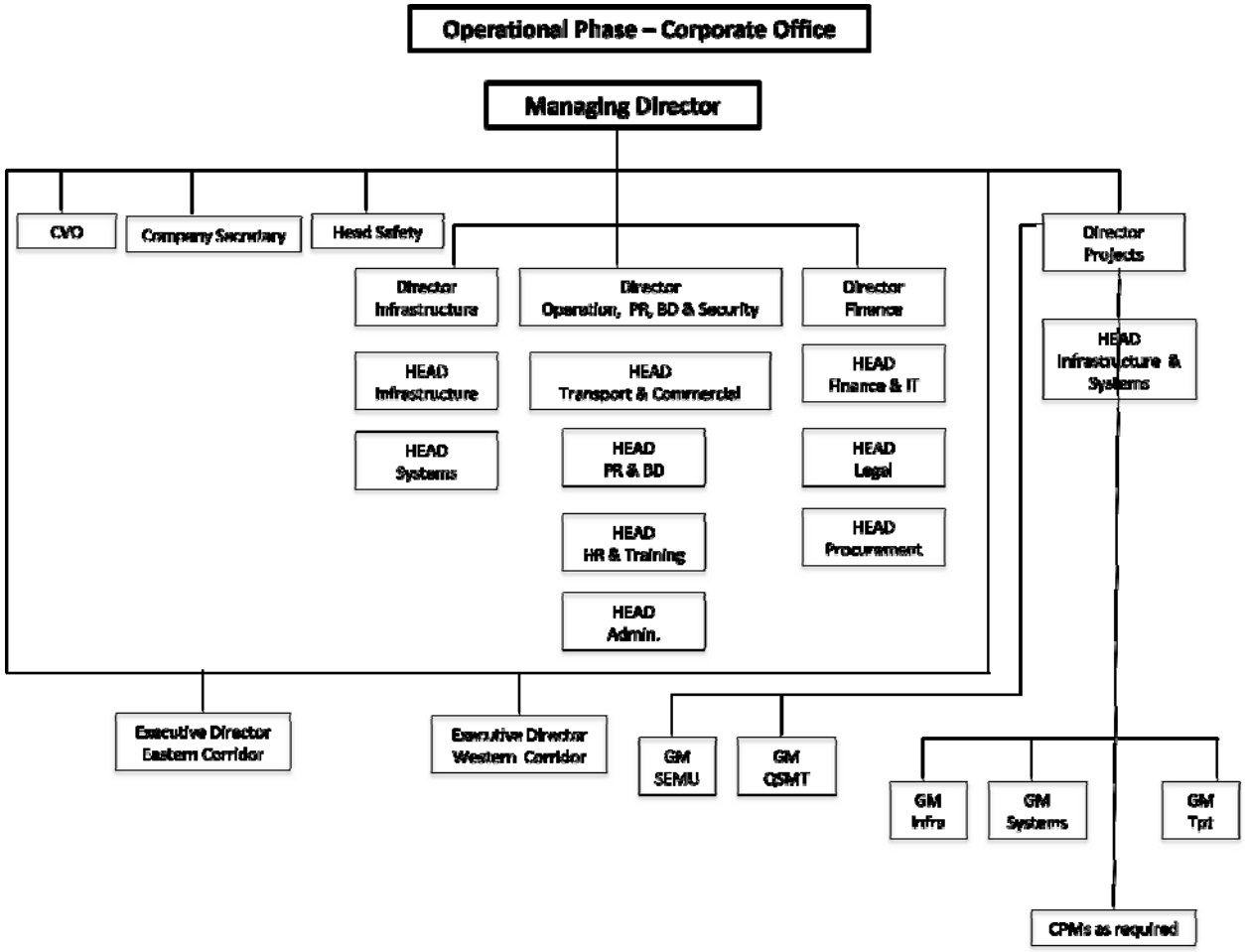
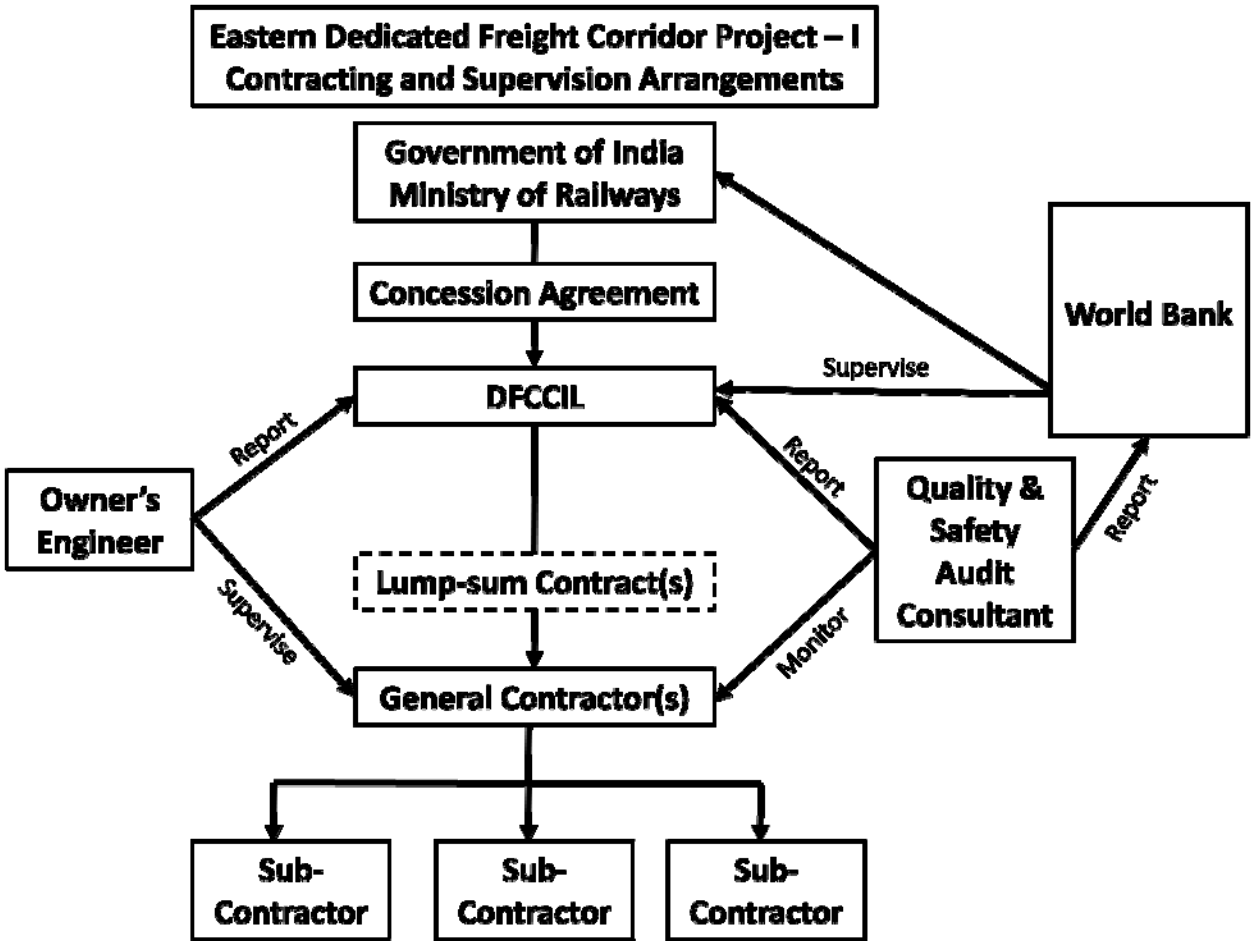


Figure 2: Project Level Organization



Annex 7: Financial Management and Disbursement Arrangements

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

1. **Summary of Financial Management (FM) Assessment.** DFCCIL, the implementing agency for the project, was registered in October 2006 under the Companies Act, 1956. DFCCIL is a deemed Railway Administration[21] as defined under The Railways Act 1989. DFCCIL is in the process of putting in place the required financial management systems and controls to account for and report on the project resources and expenditures accurately.

2. **Financial Management Strengths, Weaknesses and Mitigating Arrangements.** Experienced finance professionals on deputation from IR are spearheading the establishment of budgeting, accounting and reporting systems modeled around the Railways systems. However, these will be tailored suitably to meet the requirements of a company under the Companies Act, 1956, and also to comply with the Code of Corporate Governance[22] as a Central Public Sector Undertaking (CPSU) under the purview of DPE. These will be further strengthened as and when required to meet the increased requirements during project preparation and implementation. There is improved compliance with corporate governance requirements with some gaps which are being addressed[23]; International Panel of Experts have provided advice on good practices for planning and monitoring during, construction and operation of the freight corridors and steps are being taken to implement enterprise-wide integrated IT solutions. However, there is a capacity constraint in terms of manpower and skills across the organization. The organization is in the initial stages of preparation and would require significant capacity building for effectively executing the large-scale construction activities associated with the two dedicated freight corridors. A Human Resources Development Plan has been prepared laying down the strategy for manpower assessment, recruitment, training and retention of skilled manpower. The entity has not received an IBRD loan in the past and thus has no previous experience of the Bank's FM policies and procedures. However, as a mitigation measure in this regard, select DFCCIL executives have already undergone some familiarization in World Bank procedures as well as FIDIC documentation and will undergo further familiarization/ training at appropriate junctures which will cover Bank's project FM, procurement and contract management requirements.

3. As part of preparation the Bank FM team has been reviewing the financial management, corporate governance and accountability arrangements in DFCCIL which has indicated that DFCCIL is institutionalizing certain cardinal *principles*, in consonance with other Railway establishments and CPSUs in India in areas like accounting, auditing, internal controls, budgeting and reporting which would lay the foundation for a sound financial

[21] A Railway Administration is a unit of general superintendence and control of a railway system with a defined area over which they exercise jurisdiction. DFCC is a Railway Administration as defined for non-government railways and as a corporate entity is the owner of the railway which is being built for the purpose of public carriage of goods. As a Railway Administration DFCC has among others the power to execute all works necessary for the purpose of constructing or maintaining a railway and is entitled to the protection and authority available to a Railway Administration under the Railways Act 1989.

[22] Refer Table 4 for corporate governance assessment.

[23] Detailed corporate governance assessment provided in Annex 6.

accountability and corporate governance framework in the organization. The processes need to be further strengthened, enhanced and tested to achieve the financial accountability and corporate governance standards required when the large design-build contracts under the IBRD (and JICA) get awarded. This review has identified a few areas where DFCCIL needs to take quick actions to further strengthen corporate governance and financial accountability arrangements and the key actions required in this respect has been agreed with DFCCIL[24]. (Refer to Table 3 for the Action Plan). The overall FM risk for the project is rated substantial as shown in the Table 1 below.

Table 1: FM Risk Rating

	Risk Assessment	***Risk Mitigating Measures***	***Residual Risk***
Inherent Risks			
Country level (India)	M	IBRD loan funds will flow to DFCCIL through MoF and MOR on back to back basis on IBRD terms. Counterpart funds will flow to DFCCIL under country budget process as equity.	M
Entity level (at DFCCIL level)	H	Action plan for gaps in corporate governance and financial accountability/ management arrangements will be agreed by appraisal. Several actions have been initiated in the areas of independent directors appointment, internal audit strengthening, FM manual preparation, IT implementation. Balance actions would be required during project implementation.	S
Project level	H	Internal controls are being built into the project design with enhanced internal audit and improved contract management. Project Implementation Manual has been developed covering all aspects of the project including FM and contract management and will be agreed with the Bank by appraisal.	S
Overall inherent Risk			M
Control Risks			
Budgeting	H	Budgeting, monitoring being strengthened. Budget allocations will be based on annual work plans. Cash forecasting will be implemented to strengthen funds management. Budgeting and monitoring guidelines are being updated.	S
Accounting	H	Separate project trial balance will be prepared. Appropriate accounting and reporting formats will be put in place; steps are being taken for implementing ERP systems; FM manuals/ guidelines are being updated.	S
Internal Controls	H	Delegation of Powers is being updated and manuals are being developed. Internal audit coverage is being	S

[24] These include fully functional audit committee with independent directors having broad scope and coverage; strengthened internal audit function; upgraded manuals and guidelines; enterprise risk management systems and implementation of enterprise wide IT solutions etc

		enhanced through inclusion of technical, procurement and contract management aspects, and auditor selection process will be strengthened to ensure audit quality. Project internal audit TOR will be shared and agreed with the Bank. Audit committee with independent directors will play a significant role in continuous strengthening of the function and assuring its independence. Internal audit manual/ guidelines are being tested. Quarterly technical audit has been built into project design and would be carried out by the QSAC. Audit reports and action taken will be shared with the Bank.	
Funds flow	S	IBRD funds will flow from consolidated fund of GoI to MoR and thereafter to DFCCIL as per IBRD lending terms on back-to-back basis. There will be no advances. Counterpart funds will flow periodically to DFCCIL from MOR on the basis of revised forecasts under existing budget process. Adequate provision for counterpart funding by way of equity will be ensured by MOR.	M
Financial Reporting	H	Quarterly IUFR will be prepared and submitted to the Bank. ERP is expected to strengthen quality and timeliness of entity and project level MIS	S
Auditing	S	Independent CA firm will audit annual project financial statement under agreed terms of reference. Selection process for top ranking audit firm in India will be agreed. Annual project audit reports will be disclosed in the client's and World Bank websites.	M
Overall Control Risk			S
RESIDUAL RISK RATING: Substantial			

4. The residual risk rating is substantial since the systems/ process enhancements have not been fully tested. The organization is in the initial stages of preparation for the construction of the dedicated freight corridors, and its current operations are limited. Procedure manuals are being developed and expanded but are yet to be tested for the expected significant increase in volume and value of activities. Although FM personnel are experienced, they are on deputation from IR and may be replaced. DFCCIL will require significant numbers of qualified and experienced manpower, whose capacity will need to be developed to meet specific DFCCIL requirements. An initial Human Resources Development plan has been prepared and is expected to be finalized by appraisal.

5. **Arrangements for oversight and accountability.** DFCCIL's Finance Department will assume overall responsibility for the FM arrangements of the project[25]. The Finance Department at Head Quarters (HQ) is headed by Director Finance and assisted by Group General Manager (GGM) Finance, General Manager (GM) Finance and Information

[25] Implementation arrangements are provided in detail in Annex 6.

Technology (IT)[26]. In each of the field units, FM function is headed by a Deputy Chief Project Manager (Finance) supported by a Project Manager (Finance) and AM (Finance). Current overall FM staff strength is 25 – 10 at HQ and 15 at the field units. According to the draft HRD plan, during construction the total requirement of FM staff including IT is 96 – 26 at HQ and 70 in the field units. The induction would be in a phased manner in line with the progress on the construction activities and expected to be completed by March 2012. Its three-member Board Level Audit Committee was reconstituted in June 2010 with two independent directors and the IR nominated director. The Company Secretary to the Board is responsible for reviewing compliance with the corporate governance code and report to the DPE on quarterly basis.

6. DFCCIL shall provide the fiduciary assurance to IBRD over proper and efficient use of the loan proceeds. The mainstream FM systems as upgraded will be used to generate the financial and other progress reports under the project. The Project Implementation Manual (PIM) laying down detailed FM arrangements, structure, procedures and controls, IUFR formats, and internal and annual project audit TORs are under finalization and will be ready by appraisal.

7. **Funds Flow[27]and IBRD loan on-lending.** The IBRD loan will flow from the consolidated fund of India through MOF to MOR and then to DFCCIL on back-to-back basis on IBRD terms and conditions. The back-to-back arrangement in line with the IBRD lending terms implies that the servicing of US$ denominated debt, managing and mitigating foreign exchange risks, exchange rate differences shall be borne by DFCCIL and all costs would be factored in the TAC. The counterpart funds received by DFCCIL under the project from MOR would be in the form of equity. As per the existing process, annual counterpart funds requirement will be released by MOR in four tranches through budget. DFCCIL would open a separate bank account to receive the project funds (both IBRD and counterpart). DFCCIL would also seek direct payments/special commitments (SC) by IBRD to suppliers/contractors based on duly authorized bills and documents. According to DFCCIL most of the payments under the IBRD loan would be of large sums to foreign/ local contractors and therefore, the direct payment/ SC options would be best suited for the EDFC project. For the JBIC funded contracts for the western corridor, direct payment option has been implemented.

8. **MOR/IR - DFCCIL Obligations.** The legal agreements between IBRD, MOR/IR and DFCCIL will lay down among others (a) the obligations of the implementing agency (DFCCIL) in relation to FM and (b) timely infusion of the required counterpart funds by MoR in the form of equity in DFCCIL. A similar clause for counterpart funds will be included in the Subsidiary Agreement between MOR and DFCCIL.

9. **Counterpart Funds.** There is a need to mitigate the risk of timely and adequate availability of counterpart funds (equity infusion) not only for the purposes of the IBRD project but also at the entity level due to other projects (western DFC and other parts of

[26] In addition, the finance team at HQ comprises an Additional General Manager (AGM), Deputy General Manager (DGM), Manager (Finance) and four Assistant Managers (AM) including one for IT.

[27] Till date, MOR funding of DFCC is through MOR equity other options being MOR loan and external debt. Currently funds flow to DFCC from the Government in the form of Gross Budgetary Support (GBS) under Plan Head – 62 Investment in PSU. Plan Head 63 investment in non-Government SPVs. Plan Head 63 implies equity funding.

eastern DFC) that are financed by JICA and others and the sizeable amounts involved. Commitment to provide funds in a timely manner will need to be provided by GOI/ MOR. Financial Analysis of DFCCIL would be able to set out the annual requirements of funds in this regard. This would be laid down in the sub-loan agreement (IBRD specific) between MOR and DFCCIL which sets out a time schedule of equity/counterpart funds to be provided by MOR. The annual MOU between MOR and DFCCIL includes the commitment from MOR of timely release of adequate funds for execution of the projects undertak**e**n by DFCCIL. The Concession Agreement also provides for adequate and timely funding of the project by MOR.

10. **Disbursement and Reporting Arrangements.** Applicable IBRD loan disbursement methods for this project are: Reimbursement, Direct Payment and Special Commitment. Supporting documents for Reimbursement applications would be quarterly IUFRs[28]. The project would seek reimbursement of expenditure as reflected in the IUFR which would also provide details of expenditure incurred till date by category and component/ package. Option for direct payment/ special commitment will also be available to DFCCIL. Supporting documentation, including completion reports, certificates and other documentation, will be retained by DFCCIL and made available to the Bank during project supervision. These would also be audited as a part of annual project financial statements audit.

11. **Reporting.** Interim un-audited financial report (IUFR) format (which has been agreed) will provide details of project expenditure incurred till date and planned expenditure. The IUFR will be prepared from information generated by DFCCIL's financial systems and submitted to both project management and IBRD. The project expenditure will be captured under separate account codes in a project trial balance to facilitate (i) effective segregation of IBRD project expenditure from other expenditure of DFCCIL and (ii) detailed monitoring of financial progress by individual contract and by milestone. The annual project financial statements, which would be similar to the format of the IUFR would be audited and submitted to the Bank and disclosed in the website of DFCCIL. Further, during project execution, periodic reports on progress in contracting and contract management and physical and financial progress would be required for monitoring project progress and initiating timely action to ward off/ manage potential disputes.

Financial management arrangements

12. The major elements of financial management accountability framework are being put in place and would need to be enhanced with expansion in DFCCIL's activities. The FM manuals are in the process of being updated and made operational with the assistance of an accounting firm.

13. **Budgeting and performance review.** There is a system of preparation of annual budgets and revisions. The budget proposals under-go three revisions during the year (i) August review based on actual expenditure during April – June; Revised Estimate in November based on actual expenditure for the first half of the year and (iii) Final Modification in February based on actual expenditure for nine months. The fund flow from

[28] DFCC would have the flexibility of furnishing reports earlier (say on a monthly basis) to seek early replenishments wherein they could also provide forecasts for a shorter period than six months.

MOR coincides with these revisions. Provisional financial statements are prepared on monthly basis and half-yearly accounts are required to be placed before the BOD.

14. DFCCIL has developed a detailed budgeting manual for preparing realistic budgets and monitoring budget performance. DFCCIL would create separate budget head/s for receiving Bank funds and for expenditures based on detailed annual project work plans.

15. **Accounting and internal controls.** Finance. Accounting is carried out at HQ in accordance with the provisions of the companies Act and ICAI prescribed accounting standards, using an off-the-shelf accounting package (Tally). Provisional financial statements are prepared on monthly basis and discussed with field units prior to monthly closing. Work on implementing Enterprise Resource Planning (ERP) packages is in progress for project management as well as financial accounting. The present centralized accounting in HQ will be de-centralized when the field units are fully operational. The company has been subject to four statutory audits and supplementary audits by the Comptroller and Auditor General (CAG) and the reports are clean.

16. The basics of an accounting system and internal controls (such as Delegation of Powers - DoP-, chart of accounts, accounting systems and procedures etc.), are in place. The DoP and the Financial Classifications Manual and the Accounting Manual are being updated to cater to expected increase in activities, proposed ERP implementation, multiple funding agency requirements, concession agreement requirements etc. The manuals have been reviewed by the internal auditors and are awaiting approval by the audit committee in April 2011. Detailed principles based Financial Rules covering the processes and systems for financial concurrence are pending review by the Audit Committee and BOD approval.

17. **Project accounting.** Costs incurred on the construction of the railway line and other assets, forming part of the railway infrastructure, are treated as capital work in progress. The accumulated costs are capitalized when the completed works are commissioned and put to commercial use. Common expenses not directly identifiable to capital works are apportioned in proportion to the direct costs of completed assets. Completed assets would be depreciated in accordance with the provisions of the Companies Act[29].

Computerization

18. DFCCIL is taking steps to implement enterprise-wide IT solutions comprising of ERP package, Document Management System, Project Management Application and Enterprise Asset Management on a GIS Platform. A broad IT implementation plan has been prepared and a prime IT consultant has been hired[30] for providing IT advisory services and best practice enterprise architecture service for implementing IT solutions. The recruitment of a Systems Integrator (SI) is underway. The IT implementation is expected to commence in September/ October 2011 and be implemented over a period of 18 months. Further, in order to secure greater awareness and support of the organization in this venture, DFCCIL has prepared a Shared Vision document which is under review by the functional directors. Once approved the document will be shared across the organization. Implementation risks have

[29] DFCCIL would also review practices of other corporatized railway organizations such as Konkan Railway in the areas of classification of railway assets and depreciation.
[30] Wipro Technology has been hired in May 2010 as the prime IT consultant.

also been identified and documented and steps are being taken to monitor and mitigate the risks.

Internal audit

19. DFCCIL currently has an internal audit system in place, including a recently updated internal audit manual. The objectives of internal audit include examining system of internal checks to ensure that fraud, misappropriation, and deflections are not only detected but also prevented and to point out areas of weaknesses which need to be strengthened by remedial measures. Internal audit of DFCCIL is being carried out by an independent audit firm appointed by the Board. Internal audit reports are addressed to management and are reviewed by the Audit Committee.

20. DFCCIL has decided to establish a structure with dedicated resources for internal audit under the AGM/DGM (Internal Audit) reporting to GGM/GM (Risk Management). The AGM/DGM (IA) is yet to be appointed. Internal audit will continue to be outsourced under broad TOR to cover all aspects of the entity and the project.

21. DFCCIL would need to orient its internal audit towards assessing the effectiveness of management's risk mitigation measures once the risk management framework is put in place. The scope of internal audit should be expanded to cover technical aspects of contract management and project implementation (especially design build and other specialized types of contracts). Technical audit reports would be required to be placed before the audit committee along with the reports covering the financial aspects.

22. The Bank financed project will be subject to internal audit (under agreed terms of reference) and the internal audit reports would be available to the Bank upon request. The broad scope of the terms of reference for internal audit would be included in the PIM and will address some of the issues discussed above.

Statutory audit

23. Under Section 619(2) of the Companies Act, 1956, the Comptroller and Auditor General (CAG) appoints DFCCIL's statutory auditor. The auditor is selected by CAG and the appointment/ re-appointment is made by the Board. Following the completion of the statutory audit, a supplementary audit is carried out by the CAG under Section 619(3)(b) of the Companies Act 1956. In addition, the CAG also conducts proprietary audit which is carried out by its Commercial Wing. Statutory audits of DFCCIL are on schedule. The statutory audit reports are by and large clean[31].

24. In addition to the annual entity audit report and accounts, DFCCIL would submit to the Bank a separate annual project audit report, along with the audited project financial statements, by September 30 each year during the currency of the project. The project audit

[31] As per the audit report for 2009-10 the audit observations relate to non deduction of tax at source on interest received on mobilization advance; recognition as income of interest on security deposit in a case where the terms called for interest free deposit; and Rs.2.8 crores charged to development expenditure being value of assets installed in premises leased to MOR but not reimbursable by MOR under Presidential Directive. In addition the auditor has stated that the company has purchased and obtained services for which comparative quotations have not been obtained but are unable to comment. DFCCIL has responded to the audit observations.

should be conducted by an independent firm of chartered accountants (which may include the statutory auditors appointed on the advice of CAG), acceptable to the Bank, under agreed terms of reference. The annual audited project financial statement would separately identify each component under the project, its progress and the funding sources for each of the components. The following audit reports will be monitored through the Bank's Audit Reports Compliance System (ARCS):

Table 2: Audit Reports Monitoring

Agency	Audit Report	Audited by	Due Date
DFCCIL	Annual Entity audit report as required under the Companies Act 1956	Statutory Auditors appointed by CAG	September 30
DFCCIL	Project financial statement audit including	An independent firm of Chartered Accountants (which may include the statutory auditors)	September 30

Disbursement under Resettlement and Rehabilitation:

25. R&R expenditure under the project will be funded by MOR. While the responsibility for relevant ground work for resettlement and rehabilitation will vest with DFCCIL, all payments on account of land acquisition and resettlement and rehabilitation will be made by MOR. DFCCIL will prepare an assessment of funds required for land acquisition, rehabilitation and resettlement of affected persons and provide them to MOR. The requisite funds will be transferred to a dedicated bank account/s under MOR, to be operated jointly by DFCCIL and the competent authority appointed by MOR. Payments to project affected persons will be made from this bank account/s, with monthly accounting and reporting to MOR. The details of disbursement under R&R are provided in the RAP. Expenses relating to the ground work will be recoverable from MOR, and capitalized as part of land cost. Land acquired for the purposes of the project would be licensed to DFCCIL at agreed financial and other terms.

Disclosure Policy

26. Under the Right to Information (RTI) Act, 2005 a public authority is required to maintain and make available detailed records to facilitate right to information. Relevant details are provided in the GAAP.

27. DFCCIL will comply with the requirements of RTI and disclose the annual audited project financial statements, along with the auditor's report, as well as the quarterly IUFRs, on the website along with other relevant project documents. Under the Access to Information Policy of the Bank, the annual project audit report and the audited financial statements will be disclosed in the Bank's website.

Proposed action plan

28. The proposed action plan with risk assessment and implementation horizon is summarized below. The proposed actions are bifurcated between those that are under the control of DFCCIL and its management and those that are under the control of other stakeholders and also prioritized over short to medium term. The action plan has been

discussed and agreed with the senior management of DFCCIL. DFCCIL may consider appointing Reputable and experienced consultants (or eminent persons from the sector) to implement these actions, if required.

Table 3: Proposed Action Plan

Area of Action	Risk	Actions required for implementation	Action by (date)
Actions within the control of DFCCIL (short term – medium term)			
Internal audit Internal audit arrangements to be in line with expanding requirements and good industry practices.	Internal controls are weakened without a robust internal review and follow-up mechanism	Define internal audit organization and reporting structure after comparing with peers and identify dedicated resource for internal audit function	GM (RM) post created and orders issued for appointment. Vacancy to be filled shortly.
Appropriate internal audit structure and independence	Without independence of the function the quality of observations may be compromised	Expand internal audit TOR to cover entire organization, risk management	TOR approved by audit committee; to be placed before Board for confirmation. TOR for technical audit by QSAC under preparation; to be finalized by April 2011. First technical audit to cover period April – June 2011
Appropriate internal audit manual		Update internal audit manual through actual audit by major audit firm under broad TOR	Internal audit manual updated and under test implementation during FY 2010-11. TOR of QSAC to be incorporated in the internal audit manual.
Audit Committee of the Board Appoint independent directors to inject professional independence and improve oversight	Assurance function is impaired without independent review and recommendation; risk of ineffective controls may lead to future problems	Induct independent directors in audit committee	Two independent directors inducted into audit committee
Expand scope and coverage of audit committee in line with corporate governance requirements		Finalize scope and coverage of audit committee in line with DPE guidelines	Scope and coverage of audit committee finalized.
Strengthen Human Resource Management Put in place proper HRM structure and plan for recruiting and retaining staff	Inadequate focus on HR resulting in attrition; vacancies in critical positions: existing staff being stretched impacting on quality and timeliness of decision making; slow-down/ delays in project implementation; time and cost overruns.	Develop structure policies and procedures taking into account the expected growth in activities in DFCCIL	GM (HR) appointed in February 2011; Draft HRD Plan prepared and under review. To be finalized by June 2011.

Customized business solutions/ ERP Implement ERP for integrated solutions to meet requirements of management and stakeholders in a timely and efficient manner **Other reporting for MIS** Review organization wide reporting requirements and develop suitable forms and instructions for their preparation and distribution.	Failure to get properly integrated in a timely fashion with consequences - need for manual intervention causing delays, duplications and possibility of errors; losses/ leakages undetected; adequate information not available in timely fashion for informed decision making - delays in corrective actions	Appoint Prime Consultant; prepare implementation plan for implementation of enterprise IT solution	Prime consultant appointed in May 2010; reports being submitted RFP for Systems integrator under finalization for procurement under Bank guidelines. RFP to be issued in April 2011 and SI in place by September / October 2011. ERP implementation in 12 months followed by 6 months post implementation support roll-out; post implementation maintenance phase 3 years.
Financial management Manuals Update manuals for a more formalized and systems oriented financial accountability and corporate governance environment covering budgeting, accounting, internal controls, financial reporting in view of the proposed significant growth in the activities	Inadequate practices to the possible detriment of the organization; risk of becoming person dependent rather than process dependent	Initiate action for preparing/ updating manuals: (a) Budgeting (b) Accounting (c) Internal Controls (d) Financial Reporting	Updated manuals reviewed by internal auditors. To be placed before audit committee for approval in June 2011 to be followed by Board confirmation.

Actions beyond the control of DFCCIL but critical from management and corporate governance perspective			
Independent Directors Induct required numbers of independent directors to enhance the level of corporate governance	Independent directors fall short of DPE requirements	Approval by MOR for two independent directors to increase the total number to four (current strength at two).	MOR to consider
Greater functional and financial autonomy as specified in the MOU;	Closely held and less transparent; limited financing options; delayed/ constrained decision making; stagnation	MOR response to IPE suggestions	MOR to consider

Table 4: Status of Implementation of Model Code on Corporate Governance in DFCCIL

Model code	Present DFCCIL status
Board of directors shall have an optimum combination of functional, nominee and independent directors. The number of functional directors (including CMD/MD) should not exceed 50 percent of the actual strength of the board. The number of nominee directors shall be restricted to a maximum of two. In case of CPSEs listed in stock exchanges, the number of independent directors shall be at least 50 percent of board members. In case of CPSEs not listed in the stock exchanges at least one third of the board members shall be independent directors[32].	The strength of the Board is 8 (against sanctioned strength of 12) as follows: • Chairman (part-time) • Managing Director (vacant)[33] and three full-time functional directors (out of four sanctioned positions) • Two Government nominated part-time official directors • Two part-time non-official (independent) directors The number of functional directors does not exceed 50 percent of the current Board strength. The number of government nominee directors is as per the model code Presently there are two independent directors on DFCCIL Board. The number of independent directors is one short of the required 1/3rd strength. There is a pending proposal with MOR to appoint one independent director on the Board of DFCCIL. However when compared with the sanctioned strength of the Board, MOR would be required to appoint another independent director to bring the total number of independent directors to four.
Qualified and independent audit committee shall be set up giving the terms of reference. The audit committee shall have minimum three directors as members. Two thirds of the members of audit committee shall be independent directors. The chairman of the audit committee shall be an independent director All members of audit committee shall have knowledge of financial matters of company and at least one member shall have good knowledge of accounting and related financial management	The present audit committee comprises two independent directors and a part-time IR nominated official director. Audit committee role is in line with DPE guidelines. The audit committee meets once a quarter.

[32] Nominee directors appointed by an institution which has invested in or lent to the company shall be deemed to be independent directors

[33] There is a recent vacancy in the position of MD which is expected to be filled by end March 2011.

expertise. Detailed and elaborate role has been prescribed for audit committees including, financial performance, reporting and disclosures; internal control mechanisms (including internal audit); compliance with audit observations (internal as well as statutory); whistle blower mechanism etc[34]. Audit committees shall meet at least four times in a year and not more than four months shall elapse between two meetings.	
Risk management strategies and their oversight shall be one of the main responsibilities of the board and management. The board shall ensure the integration and alignment of the risk management system with the corporate and operational objectives and also that risk management is undertaken as a part of normal business practice and not as a separate task at set times. The company shall lay down procedures to inform board members about the risk assessment and minimization procedures. These procedures shall be periodically reviewed to ensure that executive management controls risks through means of a properly defined framework. Procedure will be laid down for internal risk management also. Disclosure on risks and concerns shall from part of Director's report.	There is no formal risk management system in place. DFCCIL has created the position of GM (Risk Management) initially under DF[35] with dedicated resources for implementing risk management systems in the entity. The annual report for FY 2009-10 contains Management Discussion and Analysis (MDA) report which lists the strengths, weaknesses, opportunities and threats and a brief description of the risks and concerns[36]

[34] The guideline states that audit committees set up pursuant to provisions of the Companies Act should adopt such additional functions/ features as contained in the guidelines on corporate governance.
[35] Once the department is set up, it would report to the MD
[36] The main concerns as pointed out by DFCCIL are non availability of land on time and delay in project funding.

Annex 8: Procurement Arrangements

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

A. Background

1. The Eastern Dedicated Freight Corridor-1 project proposed for financing by the Bank involves construction of 343 km of double track heavy haul freight railway lines between Khurja and Kanpur. The EDFC track would parallel the existing Delhi-Kolkata rail corridor except in built-up areas which would be bypassed. About 70 percent of the track is parallel to the existing track and utilizes, to a large extent, the existing right of way.

B. General

2. Procurement for the Eastern Dedicated Freight Corridor – 1 will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 (Consultant Guidelines) and the provisions stipulated in the Financing Agreement (FA). The various procurement transactions under different expenditure categories are described in general below. For each contract to be financed under the FA, the various procurement or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame have been agreed between the Borrower and the Bank in the Procurement Plan (PP). The PP will be updated at least semi-annually or as required to reflect the actual project implementation progress and improvements in institutional capacity. A General Procurement Notice (GPN) has been published on February 08, 2010 in UNDB on-line and in dgMarket online. Specific Procurement Notices (SPN) will be published for all ICB procurements and for all Consultancy Services contracts expected to cost more than US$200,000, as the corresponding bidding documents and RFPs become ready and available. Information regarding contract awards will be published on UNDB online and in the national press, in accordance with the requirements of Appendix 1, paragraph 7 of the Procurement Guidelines.

C. Contracting Strategy

3. The contracting strategy for the Project as recommended by DFCCIL's International Panel of Experts (IPE) has been agreed with the Bank. Since it is highly unlikely that a sufficient number of national and international contractors with adequate capabilities would be available to compete for approximately US$1 billion package comprising civil works and electrification and signaling systems, the contracting strategy will instead be based on three separate but contiguous contract packages for civil works and track and a single project wide rail systems contract (signaling and electrification). These four packages will be bid as Design-Build contracts. This strategy will maximize competition and provide bidding opportunities for the widest possible range of capable national and international contractors. Design-Build will also facilitate the introduction of innovative technologies and materials from the contractors' global experience.

4. The three civil works contract packages will cover three contiguous sections of the double track heavy haul freight railway lines between Khurja and Kanpur. Each section will average about 115 km. Following a single prequalification process for these three civil works and track contract packages, bids will be invited from the prequalified contractors for

Design-Build Lump Sum contracts. The prequalified contractors would be allowed to bid for one or several packages, depending on their capacity. The single project- wide rail systems contract (signaling and electrification) will be bid subsequently and will also involve a Design Build Lump Sum contract, but for the entire 343 km track. The bidding and contracting documents for this Project will be customized to suit its Design-Build requirements, incorporating: (i) The Instruction to Bidders from the Bank's Standard Bidding Document (SBD) for "Procurement of Plant Design, Supply and Installation (Revised August 2010)''; (ii) relevant provisions of the SBD for ''Procurement of Works'' (Revised August 2010); and (iii) the "Conditions of Contract for Plant and Design- Build for Electrical and Mechanical Plant, and for Building and Engineering Works Designed by the Contractor", (latest edition) published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC Yellow Book), supplemented by FIDIC's and further Particular Conditions of Contract. Consolidation of these various standard documents into a set of customized Design-Build bidding and contracting documents will be the responsibility of DFCCIL with assistance from its General Consultant (GC) and its Legal Advisor and guidance from the Bank.

5. This agreed contracting strategy also provides for the essential integration of the three separate civil works and track contracts with the project-wide systems contract and for reasonable balancing of risks among the various contractors and DFCCIL. The Table below shows the contract packaging for Civil Works and Systems of Phase I of the Project.

Table 1: Contract Packaging for Civil Works and Systems of Phase I

	Section	**Length** (KM)	**Duration** (months)
Civil Works and Track I	Bhaupur- Etawah	135	48
Civil Works and Track II	Etawah-Tundla	101	48
Civil Works and Track III	Tundla-Khurja	107	48
Pwr, Sgnls, Telecom Sys	Bhaupur-Khurja	343	36

D. Assessment of the Agency's Capacity to Implement Procurement

Broader procurement related policies

6. The Constitution of India (Seventh Schedule) lists specific subjects in which either the Union Government or the State Government alone can make laws and concurrent subjects in which both the Union and State governments can make laws jointly. Procurement by Union and the State Governments (except for Tamil Nadu and Karnataka, who have passed their own procurement legislations) is regulated mainly by the General Financial Rules (GFR), 2005; State Finance Rules, Indian Contract Act 1872 as amended to date and the Sales of Goods Act. Other policy interventions such as Central Vigilance Commission and the Right to Information Act also potentially impact public procurement systems.

7. A Country Procurement Assessment Report (CPAR) was prepared in December 2003. While an update of the CPAR may be necessary to reflect the changes in policies that have occurred since then, the 2003 CPAR is still largely relevant. In 2003 the CPAR main recommendations to Government were to:

(a) Create a dedicated agency for public procurement policy and oversight

(b) Introduce public procurement law and public procurement regulations

(c) Introduce mandatory standard bidding and contract documents

(d) Simplify review and approval process

(e) Publish contract awards in news media and the web

(f) Introduce electronic tendering progressively

(g) Introduce an independent authority as Procurement Tribunal to allow challenging award decisions and introduce Debriefing Procedure to unsuccessful bidders;

(h) Introduce certain reforms in works procurement related to price adjustment, rate contracts, registration of contractors, independent supervision of complex contracts, pre-disclosure of qualification requirements, etc.

8. Since these recommendations were made in 2003, there has been relatively little progress on these issues. The implementation of new and very large projects like the Dedicated Freight Corridor would require close monitoring, robust and transparent procurement systems. Recently GoI has set up a Committee to look into improvements into the procurement systems in India.

Assessment of DFCCIL procurement capacity

9. An assessment of DFCCIL's capacity to implement project procurement was conducted by the Bank and is included in the project file. Summary of the main findings are:

- DFCCIL is a newly created entity with staff deputed from Indian Railways (IR) for a limited time. DFCCIL has limited procurement staff with no prior experience in Bank projects.
- DFCCIL has no standard bidding documents for the recommended contracting strategy, which is based on a Design-Build Lump Sum contracts;
- DFCCIL's weak procurement management system could potentially result in failed bidding processes, including misprocurement, long delays or perpetual disputes with contractors;
- Slow processing of internal reviews of technical and procurement decisions that would impact the timeliness of typical bidding, contracting and implementation processes;
- Limited contractual role of GC, selected prior to Bank involvement, to support DFCCIL in contract management. According to para. 2.8 of the GC's current TOR, all contract management decisions must be made directly by DFCCIL. The GC's role would therefore be limited to coordination, reviews and monitoring; this would entail significant risks of inefficient decision making processes, construction delays and slow dispute resolutions.

Proposed corrective measures

- **Create an adequately staffed procurement cell** to be supported initially by two procurement experts (PE) recruited as short-term consultants to handle start-up procurement responsibilities, oversee all ongoing procurement activities, including the work output of the GC and the Legal Advisor and to provide on-the-job training for DFCCIL's procurement staff. Together with DFCCIL procurement staff, the PEs would augment and finalize the procurement sections of the Project Implementation Manual (PIM). The PIM will be updated periodically as necessary and include

standard operating procedures for efficient and timely internal reviews of procurement and technical decisions by DFCCIL. The PIM would be subject to the Bank' s review and clearance, in order to ensure that the described procedures satisfy the corresponding requirements set out in the Loan Agreement.

- **Accelerate and improve the document output expected from DFCCIL through its GC and its Legal Advisor.** (i) to finalize all required Design-Build bidding and contracting documents in accordance with international best practice as well as previous discussions with the Bank; (ii) to submit a coordinated final set of these Design-Build documents to the Bank for review and ''no objection''; and (iii) to issue these bidding documents to the prequalified bidders in the shortest possible time.
- **Support during bidding, bid evaluation, and contract award phase.** DFCCIL to expand the TOR of its GC to cover essential areas where DFCCIL currently lacks adequate capacity; this would include reliable and swift interpretation of the bidding documents and handling of technical issues throughout the bidding process, in order to respond to inquiries from bidders and subsequently, to assist DFCCIL in evaluating the technical, financial and commercial aspects of bids; for the bid evaluation reports and the contract award recommendations.
- **Project Management Consultant (PMC).** In line with the Design-Build approach on which the bidding and contracting documents will be based, particularly the need for an independent engineer, DFCCIL will employ the PMC under terms of reference agreed with the Bank. Once appointed by DFCCIL, the PMC will be responsible for detailed reviews of design drawings prepared by the Contractor, advising DFCCIL regarding the compliance of these drawings with its requirements and taking action as necessary to require modifications by the Contractor, supervision of the Contractor's performance of the works on a day-to-day basis, field-checks of materials and equipment installed and workmanship, necessary measures to achieve remedial actions by the Contractor, monitoring of safety issues, tests and inspections upon completion or provisional completion of the works by the Contractor. The PMC will also make fair and reasonable assessments of the payment requests submitted by the Contractor and provide its determination to DFCCIL. Only exceptions to DFCCIL's delegation of decision-making authority to the PMC will be listed specifically in the contract, including the fact that the PMC will have no authority to amend or terminate the Design-Build contracts.
- **DFCCIL's internal decision making process.** To the extent to which they fulfill the needs of this Project, DFCCIL's current operating procedures will be applied and spelled out in the PIM. Additional or modified internal decision-making processes will be developed, as necessary, to complement its current procedures for the purposes of this Project. It is already anticipated, that the heavy flow of inquiries from bidders during the bidding process will require efficient procedures from the start to guarantee timely decision-making, especially during the bid validity period.

E. Procurement risk assessment

10. **The overall procurement risk is rated HIGH.** The risks associated with procurement and the mitigation measures were identified in the assessment of DFCCIL procurement capacity and are summarized in the table below.

Table 1: Summary Risk Assessment

Description of risk	*Rating[a] of risk*	*Mitigation measures*	*Rating[a] of residual risk*
DFCCIL is a newly created entity with staff deputed from Indian Railways (IR) for a limited time. DFCCIL has limited procurement staff with no prior experience in Bank projects.	H	Create an adequately staffed procurement cell to be supported initially by 2 procurement experts (PE) recruited as short-term consultants to handle start-up procurement responsibilities, oversee all ongoing procurement activities, including the work output of the GC and the Legal Advisor and to provide on-the-job training for DFCCIL's procurement staff. Together with DFCCIL' procurement staff, the PEs would augment and finalize the procurement sections of the Project Implementation Manual (PIM). The PIM will be updated periodically as necessary and include standard operating procedures for efficient and timely internal reviews of procurement and technical decisions by DFCCIL. The PIM would be subject to the Bank' s review and clearance, in order to ensure that the described procedures satisfy the corresponding requirements set out in the Loan Agreement.	M
DFCCIL has no standard bidding documents for the recommended contracting strategy, which is based on a Design-Build Lump Sum contracts	H	Mobilize the GC and the Legal advisor: to prepare a complete set of Design- Build bidding and contract documents to be submitted to the Bank for review, comments and eventually, ''no objection'' in due time, concurrent with the completion of prequalification process.	H
DFCCIL's weak procurement management system could potentially result in failed bidding processes, including mis-procurement, delays or continuous disputes with contractors	H	Support during, bidding, bid evaluation, and contract award phase: DFCCIL to expand the TOR of the GC to cover essential areas where DFCCIL currently lacks adequate capacity; this would include reliable interpretation of the bidding documents and handling of technical issues throughout the bidding process, in order to respond promptly to inquiries from bidders and be in a position to assist DFCCIL in evaluating the technical, financial and commercial aspects of bids; the bid evaluation reports and the contract award recommendations	M

		which would be subject to the Bank's review and ''no objection''.	
Slow processing of internal reviews of technical and procurement decisions that would impact the timeliness of typical ICB processes	H	DFCCIL's internal decision making process: DFCCIL will establish its internal decision-making and communications process, in anticipation of: (i) the expected heavy flow of inquiries from bidders during the bidding process; and (ii) intensive demands from the implementation of four concurrent contracts.	H
Limited role of GC to support DFCCIL in contract management in current contract and incompatibility of these limited arrangement with the Design-Build approach...	H	Project Management Consultant (PMC): In line with the Design-Build approach on which the bidding and contracting documents will be based, particularly the need for an independent engineer, DFCCIL will competitively select the PMC under Terms of Reference agreed with the Bank and according to the Consultant Guidelines. Prior to the PMC's appointment by DFCCIL, Contractor (s) who have been selected for award of the civil works and track contracts will be given the opportunity raise reasonable objections to the selected PMC with supporting particulars. Once appointed by DFCCIL, the PMC will be responsible for detailed reviews of design drawings prepared by the Contractor, advising DFCCIL regarding the compliance of the drawings with its requirements and taking action as necessary to require modifications by the Contractor, supervision of the Contractor' s performance of the works on a day-to-day basis, field-checks of materials and equipment installed and workmanship, necessary measures to achieve remedial actions by the Contractor, monitoring of safety issues, tests and inspections upon completion or provisional completion of the works by the Contractor. The PMC will also make fair and reasonable assessments of the payment requests submitted by the Contractor and provide its determination to DFCCIL. Exceptions to the delegation of decision-making authority to the PMC will be listed specifically in the	M

		contract, including the fact that the PMC will have no authority to amend or terminate the Design-Build contracts.	
Average	H		M/H

H=High; M=Moderate and L=Low

F. Procurement implementation arrangements

11. Procurement activities, especially at start-up of the bidding process, will be carried out by DFCCIL Procurement Cell staffed with 2 Procurement Experts recruited as short-term consultants and not less than 2 DFCCIL procurement staff who will be supported and trained by the Procurement Experts. Upon achieving the necessary expertise in procurement, the DFCCIL procurement staff would assume full responsibilities, without the need for further assistance from the PEs. Executive authority and responsibility for procurement would be vested with DFCCIL. DFCCIL's General Consultant (GC) would provide services throughout the bidding process until the bid evaluation report and the contract award recommendations have been completed and been given the Bank's ''no objection'' notice. DFCCIL's Legal Advisor would provide legal advice in counseling DFCCIL during the bid clarification process, the contract award period and the implementation of the construction contracts. Prior to awarding the Design-Build contract(s), DFCCIL would recruit and select the Project Management Consultant (PMC) on a world-wide basis, according to the procedures of the Consultant Guidelines. The PMC would be appointed by DFCCIL with a delegation of authority to supervise the performance of the contractor(s) in the Design, Construction and Completion Phases according to TOR agreed with the Bank and in line with the Design-Build approach under this project. Exceptions to this delegation of authority would be spelled out in the Design-Build contract(s), among them would be no authority to amend or terminate the contract(s). Prior to the appointment of the PMC by DFCCIL, the selected contractor(s) will be given the opportunity raise reasonable objections to the selected PMC with supporting particulars.

12. The first step in the proposed bidding process, i.e. an internationally advertised invitation to prequalify for the three civil works and track contracts, has already been completed by DFCCIL, as part of advance contracting, but has not yet been cleared by the Bank. After prequalification, a two-stage bidding process would be launched following essentially, the structured two-stage process which is described in the Bank' s SBD for the Procurement of Plant Design, Supply and Installation, i.e., the First Stage would invite only technical proposals based on the designs and specifications prepared by DFCCIL's General Consultant. Alternative technical solutions, particularly those offering innovation, as further described below, would be explicitly encouraged and the criteria and methods for evaluating of these technical alternatives would be described in detail in the bidding documents. All bidders would have the option of either submitting technical proposals based on the designs and specifications of DFCCIL's General Consultant or to propose technical alternatives that comply with the same performance and technical criteria specified in the designs and specifications of DFCCIL's General Consultant; bidders would have to include the information necessary for a complete evaluation of their technical alternatives, including drawings, specifications and other relevant details in their First Stage technical proposals. Bidders would also be required to document that their proposed technical alternatives are to the benefit of DFCCIL and fulfill the principal objectives of the Project. During the review of

the First Stage technical proposals, DFCCIL would conduct individual clarification meetings with the bidders concerning their proposed technical alternatives and bring to their attention, in each case, any amendments or changes which may be required in their alternative technical proposals, in order to make them acceptable and to incorporate them in their Second Stage bids. In cases where the results of these clarification meetings necessitate amendments to the bidding documents, DFCCIL will issue these amendments to all bidders, in order ensure transparency and fairness. Furthermore, following these meetings, DFCCIL would issue a Memorandum of Understanding to each bidder, documenting decisions made regarding the amendments and changes to be incorporated in their Second Stage bids. The Second Stage bids would then be invited from bidders whose technical proposals in the First Stage have been found to be substantially responsive to the bidding documents, including, as applicable, the decisions documented in the Memorandum of understanding. The Second Stage bid would include the Letter of Bid, the Price, the Bid Security, the updated First Stage technical proposal, incorporating the amendments and changes documented in the Memorandum of Understanding, etc..

13. Encouraging Design innovations in the Design- Build Bidding Documents: Traditionally, Indian Railways has been doing procurement using the Bill of Quantity (BoQ) approach with designs and standards prepared by its Research Design and Standards Organization (RDSO), providing limited opportunity for design and technology innovations. To encourage innovation in connection with DFCCIL, a Design-Build approach is being used in bidding and contracting to include arrangements in which the selected contractor is responsible for the detailed design of the civil works and track and for their complete construction. Both, the design and the construction would be in accordance with the Employer's (i.e. DFCCIL) requirements, as defined in the bidding documents and contracting documents. In the first set of bidding documents for Civil Works and Track ample opportunity is being given to the bidders to propose new technology and innovative design, duly keeping in mind the safety requirements of the railway system. Subsequent to this first set of bidding documents, the broader objective would be to replicate these innovations at larger scale throughout the system. The same Design-Build approach will be used for the systems contracts, also encouraging innovation.

14. Paying due attention to the safety requirements of the railway system as a whole, which includes Indian Railways, DFCCIL has identified specific items where bidders would be encouraged to propose technical alternatives in design and/or construction. These proposed technical alternatives should (i) have been proven in other rail systems; (ii) be documented to show that they are to the benefit of DFCCIL; (iii) fulfill the principal objectives of the Project; and (iv) meet the basic performance and technical criteria specified in the bidding documents. While the burden of proof would be entirely on the bidder, DFCCIL would use its best efforts to facilitate and expedite the review of the technical alternatives submitted by the bidders in the manner spelled out in the bidding documents. These specific items include Embankment, Concrete Sleepers, Aluminothermic Welding, Fittings and Fastenings, Switch Expansion Joints, Swing Nose Crossing and Bridge Bearings. A similar approach to encourage innovation would be used for Systems Contract.

15. A total bidding period of 14 months from Bank's clearance of the prequalification evaluation report to the award of the contracts for civil works and track is envisaged.

G. Other Relevant Procurement Arrangements

16. In addition to DFCCIL's General Consultant and Legal Advisor a number of additional arrangements would be put in place by DFCCIL for continuous and sustained quality assurance and risk mitigation during the bidding and implementation process, including the following steps:

- Proof Consultant to check civil engineering surveys and quantity estimates, as well as to provide value engineering, as required, on random sample basis.
- Independent Design Review Consultant to check the engineering design and technical specifications prepared by DFCCIL's GC against international best practices and state-of-the-art in freight railway design, for the purpose of achieving economy and efficiency, as well as equal bidding opportunities for national and international bidders.
- Quality and Safety Auditing Consultant (QSAC) to provide periodic independent technical audits of the project during implementation or as requested by DFCCIL in case of extenuating circumstances.

H. Provisions for National Competitive Bidding (NCB)

17. For procurement subject to NCB, the bidding documents to be used for this purpose would include the NCB provisions agreed from time to time between the Bank the GOI. These currently applicable provisions are displayed on the website of the Bank's South Asia Region and the Project Implementation Manual. DFCCIL would prepare standard bidding documents for NCB, subject to the Bank's review and clearance.

I. Domestic Preference

18. Domestic preference in accordance with clause 2.55 and Appendix 2 of the guidelines will not apply to the three civil works contracts and the systems contract to be awarded on a Design-Build Lump Sum basis.

J. Contracts for Consulting Services and Training

19. The consultant contracts to be financed under this Project are listed in the Initial Procurement Plan. The selection of consultants would follow the applicable requirements of the Bank's Consultant Guidelines, including advertising and publication of contract award. Shortlists for consultants' services for contracts estimated to be less than US$500,000 equivalent may be composed entirely of national consultants. It is also expected that consulting offices associated with local universities may be included in the shortlists. However, university-based consultants would be expected to compete with private consultants on an equal basis.

20. **Training.** Procurement and contract administration training for DFCCIL staff, training for DFCCIL's evaluation committees, and information technology training in project monitoring and record maintenance tools would be required.

K. Filing and Record Keeping

21. **Filing and record keeping.** The PIM would set out the detailed procedures for maintaining and providing readily available access to project records, in compliance with the Loan Agreement.

L. Procurement Plan

22. DFCCIL has developed an initial Procurement Plan (PP) for the first 18 months covering the entire project scope. It is consistent with the Project Implementation Plan and provides information on procurement packages, methods and the applicable requirements for Bank review. The initial Procurement Plan would be discussed and agreed with the Bank at Negotiations. It would be available in DFCCIL's project database and on the Bank's external website. The PP will be updated semi-annually in agreement with the Bank. This period for updating the Procurement Plan may be changed, depending on actual progress in the first 18 months and improvements in DFCCIL's procurement capacity.

M. Frequency of Procurement Supervision

23. In addition to the prior reviews of specific procurement transactions to be carried out by the Bank in accordance with the Procurement Plan and Annex 1 of the Procurement Guidelines, the Bank's procurement capacity assessment of DFCCIL recommends post reviews to be carried on at least 20 percent of the contracts which are subject to post review in the Procurement Plan. It is expected that a supervision mission in the field will be conducted every six months during which these post reviews will be conducted. At least, one of these required post reviews will include physical inspection.

Procurement Plan for APL-I Project Dated *[19 April 2011]*

a) Works and Goods

Package No.	Description/ Location	Estimated Cost (US$) /m	*No. of* Packages	Procurement Method	Review By Bank (PRIOR / Post)	Invitation Date	Expected Bid-Opening Date	Contract Award Date	Start Date	Completion Date
	A	B	C	D	E	F	G	H	I	K
1. WORKS										
	Civil Works and Track I - Bhaupur- Etawah (135 km)	270	1	ICB	Prior	May 2011		Mar 2012	Apr 2012	Dec 2015
	Civil Works and Track II - Bhaupur- Etawah (101 km)	235	1	ICB	Prior	May 2011		Mar2012	Apr 2012	Dec 2015
	Civil Works and Track III - Bhaupur- Etawah (107 km)	227	1	ICB	Prior	May 2011		Mar2012	Apr 2012	Dec 2015
	Power Signals, Telecom Systems - Bhaupur-Khurja (343 km)	225	1	ICB	Prior	Dec 2011		Dec 2012	Jan 2013	Dec 2015
	Total 1. for works									
2. GOODS										
	Procurement of MIS	7	1	ICB	Prior	May 2011		Dec 2011	Jan 2012	Dec 2012
	Total 2. for goods									

Legend:

ICB = International Competitive Bidding (in accordance with section 2 of the Guidelines)
For works contracts valued at or more than US**$10 Million**
For goods contracts valued at or more than US**$200,000**

NCB = National Competitive Bidding (in accordance with section 3.3 of the Guidelines)
For works contracts valued less than US$**50,000 – 10,000,000**
For goods contracts valued less than US$**50,000 – 200,000**

Provisions for NCB= For procurement subject to NCB, the bidding documents to be used for this purpose would include the NCB provisions agreed from time to time between the Bank the GoI. These currently applicable provisions are displayed on the website of the Bank's South Asia Region and the Project Implementation Manual. DFCC would prepare standard bidding documents for NCB, subject to the Bank's review and clearance.

DC= Direct Contracting (in accordance with section 3.6 of the Guidelines)

SH = Shopping (in accordance with section 3.5 of the Guidelines)
For works contracts valued at or less than US$**50,000**
For goods contracts valued at or less than US$**50,000**

Prior review

For Works contracts: All ICB contracts. All NCB contracts of US$**5.0 million** equivalent or more including the first contract regardless of value of contract.

For Goods contracts: All ICB contracts. All NCB contracts of US$**500,000** equivalent or more including the first contract regardless of value of contract.

Domestic Preference= Will not apply

b) Consultants' Services

Package No.	Description of Assignment/ Location	Estimated Cost (US$)/m	Selection Method	Review by Bank Prior / Post	Advertisement for EOI Date	Contract Award Date	Start Date	Completion Date	
A	B	C	D	E	F	H	I	J	
3. CONSULTANTS' SERVICES									
2. TA	Quality and safety monitoring consultant	1	QCBS	Prior	May 2011		Sep2011	Dec 2015	
	Heavy Haul TA (several packages)	50	QCBS	Prior	May 2011		Sep 2011	Dec2016	
	Khurja - Dadri-Ludhiana and Mughalsarai (APL-II and III) General Consultant services	8	QCBS	Prior	May 2011		Oct 2011	Oct 2014	
	Bhapur-Khorja (APL-I) PMC for construction supervision and contract management services	30	QCBS	Prior	May 2011		Jan 2012	Dec 2015	

Legend

QCBS = Quality and Cost-based Selection (in accordance with sections 2.1 - 2.31 of the Consultant's Guidelines)

QBS= Quality Based Selection (in accordance with section 3.2 of the Consultant's Guidelines)

CQ= Consultants Qualifications (in accordance with section 3.7 of the Consultant's Guidelines)

LCS = Least-Cost Selection (in accordance with section 3.6 of the Consultant's Guidelines)

SSS= Single source Selection (in accordance with section 3.8-3.11 of the Consultant's Guidelines)

IC = Individual Consultant (in accordance with section V of the Consultant's Guidelines)

Other methods	**QCBS/QBS**	
	(i) International short-list	**For all cases > US$500,000**
	(ii) Shortlist may include national consultants only	**For all cases < US$500,000**
	CQS/LCS/FBS	**Up to 200,000**
	SSS	**As per 3.8 through 3.11 of the Guidelines**
	Individuals	**As per para Section V of Guidelines**

Prior Review

For firms: All contracts equal to US$**200,000** or more. All SSS contracts.
For individual consultants: All contracts equal to US$**100,000** equivalent or more. All SSS contracts.

Annex 9: Economic and Financial Analysis

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

A. Cost-Benefit Analysis

1. The main benefits of the Project are expected to be: (a) the economic advantages that follow from being able to transport large quantities of strategic bulk freight that otherwise could not be carried (generated traffic), or would have to be sent by road at high cost and damage to the environment (diverted traffic); (b) savings in IR's operating costs over the dedicated freight corridor (existing traffic); and (c) savings in travel time of passengers due to faster movement of trains on the existing track.

Investment Options Evaluated

2. IR proposes construction of the following sections of the Eastern Dedicated Freight Corridor:

(a)	Khurja - Kanpur	343 km double track (World Bank-financed Phase 1)
(b)	Ludhiana-Khurja	397 km single track (World Bank-financed Phase 2)
(c)	Kanpur – Mughal Sarai	390 km double track (World Bank-financed Phase 3)
(d)	Mughal Sarai-Sonnagar	123 km double track (financed by GOI)
(e)	Sonnagar – Dankuni	550 km double track (financing to be decided)

3. The total length is about 1,800 route-km, while the total track-km is about 3,216 km. The average cost will be US$3-4 million per route-km[37]. The four sections are all to be built and commissioned by DFCCIL within the next ten years. The Khurja- Kanpur – Mughal Sarai section is currently the most congested, and the Ludhiana-Khurja section is the second-most congested. The Mughal Sarai - Sonnagar and Sonnagar – Dankuni sections are the least congested, as on the former IR has already added a third track recently, and the latter carries very little of the coal traffic which mostly originates further west. These sections east of Mughal Sarai have not been evaluated.

4. Before the DFC sections are commissioned, IR is to upgrade 20 feeder lines totaling about 3,070 km (average length about 150 km), to bring their bridges and tracks up to the standards needed for 25-ton axle-loads. It is expected that these minor investments, averaging about US$100,000 per route-km or US$15 million per line, will add substantially to the traffic that can take full advantage of DFC. However, some links in these feeder routes may be congested even after their upgrading to meet the 25-ton axle load standards.

5. Economic analysis has been conducted for Phase 1 alone, for Phase 1 and Phase 3 together, and for the three combined. The Khurja-Kanpur and Kanpur-Mughal Sarai can operate and produce benefits independent of the completion of the remaining sections – even though it is likely that the Ludhiana section will be built before Kanpur-Mughal Sarai. However, on the first sections to be built, the growth of traffic in the later years of the traffic forecast could be somewhat less, if completion of the other sections were subject to long delays.

[37] For the purposes of the economic evaluation, these have been reduced by 10 percent, using a shadow price factor of 0.9.

6. The Bank, in its evaluation, has drawn on the JICA study, as well as the Business Plan prepared by DFCCIL's own consultants in 2009. The Bank team has updated key data from those analyses and in some instances applied different approaches that it considers more appropriate.

Present Traffic (Baseline)

7. LRDSS[38] has prepared origin-destination tables for IR's entire network for the base year 2007 and assessments of freight demand for two future years, 2016-7 and 2021-2. The main freight commodities carried on the existing parallel IR tracks in 2007 are shown in Table A9.1. Freight traffic in this corridor is dominated by coal moving westwards (the 'up' direction, from Kolkata to Delhi) with a small amount of iron and steel traffic and a few container trains. Most coal trains are operated as unit trains with empty wagon returns. In the 'down' direction (away from Delhi), trains of empty coal wagons predominate, accounting for two-thirds of all freight trains. The single largest category of freight carried in this direction is food-grains. The Khurja-Kanpur section carried 15 percent more traffic than the Kanpur-Mughal Sarai section in 2006-7.

Table A9.1: Main Rail Freight Traffics on Existing Parallel Line in Eastern Corridor-2006/7

Commodity	Khurja-Kanpur		Kanpur-Mughalsarai		Ludhiana-Khurja	
	Million tons	Trains/day	Million tons	Trains/day	Million tons	Trains/day
Up direction						
Coal	21.2	18.3	18.3	15.8	4.7	4.1
Iron and Steel	3.3	2.3	2.3	2.7	0.9	1.0
Other Commodities	3.0	1.7	1.7	2.0	3.4	3.5
Containers	0.5	0.4	0.4	0.9	0.2	0.3
Empties	0	0	0	4.3		2.0
Total Up	**28.0**	**22.7**	**22.7**	**25.7**	**9.2**	**10.9**
Down Direction						
Food-grains	2.5	1.2	1.2	1.4	0.6	0.7
Raw Materials for Steel Plants	0.9	0.7	0.7	0.5	0.2	0.4
Other Commodities	4.0	2.2	2.2	2.8	0.1	0.1
Empties	0	0	0	18.0		9.5
Total Down	**7.4**	**4.1**	**4.1**	**22.7**	**0.9**	**10.7**
Total Both Directions	**35.4**	**26.8**	**26.8**	**48.4**	**10.1**	**21.6**

Source: IR LRDSS base year data;'Tons' are metric tons.

8. Passenger traffic comprises a large but variable part of total traffic in the Eastern Corridor (see Table A9.2). Longer-distance passenger trains (more than 500 km) represent about 50 percent of the corridor's total traffic.

[38] Indian Railways Long Range Decision Support System (LRDSS) is a large-scale network model used to analyze the effect of traffic and operating conditions on the system's performance.

Table A9.2: Train Traffic on the Existing Parallel Line -2006/7 (Trains/day)

Train Type	Khurja-Kanpur		Kanpur-Mughalsarai
	2-track sections	3-track section	2-track sections
Passenger Trains	74-96	88	68-102
Freight Trains	66-76	102	68-88
Total Trains	**152-174**	**208**	**138-194**

Source: IR LRDSS base data, average over contiguous sections

Traffic Forecasts

9. The forecasts of freight traffic are based mainly on the expressed needs of power plants and other main industrial users, as well as the production plans of the coal mines, without regard to rail capacity available in those years. For this reason they are referred to as "unconstrained demand forecasts". From these tables origin-destination pairs likely to use the Eastern DFC were selected. LRDSS's route optimization model allocates these trips to the network, taking into account capacity expected to be available in each target year.

10. The assumed GDP growth for the decade starting from 2009 is based on the Indian government's forecast of about 8 percent per year, with some subsequent slowing to 5-6 percent. The elasticity of total freight demand to GDP is commonly about 0.9, while demand for bulks and other rail-friendly commodities generally grows more slowly than higher-value goods, putting the income-elasticity at about 0.8. That gives the growth rate of demand for rail freight *tonnage*. The number of *trains* will grow more slowly, as IR implements operating policies that increase the tons hauled per train.

11. Traffic is expected to grow at the rates shown in Table A9.3. The main forecast adopted for appraisal is derived from LRDSS-based forecasts.

Table A9.3: Traffic Growth Rates, 2008-2041

Period	Khurja-Kanpur		Ludhiana-Khurja		Kanpur-Mughalsarai		Pax %
	Tons %	Train-km %	Tons %	Train-km %	Tons %	Train-km %	
2006/7 – 2016/7	5.9	2.9	13.3	8.8	9.2	5.2	4
2016/7 – 2021/2	6.1	6.9	5.2	5.5	5.5	6.2	4
2021/2 – 2031/2	n/a	3.2	n/a	2.7	n/a	3.5	4
2031/2 – 2041/2	n/a	3.3	n/a	2.8	n/a	3.3	4

* Note that increased loading factors reduce the growth in train-km in earlier years, but increased haul distance increases train-km slightly in later years. Source: LRDSS and DFCCIL Business Plan.

12. The main forecast adopted for appraisal is derived from LRDSS-based forecasts. Details of the main commodities are given in Table A9.4 for Khurja-Kanpur, Kanpur-Mughal Sarai, and Ludhiana-Khurja. This forecast is somewhat more conservative than that of the DFCCIL Business Plan.

Line Capacity

13. The capacity of the existing pair of IR tracks is estimated at 200 trains per day (sum of 'up' and 'down'). It is expected that the full Eastern DFC will start operating in 2016-7. By that time the feeder routes will have been upgraded. The two DFC tracks will together

have a capacity of 320 trains (minimum headway of 7.5 minutes), giving a combined IR+DFC capacity of 520 trains per day – enough for at least 20 years after 2016. The Ludhiana line, single-track, will have a capacity of about 136 trains per day.

14. This "complete DFC + upgraded feeder-routes" scenario is compared with a 'Without DFC' scenario, that is, the existing IR network with the lines parallel to the proposed DFC expanded to handle the forecast traffic.

Economic Benefits Evaluated

15. In measuring benefits, two traffic categories are considered (in declining order of magnitude): base traffic and traffic diverted from parallel roads. The unconstrained demand for bulks is defined without reference to the availability or cost of transport, while the diverted traffic depends on the cost of rail transport and the availability of capacity.

Table A9.4: Forecast Main Rail Freight Traffics in Eastern Corridor –

	Khurja-Kanpur				Kanpur-Mughalsarai				Ludhiana-Khurja			
Commodity	**2016/17**		**2021/22**		**2016/17**		**2021/22**		**2016/17**		**2021/22**	
	Mln tons	**Trains/d**	**Mln tons**	**Trains/d**	**Mln tons**	**Trains/d**	**Mln tons**	**Trains/d**	**Mln tons**	**Trains/d**	**Mln tons**	**Trains/d**
Up direction												
Coal	36.8	22.3	44.0	26.7	40.0	24.3	47.4	28.8	24.6	14.9	29.7	6.4
Iron and Steel	5.9	5.8	8.3	8.2	7.0	6.9	11.1	10.9	2.1	2.0	3.2	1.2
Other Commodities	3.8	3.6	6.7	6.1	3.0	2.9	3.8	3.7	4.9	4.7	5.1	5.1
Containers	1.7	3.4	3.8	7.6	1.1	2.2	2.5	5.0	1.6	3.2	2.1	2.3
Empties	0.0	4.4	0.0	6.5	0.0	4.7	0.0	6.8		0.1		0.1
Total Up	**48.2**	**39.5**	**62.8**	**55.1**	**51.1**	**41.0**	**64.8**	**55.2**	**33.2**	**24.9**	**40.1**	**15.1**
Down Direction												
Food grains	5.1	4.5	6.2	5.5	5.3	4.8	5.8	5.3	0.9	0.8	1.0	0.6
Raw Materials for Steel Plants	1.5	0.9	1.7	1.0	1.6	1.0	1.7	1.1	1.1	2.2	1.7	1.3
Other Commodities	8.0	9.6	13.6	11.3	6.7	7.3	12.1	12.8	0.1	0.1	0.2	0.3
Empties	0.0	22.4	0.0	29.2	0.0	25.9	0.0	32.8		16.5		7.5
Total Down	**14.6**	**36.4**	**21.5**	**51.0**	**13.6**	**39.0**	**19.6**	**52.8**	**2.1**	**19.6**	**2.9**	**9.7**
Total Both Directions	**62.8**	**75.9**	**84.3**	**106.1**	**64.7**	**80.0**	**84.4**	**108.0**	**35.3**	**46.9**	**43.0**	**24.8**
Total NTKM	**22.2 bil**		**29.8 bil**		**22.5 bil**		**29.3 bil**		**7.4 bil**		**9.1 bil**	
Total GTKM (bil)		**36.1**		**46.6**		**36.6**		**48.0**		**21.7**		**11.4**

Source: IR LRDSS preliminary base year and forecast origin-destination data with least cost routing assumed. NTKM is product of tonnage and distance and GTKM from LRDSS train database; GTKM includes empty trains.

16. **Base traffic.** Base traffic will grow until it reaches 100 percent of 'without DFC' line capacity as defined above. About 85 percent of current freight traffic is expected to switch to the DFC tracks when they become available, and the cost to IR of operating those trains will be cut substantially (see below). Passenger trains will continue to use IR's tracks, as will 15 percent of freight, but under less congested conditions. Trains continuing to use the existing A route tracks will save on operating costs compared to the 'without DFC' scenario, though not as much as the traffic switching to the DFC tracks.

17. Passengers on the existing lines should experience a significant improvement in travel times, as the congestion from freight trains reduces. On some sections, this will increase the commercial speed (i.e., the time between start and finish, including en route stops), from around 55 km/hr prior to the opening of the DFC to around 70 km/hr, saving around one hour on a 300 km journey.

18. The improved level of service available from the DFC lines should also benefit freight customers, providing a more reliable service with better en-route information. Typically, rail customers perceive a penalty of about 15-20 percent of the rail tariff from the level of service, primarily because of unreliability and lack of information. The improved service on DFC should reduce this significantly. However, as much of the traffic is coal, a relatively low quality penalty of 10 percent of the tariff has been assumed for the existing network, reducing to 5 percent for traffic carried on DFC.

19. **Diverted traffic - modal shift from road to rail.** 'Diverted traffic' is traffic going by road in the 'without project' scenario but switching to rail in the 'with project' case, attracted by rail's lower tariff and shorter journey time. IR has heretofore had a national policy to accept only full trainload shipments of freight, which cost far less to handle than smaller shipments. While IR is planning the development of privately operated logistics terminals along the DFC route to consolidate train loads of cargo presently going by road, this is still at too early a stage to rely upon as a source of significant traffic. A significant modal shift to rail of freight currently going by road is not expected, with the exception of containers and possibly new cars, which fall under a specific policy of IR to attract intermodal freight and continue the profitable expansion of today's containers-on-rail operations. On the line under evaluation IR has set itself the target of attracting 2-4 pairs of trains per day of containers and other high-value freight such as new automobiles.

20. **Diversion of passengers from bus to rail.** Two highways run parallel to the Eastern DFC, NH2 and NH91, meeting west of Kanpur. On NH2 full-size buses numbered about 440 in 2008, which can be extrapolated to about 900 by 2016, and could exceed 1,500 when those going via NH91 are included. Buses are favored for shorter trips. The main inducement for modal shift is likely to be the reduction in rail trip times because of reduced congestion and perhaps greater comfort. While some passengers may shift because of this, these have been ignored in the evaluation, which instead conservatively assumes that IR instead uses the freed-up capacity to accommodate the natural growth in the existing services.

Measuring the Various Benefits

21. **Base Traffic.** The savings internal to IR when the base traffic switches from the existing tracks to the DFC tracks will consist of savings in energy and materials, replacement of locomotives and wagons, and staff. The triggers for these savings will be:

- Reduced energy consumption from running at steady speed rather than stop-go, thanks to DFC's improved track quality and avoiding the need for trains to slow down to pass through stations and yards. On the existing mixed-traffic lines passenger trains often require freight trains to stop and wait in sidings while the faster trains overtake them.DFC, by eliminating the need for this practice, will also help keep freight train speeds constant.
- Savings in wagons from larger wagon capacity made possible by 25-ton axle-load limits instead of 22.5 tons, wagons with lower tare weight relative to their payload capacity, and savings in locomotives from the resulting larger train size (net tons), and in wagons, locomotives and crew costs from faster turnaround. (i.e. more paying ton-km performed per year). In addition, all rolling-stock will have slightly lower maintenance costs because of the better track condition provided on DFC.
- Although infrastructure staff requirements per unit distance will be substantially less on DFC than on the existing network, there will still be a net increase in infrastructure maintenance and operating staff because of the additional trackage.

22. These savings in operating costs are summarized in Table A9.5 and show a 23 percent reduction in overall above-rail operating costs on DFC[39]. Since IR will continue to set tariffs without regard to whether they run on its own tracks or the DFC, all the above savings will accrue to IR: they are purely producer's surplus. (In response to competition from other modes, IR may reduce tariffs overall.)

Table A9.5: Savings in Above-Rail Operating Costs on DFC (Ps per ntkm)

Freight Trains	Without DFC	With DFC	Saving
Energy	5.3	4.7	0.6
Rolling stock replacement	9.2	4.0	5.2
Locomotive maintenance	2.8	1.4	1.4
Wagon maintenance	3.0	2.2	0.8
Train crew	3.0	1.6	1.4
Other (terminal, marshall, management)	18.6	17.5	1.1
Total	41.9	31.4	10.5

23. **Unsatisfied demand.** It has been IR's practice to add additional tracks to its most congested lines, as already done between Mughalsarai and Sonnagar and now in progress going east from Khurja. In the 'without DFC' scenario IR would likewise add new tracks incrementally. When the capacity exceeds 100 percent, an extra conventional track would be added, with the conventional axle load limit and signaling. As that track too reaches capacity, IR would add a fourth track that would take the capacity of all four tracks to about 400 trains per day. The cost of each extra track built by IR under the 'without DFC' scenario is taken as 60 percent of the cost of the twin DFC tracks, to allow for the extra cost of acquiring land in urban areas, since they would not bypass cities as the DFC tracks will, as well as the higher cost of

[39] A shadow price factor of 0.9 has been applied to both the passenger and freight financial operating costs in the economic evaluation, given the high proportion of labour in IR's operating costs.

piecemeal construction. The extra track will be laid at about 60 km per year (approx 360 km spread over 6 years).

24. **Alternative approach.** The alternative approach of diverting the extra traffic from rail to road would be far more costly than the above solution.

25. **Savings in operating costs of 'base' passenger trains.** Once the freight trains are routed onto the DFC tracks, passenger trains will be able to **s**ustain stable high speeds. This saving varies with the reduction in congestion on each section but is typically about 15 percent of the passenger above-rail costs (i.e., excluding infrastructure and corporate overheads) for the sections included in the evaluation.

26. **Savings in travel time of 'base' passenger trains.** With the decongestion of the IR existing tracks and faster movement of trains, there is expected to be a significant saving in travel time of passengers. This is the product of very large flows and substantial time savings. Typically, when the freight leaves the existing lines, the average speed of passenger trains is estimated to increase by about 15 km/hr, from about 55 km/hr to about 70 km/hr. This is worth about three hours for a 700 km trip (Phases 1 and 3). There are around 100-150 passenger trains on the various links and it is assumed 1,500 passengers per train (the average for all India is about 1,000, for Northern is 1,600 and for North-West about 1,200), since these are mainline services. The 2009 value of time is Rs 18/hr (US$0.40) (this is equivalent to a wage of about Rs 4,000 per month), increasing in line with average wages.

Diverted Traffic

27. **Diversion of high-value freight in containers, Ro-Ro and car carriers from road to rail.** The evaluation assumes (taking a more conservative view than the Business Plan) that DFC will attract 1-2 pairs of such trains per day starting in 2016, growing to 3-4 after 2020. The diversion of this traffic will also create road decongestion benefits. The economic savings from reduced congestion on the parallel road network are estimated at Rs 2.4 per truck-km (Rs 2009).

Reduced Emissions of Carbon Dioxide

28. The energy consumption by freight traff**ic that would use IR's tracks in th**e 'without-DFC' scenario is predicted at 6.5 kWh per 1000 gross ton-km, whereas on the DFC tracks, with less congested operation, more efficient rolling-stock and better infrastructure, it will be 5.7 kWh, 12 percent less. The economic value put on CO_2 avoided is taken as US$29 per ton, consistent with values used in other recent Bank evaluations.

Beneficiaries

29. The benefits to base traffic and suppressed demand will accrue to IR. The benefits to diverted traffic will accrue partly to IR and partly to the users, while benefits from reduced CO_2 emissions will benefit the global commons.

Results

30. EIRRs have been calculated for the project over a life of 30 years from the assumed opening date of Phase 1 in 2015. Taxes expected to average 10 percent of the financial construction cost have been deducted to give the economic construction cost. A number of tests have also been undertaken to test the EIRR's sensitivity to increases in the construction cost, transfer rate of traffic, DFCCIL O&M costs, etc. (Table A9.6).

Table A9.6: Estimated EIRR (2008/9 constant prices)

	EIRR (%)	NPV (Rs bn)
Base		
Phase 1	22	98
Phase 1+2	22	208
Phase 1+2+3	23	316
Sensitivity tests (on 1+2+3)		
Construction costs increased 30%	19	269
Transfer rate to DFC reduced to 75% from 85%	22	277
DFC above-rail cost savings reduced from 25% to 15%	22	274
IR construction avoided reduced 50%	21	263
No diverted traffic	19	174

31. The project is robust to variations in the capital costs and assumptions about traffic transfer rates and avoided investment. Large infrastructure projects in India are prone to over-runs in both cost and time, and around the world many railway projects fail to reach their traffic targets. However, the Project would still achieve a 17 percent economic return if the construction cost turned out as much as 50 percent higher than the current estimate. The underlying reason for this solid performance is that these lines are extremely congested and are experiencing continuing growth; without the project, capacity will be provided but slower and more expensively, delivering a lower level of service.

- The project has an NPV discounted at 10 percent to 2015 of Rs.316 billion (US$7.0 billion); Table A9.7 lists the key benefits by component. 67 percent of the benefits are savings associated with existing traffic. Of these, 19 percent are associated with passenger services, largely accruing to passengers through reduced journey times, and 46 percent are from freight services, largely because of the reduced operating costs on the DFC.
- Around half of the cost of construction of DFC is offset by the savings from avoiding the expansion of the existing corridors, at a higher unit cost.
- About 24 percent of the benefits are associated with generated traffic, mostly from the reduced operating cost of rail (including road access/egress) compared with road.
- Finally, about 9 percent of the benefits are external benefits, about two-thirds from reduced congestion with the transferred freight and the remainder from CO_2 emissions avoided.

Table A9.7: Economic NPV (at 10% discounted to 2015)

Component	Rs billion	% of Total Benefits
Infrastructure –related costs		
DFC infrastructure	-181	
Feeder network	-7	
IR investment avoided	105	
Infrastructure maintenance (net)	-27	
Subtotal	**-83**	-
Benefits		
Base traffic benefits		
Passenger users	71	17
Passenger operating costs	11	2
Freight users	50	13
Freight operating costs	152	35
Subtotal	**284**	67
Diverted traffic		
Customer benefits	11	2
Operating costs	92	22
Subtotal	**105**	24
External benefits	39	9
Total benefits	**426**	100
TOTAL NPV	**316**	

B. Financial Analysis

32. A financial assessment of the DFC project was carried out from three separate aspects:

(i) a stand-alone financial assessment of the Bank funded DFC Eastern Corridor project.
(ii) an assessment of the finances of the entire DFCCIL, the entity which will construct and operate the line.
(iii) an assessment of the impact on IR's overall finances of making equity contributions to DFCCIL.

33. Much of the assessment uses the same structure and input data as the economic evaluation. In particular, it uses the same forecasts, revenues, operating assumptions and operating costs, although these last are expressed as financial costs and thus not adjusted by shadow price factors as is done in the economic evaluation. As in the economic evaluation, the financial assessment is done for the individual sections being considered, as well as for the entire DFC project. The assessment of DFFCIL and IR finances, however, is based on the impact of both the Western and Eastern Corridors being constructed.

34. The main assumptions used in the analysis are summarized in Table A9.8. They form six main groups:

- **General economic:** the assumed macro-economic parameters, together with some derived indices.
- **Corridor physical characteristics**: the physical characteristics of the DFC corridors, including the length of each section, the assumed percentage of traffic transferring

from the existing corridor, the distance travelled on the upgraded feeder lines, the current traffic volume, train characteristics and capacity on the parallel IR line and on the new DFC line.

- **Traffic growth rates**
- **Investment**
  - Base IR investment program by main program and source of funds.
  - Age profile of current rolling stock fleet and assumed utilisation improvements (used to generate the rolling stock investment program).
- **Capital and operating costs and revenues.** the assumptions on capital and operating costs and revenues:
  - Passenger and freight unit revenues and costs (i.e. per passenger-km or per net ton-km). Parameters to relate track utilization to train commercial speeds.
- **Financing**
  - DFC financial inputs, including non-access charge revenue, the cost of traction electricity (assumed to be billed separately to users), maintenance and operating unit costs (derived from the DFCCIL Business Plan).
  - Assumed interest rates, dividend rates and return on investment
  - The IR projections include an assumed capital expenditure program for the next twenty years and an indicative set of funding sources. The projections assume that any financing gap is filled with loans from the Government which are subsequently repaid as surplus funds become available.

Definition of With and Without Project Cases

35. As in the economic evaluation, the definition of the 'with-project' and 'without-project' cases is **a critical part of the model structure.** The financial evaluation follows the assumptions in the economic evaluation that, in the absence of the project, IR would increase capacity on the existing alignment using the current track standards.

Access Charges

36. The approach adopted in the evaluation is to set the access charge to recover 100 percent of track costs in aggregate, including depreciation and the dividend payment to IR. The model also assumes that DFCCIL is not liable for tax (at least for the first ten years of its existence). The model sets the charges on an annual basis, but in practice access charges are probably best set for, say, a five-year period and should then include enough to finance any renewals that are required. They can then be subject to simple indexation during this period, possibly using an RPI-X approach if it is considered worthwhile.

Table A9.8 Inputs to Economic and Financial Evaluations

Input	Comment
Economic	
Real GDP	8% p.a. (GOI projection)
Inflation	5% p.a.; historic average
Real GDP/head	6% p.a. (2% less than GDP)
Labor productivity	Equal to traffic growth
Non-labor productivity	-1% p.a.
Rail labor cost (real)	3% p.a.
Rail labor bracket creep	1% p.a.
Productivity Commission	4% in 2018 and 2028, 5% in 2019 and 2029
Non-labour unit cost	0% p.a.
Corridor characteristics	
Distance, feeders lines	DFC Business Plan
% traffic transferring to DFC	DFC Business Plan
Traffic volume	IR data
Train sizes	IR data and DFC Business Plan
Traffic growth	
DFC corridors	IBRD (see economic evaluation)
IR network	IBRD using elasticities and GDP forecast
IR network tariffs	IBRD based on long-term trend in yields
Investment	
IR investment program	IBRD based on historic patterns
IR rollingstock renewal	IBRD based on current fleet age profile
On-going DFCCIL investment	DFC Business Plan
Operating costs	
IR operating costs by segment	IBRD, derived from 2006/7 IR analysis by service type, updated to 2008/9 control totals
IR speed-volume relationship	IBRD, based on industry experience and LDRSS analysis
IR cost-speed relationships	IBRD, based on analysis of IR unit costs
DFCCIL O&M costs	IBRD, based on analysis of DFC Business Plan
Construction costs	
DFC	DFC Business Plan
Incremental capacity on IR	IBRD
Feeder network upgrading	IBRD, based on IR expenditure to date
DFC track renewal	DFC Business Plan
Financial data	
DFC opening balance sheet	DFC Business Plan
IR opening balance sheet	IR Annual Report
IR staff	IR statistics
Interest and dividend rates	IR and IRFC reports

(1) Adjusted in the economic evaluation using shadow price factor of 0.9
(2) Actual data used where available for 2009/10 and 2010/11

37. Most practical access charges use a two-part tariff: one part was originally meant to reflect signalling infrastructure and operation costs and was set per train-km; and the other was originally meant to cover track-related costs and was set per gross ton-km. The evaluation assumes a structure in which O&M costs variable with train-km and gross ton-km are charged to

the respective cost drivers; the other costs (fixed O&M, depreciation and dividend) are split equally between train-km and gross ton-km. This produces a fee structure, which has around 40 percent of costs variable with train-km and 60 percent with gross ton-km, providing a reasonable incentive for third party operators in the future who may not be able to initially operate trains, which are as large as the incumbent IR.

C. Financial Internal Rate of Return of DFC Eastern Corridor Project

38. The financial evaluation uses the number of passenger and freight trains on each section for the 'with-project' and 'without-project' cases forecast in the economic evaluation, from which operating statistics (train-km, gross and net ton-km) are derived which are input to the calculation of operating costs, as described in the economic analysis. The traffic forecasts are also used to calculate the change in revenue.

39. The various construction and renewal costs described in the economic evaluation are also input to the evaluation, including the construction costs of the DFC Eastern Corridor, the capital expenditure that would otherwise be incurred on the conventional IR network, the DFC renewals expenditure incurred, based on the estimated infrastructure life, and the cost of upgrading the feeder network.

40. The FIRR has been calculated using the cash flows associated with the project, whether incurred by DFCCIL or IR, without distinguishing between them. The FIRR is shown in Table A6.9, together with sensitivity analysis to various risks: higher-than-expected construction cost, lower-than-expected traffic on DFC, etc.

41. The FIRR is calculated in nominal terms, i.e. using projections that include inflation, over 30 years from 2015. A 'real' FIRR is then estimated approximately[40] by netting-off the assumed inflation rate of 6 percent. Detailed projections for the Base Case are given in Table A9.9.

Table A9.9 Estimated FIRR (constant prices)[(1)]

	All Sources Combined
Base	
Phase 1	14
Phase 1+2	16
Phase 1+2+3	17
Sensitivity tests *(on 1+2+3)*	
Construction costs increased 30%	14
Transfer rate to DFC reduced to 75%	16
DFC above-rail cost savings reduced from 25% to 15%	15
IR construction avoided reduced 50%	15
No diverted traffic	15

[1] FIRR in constant prices approximated by removing inflation of 6 percent p.a. from current FIRR.

42. The project is also robust to variations in the capital costs and assumptions about traffic transfer rates and avoided investment. However, the ability to attract generated traffic (i.e., high-value container traffic that would otherwise travel by road) also has a significant impact on the FIRR and emphasises the need for IR and DFC to maximize the new traffic opportunities

[40] As certain of the financial costs, most notably the dividend payment to GOI, do not increase with inflation.

provided by the project. The project has a financial NPV at 16 percent nominal (approximately 10 percent in constant prices) of Rs 209 billion (US$4.6 billion) (Table A9.10).

Table A9.10 Financial NPV (at 16% nominal)

Component	Rs billion
Construction (net)	-122
Base traffic benefits	297
Generated traffic benefits	86
DFCCIL costs (net)	-52
Net present value	209

D. DFCCIL Financial Projections

43. Projections of the DFCCIL income statement were developed by considering only those financial costs and revenues associated with DFCCIL, but included both the Western and Eastern Corridors. The projected balance sheet followed using assumptions on the level of DFCCIL current assets and liabilities (inventories and accounts payable and receivable) and by assuming that all surplus cash is returned to IR as a dividend each year. The projections assume that no tax is payable by DFCCIL because of exemption from corporate income tax during its first ten years, and its affairs and revenues are organized to avoid tax thereafter. These statements are based on the assumption that IR receives the JICA loan for the Western Corridor as a budgetary transfer from Ministry of Finance which is payable in the form of a capital at charge at the rate of 7 percent (without principal repayment) for the period of 40 years with a deferral over the first 10 years. The Bank loan for the Eastern corridor will be on a back-to-back basis with IR and has been included using the same conditions (30 year tenor, 5 year grace period, no arrangement or commitment fees and an interest rate of LIBOR plus 50 basis points).

44. DFCCIL breaks even throughout the period, except for some small exchange losses during construction, due to the assumed policy of access charges covering full costs. The balance sheet shows the GOI contribution for the JICA loan as a non-repayable loan while the IR contribution is treated as equity. The financial projections (income statement and balance sheet) are available in Table A6.12.

E. Impact of the Project on IR's Finances

45. The impact of the project on IR finances was assessed using a set of financial inputs covering IR as a whole. The projected financial statements (available in project files) show, on the assumptions adopted, that IR only achieves a working ratio of 75 percent (the ratio of expenditure excluding depreciation to revenue) by 2015. Thereafter, it continues to improve and stabilises in the 60-70 percent range. The key assumption underpinning this forecast is the assumed increase in tariffs, which for passengers is set at 50 percent of inflation (in effect a real reduction of 2.5 percent p.a.) and for freight at 75 percent of inflation (a real reduction of 1.25 percent p.a.). More pessimistic assumptions (e.g. passengers held constant in nominal terms and freight at 50 percent of inflation) give a working ratio of over 80 percent for the next decade and the government having to make a continuing contribution of Rs 2-300 billion to achieve the investment program.

46. In terms of IR's overall investment, DFC, while substantial, is by no means the dominant project. The projected IR investment program during the next few years (including rolling stock funded through IRFC) is around Rs 4-500 billion p.a. in constant prices. Of this, the DFC is only

around Rs 50 billion p.a., say about 10 percent of the total planned expenditure. Thus, while it is a significant project in its own right, it is not a make-or-break project as far as IR finances are concerned, being of about the same order of magnitude as gauge conversion or new line construction. The principal determinant of whether DFC will squeeze out other investment is the overall volume of investment funds available, which is primarily determined by the working surplus on IR operations; this, in turn, is a direct function of tariff policy.

47. The short-term projections (Table A9.11) show IR will be consistently short of funds over the next three or four years if the planned rate of capital expenditure is maintained. This gap, of Rs 50-100 billion, is represented in the modelled projections as 'Government loans'. In practice, this will probably be funded by increasing the 'capital-at-charge' provided to IR, over and above the amount that was planned. In this case, the funds are never repaid but are instead subject to a dividend in perpetuity. The alternative option, of treating these funds as a loan, would incur interest charges for around a decade before they could be fully repaid.

Table A9.11: Projected IR Cash-flow 2010-2014 (Rs billion)

	2011	2012	2013	2014	2015
Investment (Rs bn)					
Infrastructure	252	268	289	308	327
Replacement rolling stock	39	48	51	78	83
New rolling stock	107	140	157	177	200
Other companies	21	27	33	35	19
Lease repayment	29	36	43	52	63
Subtotal	448	519	574	650	692
Other					
Working capital	5	9	9	10	11
Dividend	45	50	56	62	69
Interest on borrowings	3	11	21	30	37
Subtotal	53	71	85	102	117
Total	501	589	659	752	809
Sources					
Capital-at-charge	77	81	91	97	103
Excluded capital	21	22	25	27	29
IR operations	92	116	158	206	263
IRFC leases	121	153	168	217	238
DFFCIL dividend	0	0	0	0	0
IR funds	57	70	78	87	98
Government loans	134	147	139	118	80
Total	501	589	659	752	809
IR funds balances	0	0	0	0	0
Cumulative IR borrowings	177	325	464	582	661
IRFC leases	503	621	746	910	1085

Table A9.12: DFCCIL Financial Projections (Rs billion current)

DFCCIL financial statements (Rs current billion)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Income statement												
Revenue												
Track access charges												
Train-km related	0	0	0	0	0	12	20	21	22	23	29	55
Tonnage-related	0	0	0	0	0	15	28	30	32	34	47	84
Subtotal	0	0	0	0	0	27	48	51	54	57	76	139
Traction electricity	0	0	0	0	0	3	6	7	7	8	10	12
Total	0	0	0	0	0	30	54	58	61	65	85	151
Expenditure												
Labour	0	0	0	0	0	4	8	10	11	12	21	39
Materials, Traction etc	0	0	0	0	0	8	18	20	22	24	36	53
Subtotal	0	0	0	0	0	12	26	29	33	36	57	93
Depreciation	0	0	0	0	0	9	17	17	17	17	17	17
Total	0	0	0	0	0	21	43	46	50	53	74	109
EBIT	0	0	0	0	0	9	11	11	12	12	11	42
IBRD loan interest + fees	0	0	1	1	3	5	6	6	6	6	5	5
XR loss on IBRD loan	0	0	0	1	2	4	6	6	6	6	6	6
EBT	0	0	-1	-2	-5	0	0	0	0	0	0	31
Corporate tax	0	0	0	0	0	0	0	0	0	0	0	6
Profit	0	0	-1	-2	-5	0	0	0	0	0	0	25
Dividend to GOI	0	1	3	6	10	13	14	14	14	14	14	14
Dividend to IR	0	0	0	0	0	0	12	18	18	19	11	3
Balance sheet (Rs bn)												
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2025**	**2030**
Assets												
Non-current												
Net value	0	0	0	0	0	362	650	633	616	599	515	430
WIP	0	54	173	346	568	304	0	0	0	0	0	0
Subtotal	0	54	173	346	568	667	650	633	616	599	515	430
Current												

Inventory / AR/ Cash	0	2	5	7	9	8	6	7	7	8	11	19
Total	0	56	178	353	577	674	656	639	623	607	525	449
Equity and liabilities												
Non-current												
GOI loan	0	19	60	116	176	196	196	196	196	196	196	196
IBRD loan	0	9	32	64	120	154	153	151	150	148	134	122
Deferred dividend	0	1	3	10	20	33	47	60	74	88	157	109
Subtotal	0	29	95	189	316	383	396	408	420	432	487	427
Current												
AP/Loan and Def. Div payable	0	4	10	14	18	9	1	1	1	1	2	3
Subtotal	0	4	10	14	18	16	8	8	8	9	11	3
Renewal reserve fund	0	0	0	0	0	2	7	13	20	27	60	57
Retained profit	0	-1	-4	-13	-28	-41	-69	-104	-139	-175	-347	-353
Equity	0	24	78	162	271	314	314	314	314	314	314	314
Total	0	56	178	353	577	674	656	639	623	607	525	449

Annex 10: Safeguard Policy Issues

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

Introduction

1. This Annex describes the potential Environment and Social impacts and their mitigation measures with an overview of applicable safeguard policies for Phase - I investments. The physical works proposed will cause potentially significant environmental and social impacts comprising of important construction activities such as, tree cutting, forest land conversion, impacts on cultural resources, and land acquisition and involuntary resettlement. Considering the above, the Project has been placed in Category A and has triggered three safeguards policies: Environmental Assessment (OP/BP 4.01), Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.12).

2. Project has completed a series of environment and social reports as part of preparation to ensure inclusion and compliance with the Bank safeguard policies. List of social and environment reports are provided below.

Social Reports / ToRs

(a) Social Impact Assessment of 272 km Phase-I section (Khurja-Kanpur);

(b) Revised Resettlement Action Plan for 272 km, Dedicated Freight Corridor Corporation of India Limited, January 2011;

(c) Revised Resettlement Policy Framework for 71 km,(Tundla detour) Dedicated Freight Corridor Corporation of India Limited, January 2011;and

(d) Terms of Reference for Social Impact Assessment for the remaining 71 km Tundla detour.

Environment Reports/ToRs

(a) Environmental Impact Assessment and Environmental Management Plan for 272 km Phase I Section (Khurja – Kanpur);

(b) Environmental Management Frame Work for Eastern Dedicated Freight Corridor;

(c) Detailed Environmental Strip Plans for 272 km Phase I Section (Khurja – Kanpur);

(d) Silicosis Reduction Strategies for Eastern Dedicated Freight Corridor Project; and

(e) Green House Emission Reduction Analysis for the Eastern and Western Dedicated Freight Corridor Projects.

3. **Environment Management** *Environmental Assessment (EA):* The current environmental regulations in India, do not require conducting Environmental Impact Assessment and securing environmental clearance for Railway Projects. However, considering nature of the project and its potential to cause environmental impacts in the project area and the policies of the Bank, DFCCIL carried out a detailed environment assessment through an independent consultant for 272 km of the first project (APL 1), complying with *Category "A" – Full Assessment* requirements of the World Bank. A separate EA for the rest of the 71 km (Tundla detour) APL 1 is being prepared. The EA was competed for the entire stretch of 343 km; however, the 71 km section of Tundla detour has been realigned in order to further minimize land acquisition

requirements by replacing a long detour with three smaller detours. The EA is being updated for this stretch and is expected to be completed by the end of May 2011.

4. **The EA Process Included:**

(a) detailed mapping of environmental profile of the project area in the form of strip maps, to provide a clear picture of environmental features along the alignment;

(b) base line environmental monitoring for two critical seasons (winter and summer), for various environmental parameters such air, water quality, flora / fauna, etc.;

(c) detailed investigations through specific measurement of base line noise and vibration levels at various sensitive receptors along the project alignment and modeling to predict the anticipated noise and vibration impacts;

(d) detailed assessment / analyses to identify potential environmental impacts, for various environmental parameters;

(e) an analysis of 'Project' and 'No Project' scenarios, and alternative alignment options at various locations;

(f) a complete inventory of cultural properties that could be affected by the project;

(g) an inventory of trees to be cut for the project; and

(h) other aspects of the environmental assessment.

5. **Environmental Impacts.** Based on the above surveys/investigations, the EA identified the following potential impacts associated with the project. (a) acquisition of small parcels of forest land in seven locations along the alignment amounting to a total of 3.23 hectares; (b) cutting of about 1966trees for the entire 272 km of alignment; (c) involvement of about 17 million m^3 of earth work in embankment and 1.35 million m^3 of quarry material; (d) increased noise and vibration levels in about 37 sensitive receptors situated close to the alignment; (e) impacts on 22 cultural properties; and (f) health and safety issues associated with the construction activities of the project.

6. **Stakeholder Consultations.** Stakeholder consultations were carried out in two rounds at 18 and 8 locations spread across the project to: (a) obtain a better understanding of the potential impacts; (b) appreciate the perspectives/concerns of the stakeholders; and (c) secure their active involvement during finalization of EMPs. Consultations were designed in a way that: (a) affected people were included in the decision making process; (b) links between communities and their natural, physical and cultural resources base adjacent to project locations were safeguarded; (c) public awareness and information sharing on project alternatives, benefits and entitlements were promoted; and (d) views on designs and solutions from the communities were solicited. The inputs from the consultations were integrated in the environmental management plan of the project.

7. **Environmental Management Plan.** The EA recommended a comprehensive environmental management plan to address the impacts identified in the EA with specific mitigation measures. The measures include:

(a) compensatory afforestation to compensate with the loss of forest land and the loss of tree cover, in complete compliance with the Forest Conservation Act of Government of India;

(b) Avenue Plantation at 10 trees per km all along the alignment, with a detailed plan for the implementation of avenue plantation programs;

(c) Rehabilitation Plan for the Borrow Areas developed for the earth work for the project with detailed guidance on rehabilitation of borrow areas;

(d) noise barriers in four critical locations affected with high noise levels and specific mitigation measures for the management of increased noise levels in other sensitive locations;

(e) cultural properties rehabilitation plan for all the affected properties; and

(f) specific construction safety and environmental management measures, such as construction site management, camp site management, occupational health and safety measures to be implemented by the contractors.

8. **Physical Cultural Resources (OP/BP 4.11).** The project affects 22 cultural properties along the alignment. Some of these could be affected physically or access to such properties could be affected. All such areas of cultural and religious importance have been identified as part of EA for specific measures. All these measures will be planned and implemented in consultation with and close involvement of local communities. The project is also expected to run close to and affect a few religious structures in the new alignment proposed for Tundla detour and an archeological monument 'Budiya ka Tal' on Tundla detour. This will be confirmed during EIA / SIA study for this detour. In accordance with the requirements of Archeological Department, Government of India (GoI), DFCCIL will secure 'No Objection Certificate' from the department prior to the finalization of the contract, prepare suitable management for the affected structure and incorporate the measures in the implementation plan for this section of the project. In addition to the above, the EA provides detailed guidelines to deal with "chance find" of cultural properties along the project corridor during the implementation phase. These include: (a) notifying the district administration and the archeological department of the Government of India; (b) securing necessary clearances; and (c) preparing the suitable management plan(s) for the cultural properties found to be affected.

9. **Silicosis Reduction Strategies.** Considering the large quantities of quarry material handled in the project, a separate analysis of measures required to mitigate the potential impacts of 'Silicosis' on the construction workers of the project was carried out specific measures were recommended to be integrated in to the bid documents of the project, for implementation by the contractor. The EMP including the silicosis reduction strategies are being integrated in the bid documents for implementation by the contractors of the project.

10. **Regulatory Clearances.** The prevailing environmental regulations of Government of India do not require securing environmental clearances for the project. The project could however, require securing 'No Objection Certificates' by the contractor, from local pollution authorities, for setting up quarries, construction sites and other associated equipment. DFCCIL will monitor and ensure compliance to these regulatory requirements.

11. **Environmental Management Framework (EMF).** Considering the series of projects (APL 2 and APL 3) being developed by DFC and the absence of specific safeguard management experience by the agency, an Environmental Management Framework (EMF) has also been prepared for DFC. The framework defines environment management approach for identifying the environmental issues associated with the proposed projects, identifies the requirements of

conducting EA studies and also provides guidance to integrate environment safeguard measures during the planning, designing and construction phase of DFC East. The EMF also provides a detailed guidance on the formulation of environment management strategies and also sets out policies and procedures to be followed by DFCCIL in managing environmental safeguards of the Eastern DFC Program.

12. **GHG Emission Analysis.** The proposed project is expected to promote shifting of freight transport from road transport to more efficient rail transport, and this shift is expected to offer significant reduction of Green House Gas (GHG) emissions. Considering the above potential and possible opportunities for realizing these benefits through CDM or other emerging carbon trading mechanisms, a study on GHG emissions due to the development of the project has been carried out by DFFCIL with the help of specialized consultants. The analysis estimates that the eastern corridor to generate about a total of about 10.48 million tons of GHG emissions during the forecast period up to 2041-42, as against 23.29 millions of GHG emissions in the absence of DFC - a reduction of about 55 percent of GHG emissions due to the proposed project. The results of this study are being evaluated to identify suitable activities of the project for possible financing through Clean Development Mechanism (CDM) or other carbon finance opportunities. A more detailed description of the analysis is provided in Annex 12.

Social Safeguards Management

13. The proposed corridor will require land acquisition along the existing route for a 40 meter ROW and for 60 meters ROW for crossovers and bypasses. The alignment was finalized considering minimization of impacts with minor and major detours to avoid thick habitations and resulting displacement. The following measur***e***s were taken to minimize the impacts: (a) maximize the use of existing railway land within the existing ROW; (b) negotiate with Indian Railways to transfer unutilized loop lines and yards to transfer to DFCCIL where available; and (c) use the detours at busy stations to avoid the physical displacements and acquisition of structures. It also detours in urban locations to avoid large-scale impacts in the towns.

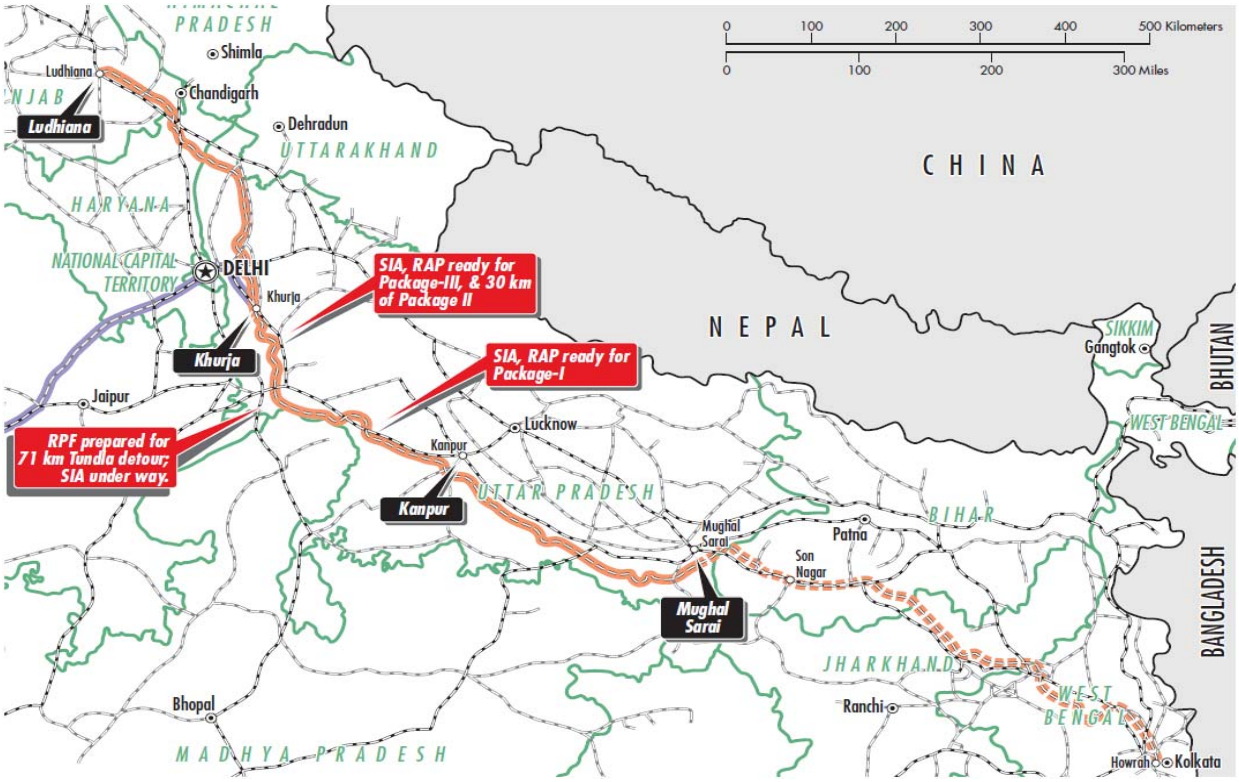
14. The Government of India (GOI) has enacted a special legislation, the Railway Amendment Act (RAA), 2008 for carrying out land acquisition for special Railway projects such as the DFC project. The RAA has new provisions (compared to the Land Acquisition Act of 1894) as regards compensation and timeline. The RAA, 2008 offers compensation with a 60 percent solatium[41]. This also requires that the market value of land/structure to be determined taking into consideration (a) land value under Stamp Act, 1899; and (b) average sale price of similar lands based on transactions recorded in the previous three years. The EM provides ex gratia of INR 20,000 for those losing land up to 1500 square meters (sq.mt) and additional ex-gratia at INR.15/ sq.mt. to those losing land above 1500 sq.mts. The Entitlement Matrix provides a range of R&R benefits as per NRRP (2007). The land owners becoming landless, marginal and small farmers due to land acquisition will receive a rehabilitation grant of `750 days of wage. In response to the concerns of the farmers, the IR has updated the Entitlement Matrix with a clause for providing "higher compensation rates based on provisions in any Act or Notifications issued or procedure established by the state Government". In order to maintain transparency,

[41] The term "solatium" has its origin in the Latin word "solace". "Solatium" is an amount paid in excess of the compensation award in order to mitigate grief caused due to involuntary loss of land and assets.

compensation and R&R benefits shall be distributed among PAPs by check at select village camps on dates announced in advance.

15. The Entitlement Matrix offers compensation at replacement cost and R&R assistances for loss of land, assets, and livelihoods to the affected families compliant with OP 4.12. The entitlement matrix provides that an Independent Evaluator will advise the Competent Authority in determining the replacement value of the affected land and structures. The 'Section P' of the RAA, 2008 requires framing of rules under the Act to deal with land acquisition and compensation related issues during implementation. The RAP/RPF defines cut-off date, and offer payment of taxes for purchase of alternative lands and assets. All rehabilitation benefits expressed in monetary terms in the entitlement matrix shall be updated based on the Consumer Price Index (CPI) on an annual basis.

Social Impacts and Mitigation Measures



16. A Detailed Social Impact Assessment (SIA) was carried out for 272 km where the alignment was finalized in the Phase-I section (Khurja-Kanpur) to assess impacts associated with the private land acquisition. The SIA reveals that 66 percent of the affected population lives the below poverty line (i.e. earning less than INR 25,000 per annum) and more than half of the affected people are marginal land owners owning less than one hectare of land. The SIA also identified vulnerable populations based on the vulnerability definition by NRRP 2007. The study shows that a majority of the project affected population is engaged mainly in farm related activities and also indicates a social setting where the adult male members are the main bread earners. As per the Entitlement Matrix the widows and unmarried girls above 18 years of age, who are considered vulnerable people as per the Clause 6.4 (v) of the National Resettlement and

Rehabilitation Policy, (NRRP) 2007, will be eligible to receive 300 days of minimum wage as livelihood restoration grant. The capacity building activities to be carried out with the help of NGOs for income generation and livelihood restoration will focus on the affected women.

17. The study also assessed the likely project impacts on tribal/adivasi populations. It was well noted that there are no tribal communities in the proposed corridor. The number of tribal families affected by the project is eight who are spread out in the corridor of impact. These eight affected tribal families do not have separate social and cultural institutions and are socially a part of the mainstream population. No Tribal Development Plan (TDP) has therefore been prepared as per OP 4.10. However, in view of special protection provided by the Indian constitution to the scheduled tribes, the Entitlement Matrix offers additional assistance for the tribal people affected by the Project. This is aimed to minimize and mitigate any negative impacts and to ensure that no irreversible harm will be caused due to the project to the tribal people. This approach is consistent with the Bank Policy and NRRP 2007. If the SIA for Tundla stretch of 71 km or proposed investments for APL-II and APL-III indicate impact on tribal communities, a TDP shall be prepared and implemented as mandated in the RPF.

18. The Project will entail negative social impacts from loss of land and nearly 75 percent of those losing land will become small, marginal, landless farmers due to land acquisition, while a substantial number of them are already in the small and marginal category. The table below summarizes the impacts.

Table 1: Land acquisition and resettlement impacts

Work package	Length (in Km)	No. of Villages affected	LA required (in ha)	No. of Affected land owners	% land owners losing a linear strip (< 0.15 ha)	No. of Displaced families	No. of affected community prosperities	Status of Safeguard Planning Measures
I	135	104	570	3,566	57.00	88	6	SIA and RAP prepared
II	101	27	93	1,841	38.00	58	1	SIA+RAP done for 30 km; RPF done and SIA under way for 71 km
III	107	98	519	2,719	52.00	240	15	SIA and RAP prepared

19. A **Resettlement Action Plan** (RAP) for the 272 km has been prepared in close collaboration with the stakeholders. It endorses commitment to ensure that no irreversible harm will occur from implementation and that project benefits are equitably distributed. The RAP involved extensive stakeholder consultation in local languages, in a culturally appropriate manner with focus on gender, birth identity and poverty. While population composition of the affected persons was not socio-economically diverse, the presence of the eight scheduled tribe families scattered in the project area was recognized during the process, particularly in terms of their general socio-economic vulnerability recognized by the Indian Constitution. The RAP underscores conformity with the Bank Policy OP 4.12 and institutes targeted measures in its entitlement matrix and grievance redress mechanism to ensure that the vulnerability of different socio-economic categories including the scheduled tribe families is fully addressed with equitable project benefits for all the affected families. The borrower has approved an Entitlement Matrix for providing compensation at replacement cost and R&R assistance for loss of land, assets, and livelihoods to the eligible PAPs fulfilling the requirements of OP 4.12. The Ministry of Railways (MoR) has updated the Entitlement Matrix to include an additional provision for offering higher compensation rates based on any act or notifications issued or procedure established by the concerned state Government.

20. **Resettlement Policy Framework**. The alignment for the Tundla detour (71 km) in Firozabad and Agra districts was changed during the preparation process in order to further minimize the land acquisition requirements. Earlier the alignment in this stretch involved a single long detour of 71 km passing through pre-dominantly green field areas. This was replaced with three smaller detours bringing down the land acquisition requirements significantly. The social impact assessment for this realigned stretch is being updated and is expected to be complete by the end of May 2011. Based on findings of the SIA, a RAP will be prepared and implemented in line with the Resettlement Policy Framework (RPF). The institutional arrangements and compensation and other R&R benefits will remain the same for this Tundla stretch as for the RAP prepared for the 272 kilometer stretch of the Project. The budget of US$110 million indicated in the last section of this Annex covers costs of implementing the RAP for the whole stretch of 343 km for APL I including the Tundla stretch. This RPF prepared for the Tundla stretch will be applicable for any future alteration in alignment during implementation and also for proposed investments for APL-II and APL-III.

21. The RPF, in line with the principles of existing RAP for 272 km, outlines principles and procedures for: (a) assessing social impact with a terms of reference (TOR); (b) preparing the RAP before awarding work; (c) overall legal and institutional framework; (d) entitlement matrix; and (e) implementation arrangements (including disbursement of compensation and rehabilitation benefits, grievance redress mechanisms, stakeholder consultation, NGO participation for facilitating community mobilization and livelihood restoration, site hand over for civil work, monitoring and evaluation and indicative budget). This RPF will be applicable for all activities linked to or associated with this project, such as ROBs. The RPF makes full commitment to ensure no irreversible harm occur from project implementation and states measures to promote equitable and culturally appropriate distribution of project benefits among the all the socio-economic groups including the vulnerable population and the scheduled tribes. The RPF mandates that based on the SIA undertaken for the remaining stretch of 71 km in APL-I and later for APL-II and III mitigation plans will be prepared. In addition to consultations carried out as a part of the SIA for the 71 km of the Tundla as well as for the forthcoming APL phases, “free, prior, and informed” consultations will be held where there is impact on the tribal communities. Based on these special consultations and SIA findings, Tribal Development Plan (s) will be prepared in a culturally sensitive manner complying with OP 4.10.

Institutional Arrangements

22. DFCCIL is a new organization with no previous experience in environmental management, land acquisition and resettlement management and has taken steps to establish necessary institutional arrangements for safeguards management. The land acquisition will be carried out by the State Government who is experienced in this field. Competent authorities and Arbitrators have been appointed for carrying out land acquisition using RAA, 2008.

23. DFCC has established a Social and Environment Management Unit (SEMU) for overseeing management of environment and social safeguard measures. The unit is headed by a General Manager, supported by an Additional General Managers for land acquisition and environmental safeguards management. The SEMU will also include experienced Environmental Management and Social Development Specialists, and a Deputy General Manger for dealing with grievances. At the field level, the Chief Project Manager (CPM) will coordinate safeguard management activities with the support of one APM for environmental management, one APM each for Social Safeguards and one APM designate for environmental safeguards for

each contract package of 100 km. The LA process will be carried out with the support from the Land Acquisition Consultants, who will undertake land surveys and coordinate with the local revenue department. In addition, the Project Supervision Consultants will include social and environment specialists to oversee coordination of civil works with RAP and EMP activities. DFCC is also hiring NGOs to assist in community participation, livelihood and skill improvement activities and to support affectees in articulating their grievances.

Monitoring and Evaluation (M&E)

24. The regular performance monitoring of the RAP implementation will be done by internal oversight mechanisms of the DFCCIL in which the SEMU and the CPM office will have a key role to play. The SEMU and the CPM office will be assisted by the PMC and the facilitating NGOs. DFCCIL will hire a Social and Environment Safeguards Monitoring and Review Consultant (SESMRC) for third party monitoring and audit of the implementation of land acquisition and R&R measures and EMP. SESMRC will provide quarterly progress reports (QPR) and yearly Safeguard Review Reports.

Independent Grievance Redress Mechanism

25. The Borrower has set out a clear institutional procedure for handling grievances and complaints. The Competent Authority appointed for carrying out land acquisition as per the RAA, 2008 will be the first level for hearing and resolving objections relating to the land acquisition process. Independent Arbitrators will hear and redress grievances relating to compensation awards as per the RAA, 2008. A two stage grievance redress mechanism (GRM) has been set out. At the field level, the GRM will be chaired by the concerned District Collector or her/his nominees, and will comprise representatives from the civil society and district local body. At the corporate level, the Director, DFCCIL (Project Planning) will chair the GRM and will have representatives from the Indian Railways, DFCCIL, and the civil society. The senior level GRM shall be independent and the SEMU, which is responsible for overall management of the resettlement and rehabilitation process, shall have no role in its decision making except assisting in documentation of the grievance redress process. Both men and women will have equal access to these grievance committees. In addition, while the Indian Railway will appoint an Ombudsman to deal with unresolved grievances, DFCC will hire an independent NGO to support the vulnerable. The Borrower will hire a Social and Environment Safeguards Monitoring and Review Consultant (SESMRC) for third party monitoring and annual quality audit of the implementation of land acquisition and R&R measures. The Consultant will provide QPRs and annual audit reports.

Consultations and Disclosure

26. Public consultations were held with the affected people during SIA and EIA studies in the form of focus groups discussions at several locations. These included 227 focus group discussions (FGD) at the village level; 54 FGDs at the Tahsil or Taluk level; and 18 FGDs at the district levels. In addition to this, consultations were held at 18 locations to discuss the potential environmental impacts of the project. These stakeholders who took part included land owners, non title holders, government official etc. The average participation varied between 12 to 45 individuals at the village level consultations. The objectives of these consultations were to disseminate information about the Project and its likely impacts and elicit people's views for minimizing and mitigating impacts. All consultations were inclusive in nature with strong focus on gender, birth identity and poverty. Key issues discussed during the consultations included: (a)

potential environmental impacts; (b) employment opportunities; (c) vibration impacts on structures close to the DFC tracks; (d) compensation; (e) loss of common properties; and (f) accident risks. In the second round, follow up consultations were held at 12 locations to discuss the draft RAP/RPF and at 8 locations to discuss the draft EA, based on which these documents were finalized. Mitigation measures proposed to address people's concerns include: (a) provision of foot over bridges; (b) cross drainage structures; (c) road over bridges; (d) and boundary walls at certain locations; and (e) compensation and resettlement assistance and RAP Implementation arrangements. In addition, the Bank team undertook field visits during the preparation to interact with the people and stakeholders to have a firsthand assessment of impacts and issues on the ground.

27. The draft RAP for 272 km and the RPF for 71 km has been disclosed on the DFCCIL's web site and also in the Bank Info Shop during January, 2011. The hard copies of these documents are also available to the public at the field level Project Office and the district administrations. The EA/EMP and RAP have been updated incorporating the Bank's comments; the final EA/EMP and RAP will be re-disclosed soon. In addition, the list of PAPs eligible for different types of compensation and R&R benefits will be disclosed at the village and panchayat levels. The details of GRM and Ombudsman will also be disseminated to enable the people to approach those committees to resolve their grievances and complaints.

Social Safeguards Related Risks

28. The key social safeguards risks include: (a) opposition among some farmer groups to land acquisition due low compensation; (b) large scale loss of land; (c) delays in payment of compensation; (d) demand for change in alignment; (e) challenges in ensuring smooth coordination of efforts with the state government; (f) lack of DFCC management capacity in to handle land acquisition and R&R; (g) disputed claims regarding eligibility for various R&R benefits; (h) loss of access to local roads; and (i) impacts on marginal farmers and vulnerable groups. Listed below are some key steps to minimize and mitigate the above risks.

(a) an Entitlement Matrix has been approved, providing compensation at replacement value along with R&R assistance to various impact categories of PAPs;

(b) senior district revenue officers have been appointed as competent authorities for land acquisition and Divisional Revenue Commissioners appointed as Arbitrators to resolve compensation related grievances;

(c) a two-stage grievance redress mechanism (GRM) will be in place with an Ombudsman appointed at the highest level to hear and resolve PAP grievances and enhance credibility of the land acquisition and R&R process;

(d) robust transparency measures planned including disclosure of the eligible PAPs in respective villages and distribution of compensation and R&R by check and through village level camps;

(e) services of NGOs will be hired to assist with mobilization support and enable PAPs to receive their entitlements, put forth grievances, and restore their incomes;

(f) readjusting alignment undertaken in Ferozabad and Aligarh districts for Tundla bypass (70 km) to avoid address concerns of the local farmers;

(g) consultations will be held with various stakeholders and their concerns addressed while finalizing the alignment and incorporating suggestions into the RAP;

(h) establishing a Social and Environment Management Unit (SEMU) with experienced professionals and officers at headquarters and field levels;

(i) mechanism for Third Party Monitoring and Evaluation through independent consultants is planned;

(j) intense safeguards supervision support by the Bank Team with adequate staff time and consultants providing DFCCIL with hands on technical support will be ensured;

(k) award of contract and handing over site with clear linkage to progress in land acquisition and offer of payment of compensation and R&R assistance will be undertaken;

(l) review and update of Entitlement Matrix will be undertaken based on safeguard review after one year of project effectiveness;

(m) stakeholder consultations to be done on regular basis during the implementation phase; and

(n) undertaking impact evaluations during the implementation phase.

Safeguard Policy Linkages

29. The safeguard policies of the Bank will apply to all components of the Project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement, that in the judgment of the Bank, these activities are (a) significantly or directly related to the Project; (b) necessary to achieve the project objectives as set forth in the project document; and (c) carried out or planned to be carried out contemporaneously with the project. This will apply to 8 critical ROBs identified by MOR in PIM to be constructed through MOR and/or State Government funding without Bank financing concurrent to this Project[42]. In case any other activities fulfilling the above criteria, the Bank safeguard policies will apply. However, this safeguard provision does not apply to the Western Dedicated Freight Corridor (WDFC) financed by JICA as this is not directly or significantly related to the Bank financed corridor and it is already in implementation. The Western DFC with a separate route alignment is spread in a different geographical zone and does not meet the safeguard policy linkage criteria outlined above.

Supervision Strategy

30. The Bank team includes Social Development and Environment Specialists based in the country office who are experienced in supervising large infrastructure projects financed by the Bank. The Bank team will provide intensive supervision support with adequate staff time and with the help of social development consultant to provide day-today hands-on support to DFCCIL. DFCCIL will carry out internal monitoring through its Team based at Headquarters and field staff supported by NGOs and consultants. The Social and Environment Safeguards Monitoring and Review consultants (SESMRC) will carry out third party monitoring and provide

[42] The remaining 3 out of 11 identified ROBs are already under construction.

quarterly progress reports on the safeguards management, indicating challenges encountered. The consultants will also undertake annual quality audit of environment and social safeguards management, based on which necessary corrective measures will be taken appropriately. In addition to the above, impact evaluation reports will also be closely reviewed by the Bank in collaboration with DFCCIL during supervision missions.

Budget

31. The Ministry of Railways has estimated US$110 million for planning and implementing the RAP including for the 71 km Tundla stretch. This budget covers payment of compensation and resettlement and rehabilitation benefits, and US$3.5 million for implementing the EMP activities independent of the civil works. In addition to this, all the EMP activities related to the construction management will be undertaken as a part of the civil works, cost of which will be factored into the bid document. An indicative outline of the budget items for social aspects is given below:

(a) conducting EA and SIA;

(b) public information and communication materials (RAP/RPF/EA/EMP brochures, list of persons affected and categories of entitlement; List of cultural properties affected);

(c) public consultations;

(d) legal expenses for transfer/acquisition of land/assets per km;

(e) implementation of remedial measures including payment of land acquisition and R&R assistance; and EMP activities;

(f) capacity building of stakeholders (training and on the job experience through consultant services to support grievance redress);

(g) quarterly monitoring by Social and Environment Safeguards Monitoring and Review consultants (SESMRC).

Attachment 1 to Annex 10

Table 2: Entitlement Matrix

Sl. No.	Application	Definition of Affected Persons	Entitlement	Details
A. Loss of Private Agricultural, Homestead and Commercial Land				
1	Land on the Project Right of Way	Legal Title holders and Affected Parties with traditional land rights	Compensation at replacement cost Resettlement and Rehabilitation	(i) Cash compensation for the land at market value, which will be determined as mentioned in note (A) (section 20 G of RAA 2008). (ii) 60 percent solatium on the compensation determined in (i) above (section 20F (9) of RAA 2008). (iii) In case where a State Government through any act or Gazette Notification or as approved by any authority of State Government (duly authorized for the purpose) as per their approved procedure has fixed a rate for compensation of land, the same may be adopted by the Competent Authority in determining the compensation for land in lieu of (i) and (ii) above. (iv) Additional ex-gratia amount of Rs 20,000/- for those losing land up to 1,500 sqmts; Plus @ Rs.15 per sqmt for area acquired above 1,500 sqmt (para 7.19 NRRP 2007). (v) If as a result of land acquisition, the land holder becomes landless or is reduced to the status of a "small" or "marginal" farmer, rehabilitation assistance equivalent to 750 days of minimum agricultural wages would also be given. (vi) The Competent Authority may in case of doubt/conflicting claims of compensation of market value may take inputs from an independent evaluator also before deciding the award. Detailed procedure in this regard is in note B. (vii) Policy for acquisition/ compensation for residual land will be as per note C. (viii) Refund of stamp duty and registration charges incurred for replacement land to be paid by the project; replacement land must

Sl. No.	Application	Definition of Affected Persons	Entitlement	Details
				be bought within a year from the date of payment of compensation to affected party as defined in section 20(H) of RAA 2008.
2		Registered tenants, contract cultivators and leaseholders	Compensation for standing crops at market rate	Registered tenants, contract cultivators and leaseholders are not eligible for compensation for land. They will only be eligible for compensation for standing crops at market rate if 3 months' advance notice is not served by EA.
3		Un-registered tenants, contract cultivators, leaseholders, sharecroppers	Compensation for standing crops at market rate	Un-registered tenants, contract cultivators, leaseholders and sharecroppers are not eligible for compensation for land. They will only be eligible for compensation for standing crops at market rate if 3 months' advance notice is not served by EA. In case of share croppers, compensation shall be in the ratio as mutually agreed by the share croppers and land owners.
B. Loss of Private Structures (Residential/Commercial)				
4	Structure on the Project Right of Way	Title Holder/Owner	Compensation at replacement rate Resettlement and Rehabilitation Assistance	(i) Cash compensation for the structure at replacement cost which would be determined as per note D. (ii) Right to salvage material from the demolished structures. (iii) Three months' notice to vacate structures. (iv) Refund of stamp duty and registration charges for purchase of new alternative houses/shops at prevailing rates on the market value as determined in (i) above. Alternative houses/shops must be bought within a year from the date of payment of compensation to affected party as defined in section 20(H) of RAA 2008. (v) Resettlement and Rehabilitation Assistance as applicable as under: (a) Transition Allowance of Rs 4,000/- per household. (b) Each affected family getting displaced shall get a one-time financial assistance of Rs 10,000 as shifting allowance (para 7.10 NRRP 2007). (c) Each affected family that is displaced and has cattle, shall get financial assistance of Rs 15,000/- for construction of

Sl. No.	Application	Definition of Affected Persons	Entitlement	Details
				cattle shed (para 7.10 NRRP 2007). (d) Each affected person who is a rural artisan, small trader or self-employed person and who has been displaced shall get a one-time financial assistance of Rs 25,000/- for construction of working shed or shop (para 7.12 NRRP 2007). (e) House construction assistance for those living below poverty line equivalent to the latest construction cost of Indira Awas Yojana Scheme for Rural Areas and cost of house construction under JNURM for Urban Areas
5	Structure on the Project Right of Way	Tenants/Lease Holders	Resettlement and Rehabilitation Assistance	(i) Registered lessees will be entitled to an apportionment of the compensation payable to structure owner as per applicable local laws. (ii) In case of tenants, three months written notice will be provided along with Rs 10,000 towards shifting allowance (NRRP 7.11). (iii) Three months' notice to vacate structures. In case notice is not provided, then three months' rental allowance will be provided in lieu of notice.
C. Loss of Trees and Crops				
6	Standing Trees, Crops on Project Right of Way	Owners and beneficiaries of land	Compensation at market value	(i) Three months' advance notice to affected parties to harvest fruits, standing crops and remove trees (ii) Compensation to be paid at the rate estimated by: (a) the Forest Department for timber trees. (b) State Agriculture Extension Department for crops. (c) Horticulture Department for perennial trees. (d) Cash assistance to title holders and non-title holders including informal settlers/squatters for loss of trees, crops and perennials at market value
D. Loss of Residential/Commercial Structures to Non-Title Holders				
7	Structures on the Project ROW	Owners of structures identified as on date of	Compensation at replacement cost Resettlement and Rehabilitation Assistance	(i) Encroachers (as defined in Note F) shall be given three months' notice to vacate occupied land or compensation for loss of crops or

Sl. No.	Application	Definition of Affected Persons	Entitlement	Details
		notification (20A).		structures. If notice is not given cash assistance to squatters (as defined in Note F) for their structures at replacement costs which will be determined as mentioned in Note D (ii) Resettlement and Rehabilitation assistance as under: (a) Transition Allowance of Rs 4,000/- per household. (b) Shifting allowance of Rs 10,000 per household (para 7.11 NRRP 2007). (c) Assistance of Rs 15,000/- for loss of cattle shed (para 7.10 NRRP 2007). (d) If the affected party getting displaced is a rural artisan, small trader or self-employed person assistance of Rs 25,000/- for construction of working shed or shop (para 7.12 NRRP 2007) (e) House construction assistance for those living below poverty line equivalent to the latest construction cost of Indira Awas Yojana Scheme for Rural Areas and cost of house construction under JNURM for Urban Areas
E. Loss of Livelihood				
8	Households living on Right of way	Title Holders/ Non-Title holders/share-croppers, agricultural labourers and employees	Rehabilitation Assistance	(i) Rehabilitation grant equivalent to 750 days of minimum agricultural wages to those families losing livelihood (NRRP para 7.14) *(land title holders availing assistance of 750 days minimum wages under section 1(v) above would not be eligible for this assistance).* (ii) Training Assistance of Rs 4,000/- for income generation per household. (iii) Temporary employment in the project construction work to Affected Persons with particular attention to APs Below Poverty Line (BPL) by the project contractor during construction, to the extent possible.
E1 Additional support to Vulnerable Group (as defined in Note E) and those Below Poverty Line				
9	Households affected by	Households affected by	Resettlement and Rehabilitation Assistance	One time additional financial assistance equivalent to 300 days of minimum

Sl. No.	Application	Definition of Affected Persons	Entitlement	Details
	ROW	ROW		wages.
E2 Additional assistance to Scheduled Tribe affected families				
10	Affected Scheduled Tribes	Households affected by ROW	Rehabilitation Assistance	(i) Each ST affected family shall get an additional one time financial assistance equivalent to five hundred days minimum agricultural wages for loss of customary rights or usage of forest produce (para 7.21.5 NRRP 2007) (ii) In case of land acquisition from each ST affected family, at least one third of the compensation amount due shall be paid to the affected families at the outset as first instalment and the rest at the time of taking over the possession of the land (para 7.21.4 NRRP 2007)
F. Loss of Community Infrastructure/Common Property Resources				
11	Structures and other resources (eg land, water, access to social services etc) on ROW.	Affected communities and groups	Reconstruction of community structure and common property resources	Reconstruction of community structures and replacement of common property resources in consultation with the community as appropriate.
G. Temporary impact during Construction				
12	Land and assets temporarily impacted during construction	Owners of land and assets	Compensation for temporary impact during construction like disruption of normal traffic, damage to adjacent parcel of land/ assets due to movement of heavy machinery and plant site.	The contractor shall bear the compensation cost of any impact on structure or land due to movement of machinery during construction or establishment of construction plant. All temporary use of lands outside proposed ROW to be through written approval of the landowner and contractor. Location of construction camps by contractors in consultation with DFCCIL.

Annex 11: GAAP (Governance and Accountability Action Plan)

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

1. The construction of DFC is one of the biggest projects undertaken by Ministry of Railways (MoR) and it will probably rank amongst some of the biggest projects ever undertaken by the GOI in recent years involving huge public outlays. Given the scale and high profile of the project, GOI has rightly established DFCCIL as a corporation under the Companies Act to be the implementing agency for DFC. As such, DFCCIL is determined to not only set new standards of engineering and managerial efficiency, but also to ensure the highest standards of transparency and accountability during project implementation. Toward this objective, this Governance and Accountability Action Plan (GAAP) has been prepared, keeping in view the broader country and sector context.

2. Recent events in India involving allegations of corruption on a large scale and at the highest levels in several sectors have brought issues of governance and accountability into the limelight as never before. A recent survey of leading domestic and foreign businesses by a top consulting firm identified corruption as the main impediment to India moving beyond the estimated growth rate of 9 percent[43]. Such intense public and media scrutiny has motivated the GoI to step up its governance agenda. The President of India listed *addressing frontally the lack of probity and integrity in public life* as a priority of her government for the coming year[44]. A high-powered Group of Ministers (GoM) has been set up to tackle corruption[45], specifically tasked with addressing issues such as speedier processing of corruption cases of public officials, transparency in public procurement and contracts, discretionary powers of ministers and a competitive system for exploiting natural resources. In addition, with a view to increase accountability, the GOI has started to rollout a *performance monitoring and evaluation system* for eighty-four government departments/ministries that will help assess them on six key governance indicators[46]. A landmark legislation[47] to protect whistleblowers who report corruption and provide for severe punishment to those who expose their identity or try to victimize such people has also been introduced in Parliament[48]. The Ministry of Defense and thirty-nine public sector undertakings in several sectors[49] have also introduced *Integrity Pacts* (advocated by Transparency International and recommended for adoption by CVC to all government organizations[50]) as part of their procurement processes. At the international level too, India has stepped up its governance efforts: It joined the Financial Action Task Force (FATF) of the OECD to combat money laundering and terrorist financing in June 2010, and is in the process of ratifying the United Nations Convention Against Corruption (UNCAC).

---

[43] *Survey on Bribery and Corruption – Impact on Economy and Business Environment*, KPMG, India, March 2011.
[44] *Checking inflation, tackling corruption UPA's priority: President Patil*, Times of India, New Delhi, February 21, 2011.
[45] *Budget Speech of Mr. Pranab Mukherjee*, Honorable Finance Minister, GoI, February 28, 2011.
[46] The 6 key indicators are: Action plans for mitigating corruption, implementing e-office and ISO 9001 certification, implementing three key recommendations of the Administrative Reforms Commission, independent audit of implementation of citizen's charter and grievance redressal systems.
[47] Public Interest Disclosure and Protection to Persons Making the Disclosures Bill, 2010.
[48] Lok Sabha Bulletin - Part I, New Delhi, August 26, 2010, No. 109.
[49] Oil & Gas (ONGC, GAIL, OIL, IOCL), Power (Powergrid, NTPC, NHPC), Telecom (BSNL), Heavy Industry (BHEL, SAIL), Airports (AAI), Shipping (SCI).
[50] Office Order No. 41/12/07, CVC, GoI, 4 December 2007.

3. In terms of governance, the Railways sector suffers from some of the same issues as the Road sector: project delays due to issues in land acquisition and rehabilitation, delays in environmental clearances, poor coordination with state governments, law and order problems in some states, frequent design changes, resource constraints[51] and corruption in the construction industry[52], poor project planning, funding and management, and contractual failures. According to a recent report by the Ministry of Statistics and Program Implementation, more than half of all infrastructure projects that are not going according to plan are by Indian Railways (IR). The time delays for these projects range from 18 to 225 months, with cost overruns of about 150 percent, the highest among all the infrastructure sub-sectors[53]. In this context, the DFC project has seen its share of delays and cost overruns: Originally scheduled for completion in 2013, now it will not be complete until 2016-17; the project cost has also doubled since its conception in 2005 due to escalation in input costs, addition of new segments, time overruns[54] and procedural delays in contracts[55]. To its credit, the GoI is now vigorously monitoring the status of implementation of all projects. In addition, the CAG also critically monitors railway projects that are both ongoing and under preparation (such as this project). The GoI has also announced the creation of a Central Organization for Project Implementation (COPI) within the Railways to ensure optimum utilization of project funds and minimize time and cost overruns[56]. Indian Railways has also initiated the installation of an *Integrated Railway Vigilance Information System (IRVINS)* to facilitate tracking and monitoring all vigilance related cases across the Railways on a regular basis.

4. The above-mentioned layers of checks and balances at GOI and IR would undoubtedly provide the backstop for ensuring good governance and accountability on this project as well. However, DFCCIL/MoR would need to take specific measures to ensure effective and efficient project implementation, especially in light of the ongoing CVC investigation into alleged irregularities on some of DFCCIL's earlier contract awards. To this end, the proposed governance and accountability action plan (GAAP) identifies key risks and the various procedures/processes that DFCCIL proposes to mitigate the same.

Key Governance Risks

5. Based on a review of existing procedures, policies and processes at Indian Railways, DFCCIL's articles of association and applicable GoI rules and regulations, the following have been identified as the critical risks in the project implementation:

Entity-level risks

- Strong corporate governance mechanisms yet to take hold in DFCCIL
- Inadequate capacity given the complexity, scale and innovation potential of the project
- Continued dependence of DFCCIL on MoR and lack of an "arms length" relationship

---

[51] *Indian Road Construction Industry – Capacity Issues, Constraints and Recommendations*, The World Bank, Washington, D.C, November 2008
[52] Same as footnote 1
[53] *Delay in railway projects pushes up cost by 85%*, Times of India, New Delhi, December 30, 2010
[54] *Rail freight corridor cost doubles in 5 years to Rs. 73,000 Crore*, Financial Express, New Delhi, August 17, 2010
[55] *Not just trains, Railway projects too run late*, Economic Times, New Delhi, August 4, 2010
[56] *Lack of funds, law and order delaying Railway projects: Government*, Economic Times, New Delhi, March 11, 2011

Risks during pre-construction Phase

- Delays in land acquisition and consequent project time/cost overruns
- Fraud and corruption in the LA and R&R due to lack of transparency in the process;
- Delays in utility shifting and obtaining environmental clearances that could affect project implementation.

Risks during procurement Phase

- Limited procurement capacity of DFCCIL leading to procurement delays or mis-procurement
- Collusion between contractors owing to insufficient competition
- Issue of robustness of cost estimates considering that bids received are much higher
- Ambiguities and infructuous variation clauses in tender documents that leave room for discretion in contract award;

Risks during contract Management Phase

- Poor quality of work by contractors;
- Variations and deviations from project design due to inadequacies in designs
- Delays due to poor integration and coordination of work between contractors
- Implementation delays due to lack of capacity/proper delegation of authority in DFCCIL for approval of design, or quantity changes/variations and/or delays by RDSO/zonal railways, local authorities;
- Inadequate supervision of progress of works and enforcement of contractual provisions
- DFCCIL's lack of experience to implement social and environmental safeguards.

Procedures and Policies to mitigate risks

Corporate Governance

6. The key risks in corporate governance arise from the fact that DFCCIL is a new company that will implement two corridors - eastern and western covering 3300 route kilometers. The company is not familiar with Bank procedures. At the project preparatory stage, the company has a lean organization with commensurate resources, systems and procedures. Since work on both corridors will proceed simultaneously with funding from multiple donors, it will strain the organization's resources, systems, procedures and controls, entailing further actions during implementation for institutional strengthening. A Business Plan that has already been developed, a Human Resource Development Plan that is under preparation and systems and procedures that are being put in place for a higher level of activities, somewhat mitigate the risks, but these will be tested only when construction begins with the award of design/ build contracts in about a year's time.

7. In May 2010, GOI's Department of Public Enterprises issued Guidelines on Corporate Governance for Central Public Sector Enterprises that are now mandatory for all central undertakings (whether listed or not on the Stock Exchanges), including DFCCIL. The guidelines cover composition and functions of the board of directors, number of board meetings, enterprise risk management (See Box 1), independent audit committee, its powers and functions in assessing internal control and audit, disclosure requirements, whistleblower policy and periodic monitoring and reporting on the status of implementation of the corporate governance requirements.

8. DFCCIL has already started complying with the DPE's mandatory code of corporate governance and undertaken some measures to strengthen the internal audit mechanism to cover its entire operations, which will also help mitigate some corporate governance risks. Further, this will also ensure that DFCCIL is in line with the SEBI guidelines[57], as and when it is ready to go public. As part of this, DFCCIL has:

- Appointed two of the required four independent directors to its Board
- Set up a Board level audit committee with 2/3rd independent directors
- Started to update its manuals to provide better guidelines to staff in their day to day operations.
- Curtailed delegation of powers to the MD to check use of discretion in decision making
- Created the posts of GM (Risk Management), DGM (Internal Audit) and DGM (Risk Management) to continuously assess and manage enterprise-wide risks. Process of appointment of GM (Risk Management) is underway and the person is expected to be in place by April 2011.

Box 1: DPE' guidelines on Risk Management - excerpts

- The Board should ensure the integration and alignment of the risk management system with the corporate and operational objectives and also that risk management is undertaken as a part of normal business practice and not as a separate task at set times (Section 3.6).
- The company shall lay down procedures to inform Board members about the risk assessment and minimization procedures. These procedures shall be periodically reviewed to ensure that executive management controls risk through means of a properly defined framework. Procedure will be laid down for internal risk management also (Section 7.3.1).
- The Board should implement policies and procedures which should include (Section 7.32.):
  (a) staff responsibilities in relation to fraud prevention and identification
  (b) responsibility of fraud investigation once a fraud has been identified
  (c) process of reporting on fraud related matters to management
  (d) reporting and recording processes to be followed to record allegations of fraud
  (e) requirements of training to be conducted on fraud prevention and identification.

Source: Guidelines on Corporate Governance for Central Public Sector Enterprises, GoI, Department of Public Enterprises, May 2010

Disclosure Policy

9. India passed the Right to Information Act (RTIA) in 2005 and the Act became operational across India from 12 October, 2005[58]. The GAAP seeks to build on the RTIA premise that the most critical step to ensure accountability is to share project information at all stages of the project cycle with the public at large. This enables the concerned citizens and organizations to not only assure themselves about the project's status, but also to provide feedback towards enhancing the project's efficiency and productivity. Such interaction with civil

[57] Which is a prerequisite for being listed

[58] The RTIA mandates the disclosure of and universal access to information wherever in the public interest. Compliance to the Act is required for all public entities including special purpose vehicles such as DFCCIL. Implementation of RTIA requires systems for *on demand* and *suo-moto* disclosure of information, and for each government department to develop a disclosure policy, automated systems for record and document management, and information handling, and appointment of trained staff for programs for citizen awareness, and annual progress reporting.

society would also help allay public apprehensions on critical issues such as land acquisition, damage to environment, adverse social impacts, and make it a partner in successful project implementation.

10. As mandated by the RTIA, DFCCIL has appointed a PIO (Public Information Officer), APIO and the Appellate Authority and has uploaded basic information about DFCCIL's functioning, roles and responsibilities of DFCCIL officials, project related information, sources of funds and tender information on its website (www.dfccil.org). In addition, DFCCIL publishes annual reports of the organization as required under the Companies Act (1956). DFCCIL has also started producing quarterly newsletters (*DFCCIL News*) with updates on the progress of work on the entire DFC project. To facilitate information disclosure during project implementation, the DFCCIL will adopt a disclosure policy (as given in Attachment 1) based on total compliance with the RTIA and Central Vigilance Commission (CVC) guidelines both for on-demand and *suo-moto* disclosure of information making maximum use of the project website. This enhanced disclosure of information to the citizens is also expected to facilitate greater adherence to transparency norms and quality of work during project implementation.

11. In addition to the RTIA requirements, DFCCIL is developing a robust communications strategy to inform all stakeholders about the project in a transparent, timely and efficient manner. This will ensure that the project impacts and benefits are widely understood, and stakeholder concerns appropriately incorporated during project implementation.

Procurement Policies and procedures

12. A Procurement Cell has been set up within DFCCIL to deal with procurement policy, processes and follow-up. This cell will be staffed with experienced procurement experts and supported with required technical and legal expertise. A booklet on Schedule of Powers has been issued which specifies delegation of powers to respective authorities regarding procurement actions for quick decision making.

13. A comprehensive Project Implementation Manual (PIM) for DFCCIL has been prepared with comprehensive guidance on procurement including bid notices, documents to be adopted and other requirements and procedures during the entire procurement process. The manual and all procurement related information will be disclosed as per the agreed disclosure policy. Procurement related complaints shall be dealt with as stipulated in the PIM.

14. Procurement policies of the World Bank will be adhered to for the portion funded by it.

Contracting and contract management policies

15. Contracts for main packages in this project will use Design-Build lump-sum modality, which was chosen based on assessments by an International Panel of Experts[59] on the appropriateness of contract types. This modality incentivizes time and cost-bound delivery, and minimizes time and cost overruns. Since design responsibility vests with the contractor, variations and delays on account of poor designs are the contractor's responsibility. In this modality, the contract management arrangements include:

- An independent Project Management Consultant (PMC) acting as the Employer's Engineer responsible for day to day contract management. To secure smooth

[59] Six experts on various aspects of railway design, operations, commercial management and concessions.

implementation of contracts, the PMC will be delegated powers to approve designs, issue working orders etc. as defined in the Contract with contractors. However, the authority to modify contract provisions should always be subject to prior approval by DFCCIL.

- Minimization of the role of DFCCIL in approvals and clearances and where necessary, provisions for time-bound responses
- Contract provisions should include arrangements to restrict the use of the mobilization advances towards mobilization activities for the said contract.
- An independent Quality and Safety Audit Consultant (QSAC) team, to track and report on the quality and progress of works to the DFCCIL's Audit Committee and the Bank at regular intervals.
- An independent Social and Environmental Safeguards Monitoring and Review Consultants (SESMRC) will audit the implementation of environmental and social safeguards.
- Regular Bank supervision missions to monitor and resolve issues highlighted by DFCCIL, PMC and QSAC
- A state of the art Enterprise-wide IT solution under implementation by DFCCIL for internal control and monitoring of contract progress.
- Full disclosure of all project implementation documents such as physical and financial progress of each contract (per disclosure policy) on the DFCCIL Website.

The following Table 1 gives a snapshot of the supervision arrangements for monitoring quality, financial management and contract management throughout the project cycle.

Table 1: Arrangements for monitoring quality, financial and contract management

S.No.	Stage of Project Cycle	Monitoring/Supervision Arrangements		
		DFCCIL	Bank	Other
1	Pre-construction stage	NGO (for monitoring LA, R&R), Internal Audit, CVO	Supervision missions	Statutory Auditors
2	Design Stage	Proof Checking/Design Review Consultants, PMC, Internal Audit, CVO	Supervision missions	Statutory Auditors
3	Procurement Stage	PMC, CVO, Internal Audit	Supervision missions, OPRC	Chief Technical Examiner (CTE, CVC), Statutory Auditors, QSAC
4	Contract Management Stage	PMC, CVO, Internal Audit	Supervision missions, Bank consultants	Statutory Auditors, CTE, QSAC
5	Post-construction	Internal audit, CVO		Statutory Auditors, CTE

Note: Statutory auditors include CAG and CAG appointed CA firms for annual audit.

Arrangements for expediting pre-construction activities

16. The following mechanisms are in place to deal with the potential risks associated with utility shifting, land acquisition and resettlement

a) Utility shifting – DFCCIL will:

- Conduct advance surveys, map affected utilities and formulate shifting plans, disclose details of the same on its website and through newspapers, and ensure minimal disruption to users during utility shifting.

b) Land Acquisition, and other resettlement and rehabilitation activities.

- Social and Environmental Management (SEMU) has been set up in DFCCIL with adequate capacity (a GM and 5 officers) to deal with land acquisition and resettlement. At the field level, Chief Project Manger (CPM) is responsible for pre-construction activities and coordination with the state government for expediting the land acquisition process. He is assisted by a Deputy Project Manager, three Assistant Managers and professional land acquisition consultants.
- An NGO will be appointed to provide implementation support to DFCCIL and assist the PAPs in dealing with their grievances and concerns and assist in their efforts to improve the living standards. A third-party monitoring team will provide monitoring and quality assurance to DFCCIL on the land acquisition and resettlement related implementation.
- Land acquisition is being carried out through the appointment of district level competent authorities from the State Government with support from the land acquisition consultants. Independent Arbitrators are also appointed to deal with grievances related to compensation and land acquisition related matters.
- The Entitlement Matrix includes provisions for awarding higher land acquisition compensation taking into account of any other notifications available in the in the respective districts for higher compensation.
- A two-level grievance redressal committee (GRC) headed by respective District Collectors at the field level and another committee headed by Director (Project Planning) at project level will be constituted. In addition, Ministry of Railways will appoint an Ombudsman to deal with any grievances that are not dealt satisfactorily by the GRC; MoR will notify constitution of the GRC and the Ombudsman for the project wherein the scope and tasks will be clearly spelt out.
- RAP provides for disclosure of legible beneficiaries for different kinds of compensation and assistance available in the Entitlement Matrix.
- Compensation and other eligible R&R benefits shall be distributed to PAPs at the village level, through camps organized at well identified locations on scheduled dates (disclosed in advance to the PAPs) by check based on verification of relevant documents.

Financial Management Arrangements

17. An assessment of the corporate governance and financial accountability arrangements carried out by the Bank during project preparation identified several areas for strengthening/ improvements and an action plan has been agreed upon (Annex 7). During preparation, DFCCIL took important steps in the areas of (i) inducting independent directors to the Board; (ii) reconstituting the audit committee with 2/3rd independent directors and expanding its scope of review. The FM and internal audit manuals are being updated in view of the expected growth and increased complexities of operations associated with simultaneous work on both the corridors and use of large design-build contracts. Actions for implementation of ERP have been initiated. There are plans for further strengthening internal audit, project monitoring and contract management. A detailed project implementation manual for the Bank funded project is under preparation and would be put in place before commencement of work.

18. The auditing arrangements in DFCCIL would comprise: (i) regular internal audit (both financial and technical) by specialized agencies appointed by the management under Terms of Reference satisfactory to the Bank; (ii) annual statutory audit of the entity by independent firm of Chartered Accountants appointed by the CAG; and (iii) audit by CAG through the Principal Director of Commercial Audit. The proposed project will also be subject to annual project audit under Bank agreed TOR by auditors appointed in conformity with Bank guidelines and the complete project audit report would be published on DFCCIL's and Bank's website per the disclosure policy.

Complaint Handling System

19. A centralized complaint handling system, which includes maintaining a project complaints log and filing to monitor status of follow up of each received complaint and grievance, will be established by DFCCIL. A Comments, Suggestions and Grievances Handling component will be included on the web site (http://www.dffccil.org), which will be updated on a monthly basis. Indian Railways has initiated work on vigilance software called Integrated Railway Vigilance Information System (IRVINS) to have all vigilance related data of all Zonal Railways, Railway undertakings and associate organizations of Railways, including DFCCIL. IRVINS will enable electronic linkages with the CVC, the Central Bureau of Investigation and State Anti-Corruption Bureaus. This should enable speedier processing of corruption cases of public officials. Once the IRVINS system is fully functional, it will also provide a public interface portal to enable online registering and tracking of complaints by the complainants, and better dissemination of vigilance information to the public to enhance awareness and transparency.

20. As a first step, in line with MOR and CVC guidelines, complaint registers have been established at each regional office and at headquarters for recording complaints and the GM (IT) has been nominated as the Chief Complaint Handling Officer (CHO). DFCCIL will record and appropriately refer all incoming grievances or complaints, with each case generating an automatic, standard format report. Complaints received by the Bank regarding the bidding process and those having a vigilance dimension will be referred to the CVO, and the status of action on these complaints will be provided in the quarterly reports to the Bank. DFCCIL will respond to all complaints, received from any source, normally within fifteen days of receipt. The CHO will monitor the disposal of complaints received and report to the DFCCIL Board on a monthly basis.

21. For the complaint mechanism to function efficiently, the information concerning the alternative conduits for complaints shall be widely publicized on the website and on information boards at headquarters, work sites and regional offices.

Strengthening preventive vigilance to deter fraud and corruption

22. An exclusive vigilance cell shall be set up (in conformity with CVC guidelines) with adequate staff and resources. The cell will be under the direction of a CVO, who shall act as a watchdog to handle fraud and corruption complaints/cases in coordination with the Vigilance Directorate of the Ministry of Railways, Central Vigilance Commission (CVC) and Central Bureau of Investigation (CBI). The CVO's responsibilities would include:

- Surveillance and detection of corrupt practices committed, or likely to be committed;
- Conducting investigations into cases based on specific complaints or allegations;

- Forwarding investigation reports for punitive action by DFCCIL/MOR;
- Referring cases to the CVC/CBI as necessary for further investigation
- Taking proactive measures to spread vigilance awareness to prevent misconduct.

23. As the first step, a full-time CVO (Chief Vigilance Officer) has already been appointed for DFCCIL. Two posts viz., (i) Deputy Chief Vigilance Officer and (ii) Assistant Vigilance officer have already been created and vacancy notices circulated to fill up these posts. Until the Vigilance cell is fully functional, as a temporary measure, an AM (Engineering) and an AM (Finance) have been deployed to assist the CVO in conducting preventive checks and investigations. Contact details of CVO shall be publicized widely through the DFCCIL website and also on bulletin boards at appropriate locations in the corporate and regional offices.

24. The CVO's annual report to the MD on systemic deficiencies at DFCCIL, upon acceptance by the MD will be shared with the Bank. The GM (Risk Management), who is the nodal officer responsible for GAAP implementation, will identify and assess the risks based on the CVO's report and formulate appropriate risk mitigation measures for the same, and will also report them in the quarterly reports to MOR. These measures will be discussed and incorporated in the GAAP as appropriate during the supervision missions.

25. DFCCIL will leverage information technology to enhance transparency in awarding contracts, monitoring execution of contracts and payments to contractors. While the details of contracts awarded (greater than US$200,000) are already available on DFCCIL website, the MIS will be enhanced to provide current status of bill payments to various contractors and the same will be disclosed on the website.

Overall Coordination and Monitoring Arrangements

26. In view of the significance of the DFC Project for the national economy, a High Level Monitoring Committee for the DFC Project headed by Principal Secretary to Prime Minister is monitoring the project progress on a periodic basis. An Empowered Committee (EC) will be set up to resolve inter-ministerial and state-level issues.

Monitoring Indicators for Compliance with the Above Agreements and for Impact on Outcomes

27. Implementation of these elements shall be monitored, through *inter alia*:

- *Compliance with corporate governance guidelines* will be assessed through the reports provided to the GOI in May of each year.
- *Disclosure of information* will be supervised mainly through: (a) checking the frequency and comprehensiveness of website updates, (b) checking the distribution of materials to key stake holders, (c) checking the comprehensiveness of information available on citizen information boards at sites and at regional offices, (d) checking the frequency of updates of the database with frequently asked questions regarding the project and (e) statistics on RTIA requests provided on the website.
- *The complaints handling system and the system of sanctions and remedies* will be supervised mainly through: (a) periodic review of statistics based on records kept on the website of DFCCIL; (b) field level checks to ensure that problems are being reported and acted upon, (c) review of number and types of complaints received and their redressal as reported in the quarterly progress reports to the Bank and (d) review of the frequency of updates of the complaint database and the action taken as reported on the website.

- *Project Management and Reporting* will be reviewed through the effectiveness of the MIS used for monitoring and evaluation and through the database of contractor/consultant performance.
- *Transparency in procurement* will be assessed based on the comprehensiveness of bid related information on the website
- *Quality of work* will be assessed based on the corrective actions taken by DFCCIL on the QSAC reports.
- *Compliance to safeguards* will be assessed based on the half-yearly audit of ESMT and the follow-up actions of DFCCIL.

28. The implementation of the GAAP shall be monitored jointly by the Bank and DFCCIL during the supervision missions. In addition, an annual progress report on its implementation will be submitted to the audit committee of DFCCIL board for their feedback. DFCCIL will consult with the Bank on any corrective and supplemental measures to be included in the GAAP based on identified weaknesses/vulnerabilities/shortcomings suggested by the DFCCIL Board and/or consequent to the CVO's report on systemic deficiencies and/or the ongoing CVC investigation. These corrective measures will also be reflected in the annual MoUs between the MoR and DFCCIL. The annual progress report and board feedback on the same will also be publicly disclosed.

Summary of Risks and Mitigation measures

Anticipated Risk/Severity	Action To Be Taken	Deadline for Action	Responsible Party	Residual Risk Rating
1. Strengthening Capacity of DFCCIL				
Newly created entity with limited staff and no prior experience in design-build or Bank projects; **(High)**	Create and implement a comprehensive HR development plan and strategy for ensuring adequate capacity for DFCCIL	Key principles of HR plan and strategy developed by negotiations; Implemented through the project	DFCCIL	Moderate
	Create procurement cell within DFCCIL with qualified staff having procurement experience. Clarify role and delegation of authority of procurement cell staff. Engage a qualified procurement consultant to support procurement staff initially. Cell to also handle procurement related complaints.	By effectiveness	DFCCIL	
	Ensure that Project Implementation Manual for DFCCIL incorporates project procurement arrangements required by the Bank.	By negotiations.	DFCCIL	
	Ensure that required technical and legal support required by the DFCCIL is provided by the Project Management consultants	Continuously during project implementation.	DFCCIL	
	Ensure that a Social and Environmental Management Unit (SEMU) is established at both DFCCIL headquarters and field units with adequate staff	By Appraisal	DFCCIL	
2. Strengthening Corporate Governance				
Arms-length relationship between DFCCIL and MoR **(High)**	Concession Agreement MoR Board approved and signed by both DFCCIL and MoR; Develop a DFCCIL permanent cadre and provide attractive performance based incentives to employees of DFCCIL Third and Fourth independent directors to DFCCIL Board in place	Approved by Negotiations Signed by Effectiveness December 2012 September 2011	DFCCIL/MOR	Substantial
3. Designing project processes and policies to enhance accountability and transparency				

Anticipated Risk/Severity	Action To Be Taken	Deadline for Action	Responsible Party	Residual Risk Rating
The project processes will not detect and address problems related to transparency and accountability **(Moderate)**	Establish a disclosure policy that specifies documents to be disclosed along with frequency and mode.	Appraisal	DFCCIL	Low
	Maintain systems and procedures to implement right to information aspects, including websites, newsletters, citizen information boards at work sites and at regional offices within the vicinity of the corridor throughout the project cycle.	Continuous	DFCCIL	
	Establish document management system for easy retrieval, update of project documents and monitoring of work progress.	September 2012	DFCCIL	
	Maintain a database of information frequently sought by stakeholders at project level and use it to enhance *suo moto* public disclosure and thus reduce the burden of on-demand disclosure, including for the R&R process.	Continuously during project implementation.	DFCCIL	
	Establish clear communications strategy to inform all stakeholders of the project, and its social, economic and environmental impact.	By project effectiveness	DFCCIL	
4. Strengthening preventive actions against corruption				
Lack of adequate safeguards may cause violation of norms and create avenues for corruption. **(Moderate)**	Empower project staff and beneficiaries to report instances of corruption by clearly describing channels for reporting, process to address allegations of corruption, and by clearly communicating sanctions/remedial actions for corruption at any level.	By project effectiveness.	DFCCIL	Substantial
	Establish a vigilance cell under CVC guidelines and provide it with adequate staff and resources to facilitate its effective working.	Within one year of effectiveness.	DFCCIL	
	Widely publicize policy of sanctions against staff found to be indulging in fraudulent behavior.	By project effectiveness.	DFCCIL	
5. Strengthening complaint and grievance handling system at the project level				

Anticipated Risk/Severity	Action To Be Taken	Deadline for Action	Responsible Party	Residual Risk Rating
A weak complaint and grievance handling mechanism may affect transparency and contribute to corrupt and manipulative practices. **(High)**	Establish a centralized system for registering, tracking, and monitoring of complaints. Institute grievance redress mechanisms for LA and RR process.	By project effectiveness	DFCCIL	Moderate
	Devise criteria to segregate complaints in order of gravity and disposal in specified timeframe by designated authorities.	By project effectiveness	DFCCIL	
	Maintain an updated database on complaints received and action taken for *suo moto* public disclosure or in reference to requests received under the RTI Act.	Continuously during project implementation.	DFCCIL	
6. Strengthening Project Procurement				
Weak procurement management system could result in mis-procurement, delays or award of work to a less qualified contractor **(Moderate)**	Project will have a transparent procurement policy based on established best practices and strict compliance with agreed Bank procedures and bidding documents.	Upon project effectiveness.	DFCCIL	Low
	Procurement plans and policies and bidding documents to be disclosed as per agreed Disclosure policy.	From project effectiveness onwards.	DFCCIL	
	Clear eligibility criteria for bidders and product quality needs will be standardized.	From effectiveness onwards.	DFCCIL	
	Clear criteria and process for disqualification of bidders who engage in misrepresentation or other fraudulent and corrupt practices.	Within 3 months of project effectiveness.	DFCCIL	
	Start maintaining a database of all contractors/consultants and their performance (in terms of physical progress, quality of works and responsiveness to conditions of contract), which could then be used as another benchmark/criterion to evaluate future bids.	Start with the procurement of first contract	DFCCIL	
7. Strengthening Systems and Processes for Project Management				
Lack of coordination among multiple authorities concerned with utilities, LA and R&R, law and order, level crossings within states where DFC passes (High)	Constitute Empowered Committee to ensure speedy resolution of coordination issues	By Effectiveness	MOR/GOI, DFCCIL	Moderate

Anticipated Risk/Severity	Action To Be Taken	Deadline for Action	Responsible Party	Residual Risk Rating
Weak contract implementation monitoring and enforcement arrangements may adversely affect project processes and results. **(High)**	Finalize and approve Project Implementation Plan.	By effectiveness.	DFCCIL, World Bank	Moderate
	Regular monitoring and evaluation activities to inform DFCCIL and the Bank on implementation progress so that project managers can reflect and improve on performance and make necessary mid-course corrections to achieve agreed project outputs and outcomes.	Within 9 months of effectiveness.	DFCCIL	
	Develop a Management Information System, to be linked to M&E activities and online reporting arrangements for quick review and follow-up action.	Within 6 months of project effectiveness.	DFCCIL	
	Any change in the scope of services and personnel in the PMC contract to be subject to Bank's prior no objection. Current arrangements with GC to be shared with Bank for monitoring purposes	As applicable.	DFCCIL	
8. Technical Quality Assurance and Safeguards Management				
Bids received are much higher than cost estimates; work quality consistent with the contract requirements; **(Moderate)**	Engage independent experts from IITs/centers of excellence for technical assistance on specific issues	As needed	DFCCIL	Low
	Establish third party Quality and Safety Audit Consultants (QSAC) and include quality monitoring as part of the project management contract. Monitor the quality of services carried out by the PMC to ensure they are in line with contract obligations.	Continuously during project implementation.	DFCCIL	
	Put major focus on construction supervision and quality control by developing bidding documents with clear and detailed specifications, engaging site supervisors for quality control.	Continuously during project implementation.	DFCCIL	
	Internal audit in DFCCIL to verify quality of works, implementation of safeguards, and remedies for contractor's non-performance or poor quality of works, percentage of works subject to quality audit and the actions taken post such audits	Within 6 months of effectiveness	DFCCIL	
	Facilitate periodic Third Party Monitoring of quality, LA, R&R and environmental safeguards	On Quarterly basis	DFCCIL, with the help of SESMRC	
9. Financial Management				

Anticipated Risk/Severity	Action To Be Taken	Deadline for Action	Responsible Party	Residual Risk Rating
Gaps in corporate governance and financial management arrangements affecting transparency and accountability **(High)**	Further strengthen Corporate Governance and Financial Accountability arrangements as per the action plan; induct the remaining independent directors; ensure effective audit committee oversight and independence; implement formal enterprise risk management; and road map for granting greater functional and financial autonomy for DFCCIL	Continuously during project implementation.	DFCCIL/ MOR	Substantial
Inadequate capacity for planning, monitoring and mitigating fiduciary risks (High)	Financial management systems and controls to ensure that funds are used for the intended purposes in an efficient manner. Management approved annual plans/ budgets, accounting based on accepted national standards and as per detailed manuals	Continuous	DFCCIL	Substantial
	Project progress (physical and financial) monitored regularly and deviations from plans/ budgets analyzed and corrective action taken within stipulated timeframe. Independent, third-party QSAC to verify milestone achievement and report to DFCCIL management periodically.	Continuous	DFCCIL	Substantial
	Regular entity and project audits; broadened internal audit scope covering financial, procurement, contract management, construction activities under agreed terms of reference; prompt action taken to resolve audit observations (entity and project, statutory and internal audits)	Continuous	DFCCIL	Substantial
	Commissioning computerized business solution (ERP) that will enable: a) Registering, tracking and monitoring all financial transactions b) Generating accurate and timely management information – both financial and physical - for decision making and audit c) generation of exception reports for prompt management action	September 2012	DFCCIL	Substantial

ATTACHMENT -1

DISCLOSURE STRATEGY AND ACTION PLAN

The DFCCIL disclosure strategy is based on the RTI Act both for on-demand disclosure and proactive or *suo motu* disclosure of information making maximum use of the DFCCIL website. This enhanced disclosure of information to the citizens is also expected to facilitate civil society oversight, to achieve greater adherence to transparency norms and quality of work during project implementation. To this end, the information will be maintained and provided in a user friendly manner that will maximize the utility of the information. The detailed disclosure requirements are based on the letter and spirit of Sections 4 and 26 of the Right to Information Act 2005.

Disclosure Strategy

The following disclosure strategy is proposed to be adopted by the Dedicated Freight Corridor Corporation. The intent is to enhance the transparency of the decision making processes inside the project during the implementation phase, including those for procurement, financial management, and social and environmental safeguards; and to comply with all the legal requirements under the Right to Information Act, 2005.

1. DFCCIL will ensure that its website has details related to information about the project in compliance with the Right to Information Act 2005 as per Section 4 (See Box) of the Act for ***Suo-Moto*** Disclosure. This website will be updated from time to time so that project details remain online throughout the project implementation period and for at least one year after the project has been completed.
2. Information on the website will be organized in such a manner as to facilitate relevance and access to all affected citizens.
3. The DFCCIL will make available the following documents in the website promptly after their completion: (a) Environment and Social Assessment Reports and (b) Environment Management Frameworks/Plans, (c) Resettlement Action Plans and (d) Safeguard audit reports
4. The DFCCIL will make all final audit reports publicly available promptly after their receipt, and all the formal responses from the government.
5. The DFCCIL will publish on its website the following documents and update them regularly as needed:
   (a) bidding documents and requests for proposals issued in accordance with the procurement provisions. In the case of requests for proposals (RFP), the relevant documents will only be made available after notification of award to the successful firm
   (b) all short listed consultants and, in cases of pre-qualification, lists of pre-qualified contractors and suppliers. This list will be updated as and when changes are required;
   (c) make publicly available and publish in the DFCCIL website, information regarding the contract awards for all contracts for goods and works in accordance with the Bank Guidelines and
   (d) allow representatives of the end-users of the goods or works being procured to attend the public bid openings.

6. DFCCIL will also monitor compliance and progress with the disclosure policy and strategy.

Box: Relevant Sections under the RTIA

Section 4(a): *Suo Moto* information to be published under Section 4 of RTI Act

(i) particulars of its organization, functions and duties;
(ii) powers and duties of its officers and employees;
(iii) the rules, regulations, instructions, manuals and records, held by it or under its control or used by its employees for discharging its functions;
(vi) a statement of the categories of documents that are held by it or under its control;
(vii) the particulars of any arrangement that exists for consultation with, or representation by, the members of the public in relation to the formulation of its policy or implementation thereof;
(viii) a statement of the boards, councils, committees and other bodies consisting of two or more persons constituted as its part or for the purpose of its advice, and as to whether meetings of those boards, councils, committees and other bodies are open to the public, or the minutes of such meetings are accessible for public;
(ix) a directory of its officers and employees;
(x) the budget allocated for various plans, proposed expenditures and reports on disbursements made;
(xiii) particulars of recipients of concessions, permits or modernization granted by it;
(xiv) details in respect of information, available to or held by it, reduced in an electronic form;
(xv) the particulars of facilities available to citizens for obtaining information, including the working hours of a library or reading room, if maintained for public use;
(xvi) the names, designations and other particulars of the Public Information Officers;
(xvii) such other information as may be prescribed; and thereafter update these publications every year;

Section 4 (c): Publish all relevant facts while formulating important policies or announcing the decisions which affect public;

Section 4(d): Provide reasons for its administrative or quasi-judicial decisions to affected persons

Disclosure Action Plan

TOPIC	DOCUMENT TO BE DISCLOSED	FREQUENCY	MODE
Project Documents	Project Appraisal Document, project implementation manual, mid-term review and completion reports, quarterly progress reports.	Once in the entire project cycle and to remain on the website throughout the project period.	DFCCIL Website
Engineering	Alignments, detailed project reports, construction program with clear milestones, start and estimated completion dates	Prior to contract award and to remain on website for at least a year after end of project	DFCCIL Website
Procurement	Procurement Policies and Manuals	As available, but to remain on DFCCIL website throughout project period.	DFCCIL website
	All Bid Invitation Notices	As available, to remain on website till date of opening and thereafter in archive section of Tenders Section of DFCCIL Website	DFCCIL website; UNDB website as per agreed procurement procedures and National Newspapers
	All Bid Documentation and related documents	As available, to remain on website till date of opening and thereafter in archive section of Tenders Section of DFCCIL Website	DFCCIL Website
	List and summary of details of tenders warded in Corporate Office	As available, to remain on main page of DFCCIL website for a period of one month and thereafter in Archive Section of Tender Section of DFCCIL website	DFCCIL website
	Status of monthly payments of contractors in corporate office	For the month in question	DFCCIL website
Land Acquisition	Details of land acquired/to be acquired for the project (Notification under Section 20 A of RAA, 2008)	Once in the life cycle of the project	Minimum two widely circulated newspapers of the district, one of which shall be in a vernacular language.
	Details of compensation to the individual land owners (Notification under Section 20 F of RAA, 2008)	Once to the concerned land owner through a written order of the Competent Authority	Order of the Competent Authority.
Environment Management	Environment Management Framework	Once in the entire project cycle. But to remain on the website and other disclosure locations throughout the project period.	1.DFCCIL website 2.CPM's offices 3.All construction sites 4.Office of the District Collector, Divisional Forest Officers,
	Corridor specific Environment Assessment Reports, Management Plan(EMP)		

	Safeguard Audit reports		Rangers(FD), office of competent authority Tahsils and Panchayats, Station in-charge of important Railway Stations for easy access.
Public consultations/ Meetings	Minutes of meetings; Environmental impacts and mitigation measures being undertaken; RAP	Once in the life cycle of the project at various locations during pre-construction phase	1. Distribution of EMP in concerned villages 2. Discussion in PCMs 3. Presentations
Social Management	Entitlement Matrix,	Once in the entire project cycle. But to remain on the website and other disclosure locations throughout the project period.	1.DFCCIL website 2.CPM's offices 3.All construction sites 4. Office of the District Collector, Competent Authority, Tehsils and Panchayats, with Station in-charge of important Railway Stations for easy access.
	List of PAPs (on the bill boards of respective villages)		
	Executive Summary of RAP (Resettlement Action Plan)		
	MoR Notification and contact information of Grievance Redressal Committee and Ombudsman		
Complaint Handling	Contact details of Complaint Handling Officer and Chief Vigilance Officer	Continuous	DFCCIL Website, bulletin boards in headquarters and field offices, project information boards on site, main railway stations en route.
	Policy of sanctions against staff indulging in fraudulent behavior.	Continuous	DFCCIL Website, bulletin boards in headquarters and field offices.
	Complaint handling statistics; status of complaints	Continuous	DFCCIL Website
Financial Management	Project audit reports; IUFRs	Annual; Quarterly	DFCCIL Website
Contract Management	Contract revisions, contract prices, status of bill payments, physical and financial progress of each contract; work progress photographs	Continuous	DFCCIL Website
Other	Communications strategy	Once in the project lifecycle	DFCCIL Website
	Details as per Section 4(b) of the RTIA	Per the RTIA guidelines	DFCCIL Website
	Progress on institutional strengthening and TA consultancies	Quarterly	DFCCIL Website, quarterly progress reports
	Report on GAAP progress; Board feedback	Annual	DFCCIL Website; Annual reports of the company
	Recommendations of the CVO on systemic improvements	Annual	DFCCIL Website; Annual reports of the company

Annex 12: Green House Gas Emission Analysis

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

A. The Background

1. The development of Dedicated Freight Corridor (DFC) is expected to cater to the growing demands of freight transport in India, decongest already saturated rail net work and promote shifting of freight transport from road transport to more efficient rail transport. In addition to the efficiency improvement and other operational benefits, this shift is expected to offer significant reduction of Green House Gas (GHG) emissions in transport sector of India. Unlike the existing rail network, which runs on a combination diesel and electrical locomotives, the proposed DFC corridor will be operated entirely through electric locomotives, thereby further enhancing the GHG emission reduction potential of the project.

2. Considering the above potential and possible opportunities for realizing these benefits through CDM or other emerging carbon trading mechanisms, an analysis of GHG emissions due to the development of the project has been carried out by DFCCIL through specialized consultants[60]. The results of this are being evaluated to identify suitable activities of the project for possible financing through Clean Development Mechanism (CDM) or other carbon finance opportunities. The analysis essentially focuses on the following aspects:

- Analyzing and establishing base line GHG emission pattern from the transport operations (both rail and road transport) on the planned DFC corridor and projecting the emissions over a 30 year project life time;
- Assessing the GHG emission potential due to construction and operation of DFC; and
- Identifying specific measures / interventions required during design, construction and operation of DFC, for reducing the GHG emissions and asses the technical and financial viability of these measures. These measures may be considered by DFC, for inclusion in the design specifications / performance standards of the respective contracts for implementation.

B. Approach to the Analysis

3. The analysis is based on the 'Control Approach' suggested by World Business Council for Sustainable Development (WBCSD)'s "Green House Gas Protocol for Corporate Accounting and Reporting Standard". This approach of WBCSD protocol accounts for 100 percent of GHG emissions from operations within the organization's control. The analysis also relied up on the guidance provided in ISO 14064 and IPCC, 2006.

C. Key Parameters for Analysis

4. **Base Year:** Base year is an important parameter for a meaningful and consistent comparison of GHG emissions over a period of time. While the basic traffic data is based on 2007-08 data, the GHG inventory has been analyzed from the year 2016-17 (the expected year of eastern DFC operation) and has been forecasted up to 2041-42.

---

[60] The study has been carried out as a 'Pilot' to analyze the GHG emissions in the project by DFCCIL and the strategies to claim the benefits through Carbon Finance or other mechanisms will be explored based on careful evaluation of the results.

5. **Greenhouse Gasses:** Since energy consumption from various operations of DFC is the main source of GHG emissions, Carbon dioxide (CO_2) will be the major green house gas emitted by the project.

6. **Sources of GHG emission:** The important sources of GHG emission from the project include freight movement, heavy vehicles transporting freight and support infrastructure such as freight stations, wagon sheds, electrical and signaling systems, workshops, administrative buildings and staff quarters.

7. **Emission Factor:** Emission factor for the national grid (0.81 t CO_2/MWh), recommended by Central Electricity Authority of India for 2007-08, has been considered for the analysis. The future projection of emission factor (0.55 t CO_2/MWh for 2041-42) is calculated based on UNFCC tool to 'Calculate the Emission Factor for an Electricity System'. The emission factor for the fossil fuel consumption is based on IPCC 2006 guidelines.

8. **Operational Boundary:** The four railway zones in the eastern corridor (Eastern, East Central, Northern and North Central Zones) that transports the rail freight and the National Highways that transports the freight by road has been considered as the operational boundary for the analysis.

Table 1: Key Parameters for GHG Analysis

Parameter	DFC Case	No – DFC Case
1.Traffic Estimates	Business Plan for DFC, August, 2009	Business Plan for DFC, August, 2009
2.Axle Load	25 tons	22.9 tons
3.Base Year – Year of DFC operation	2016-2017	2016-2017
4.Forecast Period	2041-2042	2041-2042
5.Emission Sources	Energy usage for rail movement and support infrastructure	Diesel and energy usage for rail movement, unplanned halting, support infrastructure and fossil fuel usage for freight movement by road due to modal shift from rail to road
6.Emission Factors	National Grid Emission Factor for electricity- 0.81 t CO_2/MWh (2007-08) and 0.55 t CO_2/MWh (projected for 2041-42) with low carbon measures and 10 percent increase in share of renewables/non-conventional energy sources to the national grid	IPCC 2006 guidelines for diesel
7.Sensitivity Analysis	High Growth – 5 percent increase in freight capacity Low Growth – 2 percent increase in freight capacity	

Source: DFCCIL, GHG Emission Analysis.

D. Total GHG Emissions from the Eastern Freight Corridor

9. The business plan of DFC estimates, that the freight traffic along the eastern corridor is expected to grow at a compounded annual growth rate of 4.18 percent and the proposed corridor will have to transport about 877 billon tone km of freight by the year 2041-42. The major commodities to be transported include coal, containers, food grains, fertilizer, cement, salt, iron and steel and petroleum products.

10. For the above projected traffic and based on the key parameters and assumptions illustrated above, it is estimated that the proposed eastern corridor is expected to generate about a total of about 10.48 million tons of GHG emissions (DFC case) during the forecast period up to 2041-42, as against 23.29 millions of GHG emissions in the absence of DFC. A reduction of about 55 percent of GHG emissions due to the proposed project.

Table 2: Estimated GHG Emissions - Easter Freight Corridor

Scenario	Total GHG Emissions, million t CO_2(2041-42)
DFC Case	10.48
No-DFC Case	23.29
% reduction in GHG Emissions	**55.00**
Freight transported, billion tone km(2041-42)	**877.00**

Source: DFCCIL, GHG Emission Analysis

11. These emissions, are expected to be generated at an annual compounded growth rate of 2.82 percent (DFC Case) and 4.59 percent (No-DFC case) respectively. Since, the traffic forecast has been made based on the GDP growth rates of India which are linked to the five year plans of the country, the GHG emissions, as presented in Table 3 are estimated for a block of five years commencing from the base year.

Table 3: Annual Trends of GHG Emissions – Eastern Freight Corridor

Year	Total GHG Emissions, million t CO_2	
	DFC Case	**No-DFC Case**
2016-17	1.80	2.19
2021-22	1.56	2.79
2026-27	1.50	3.22
2031-32	1.66	3.95
2036-37	1.82	4.84
2041-42	2.16	6.27
Total	**10.48**	**23.29**
Compounded Annual Growth	**2.82%**	**4.59%**

Source: DFCCIL, GHG Emission Analysis

E. Source wise contribution of GHG Emissions

12. The main sources of the GHG emissions in the DFC would be the freight transport, support infrastructure and construction activities in the initial five years of the project. On the other hand in the no-DFC scenario, two additional emission sources due to freight transport by road and network congestion are will also contribute to the emissions.

13. In terms of total emissions, as presented in Table 4 below: (i) the operational efficiency of DFC is expected to bring about 23 percent reduction in GHG emissions as compared to the current freight operations by Indian Railways; (ii) avoidance freight shift to road network is expected to bring about 46 percent reduction in GHG emissions; and (iii) avoidance of idling and congestion on the rail network is expected to bring about 1 percent reduction in GHG emissions

Table 4: Contribution of GHG Emissions by Activity – Eastern Corridor

Activity	Total GHG Emissions, million t CO_2, 2041-42	
	DFC Case	**No-DFC Case**
1.Freight transport through Rail Network	9.47	12.24
2.Freight transport by Road Network (due to saturation of rail capacity)		10.75
3.Emissions due to Rail Network Congestion		0.21
4.Emissions due to Support Infrastructure	0.37	0.09
5.Emissions from Construction of DFC	0.64	
Total GHG Emissions	**10.48**	**23.29**

Source: DFCCIL, GHG Emission Analysis

14. On the other hand the support infrastructure and the construction activities of the proposed freight corridor are expected to contribute GHG emissions of about 0.37 and 0.64 million t CO_2, which accounts for about 3.5 and 6.1 percent of the total emissions respectively.

15. As regards to the modal shift, in consistence with the economic analysis, the GHG analysis also does consider significant shift from road to rail. This is due to IR's national policy that accepts only full trainload shipments of freight, which cost far less to handle than smaller shipments Instead in the No-DFC scenario, the analysis anticipates reverse shift from rail to road due to lack of capacity for freight transport.

F. Contribution of Coal Transport to GHG Emissions

16. Coal constitutes to about 70 percent of the total freight to be transported in the proposed eastern corridor and is destined to number of coal based thermal plants being set up to meet the increasing energy requirements of India. The other major commodities that are expected to be transported by the proposed corridor include Iron and Steel, cement and food grains, respectively.

Table 5: Main Rail Freight Traffic on Eastern Corridor

Commodity	Khurja-Kanpur		Kanpur-Mughalsarai	
	2006-07	2021-22	2006-07	2021-22
Up direction	million tons			
Coal	21.2	44.0	18.3	47.4
Iron and Steel	3.3	8.3	2.3	11.1
Other Commodities	3.0	6.7	1.7	3.8
Containers	0.5	3.8	0.4	2.5
Empties	0	0.0	0	0.0
Total Up	**28.0**	**62.8**	**22.7**	**64.8**
Down Direction				
Food-grains	2.5	6.2	1.2	5.8
Raw Materials for Steel Plants	0.9	1.7	0.7	1.7
Other Commodities	4.0	13.6	2.2	12.1
Empties	0	0.0	0	0.0
Total Down	**7.4**	**21.5**	**4.1**	**19.6**
Total Both Directions	**35.4**	**84.3**	**26.8**	**84.4**
Total NTKM	**12.5 billion**	**29.8 bil**	**9.3 billion**	**29.3 bil**

Source: IR LRDSS base year data and forecast origin-destination data with least cost routing

17. The traffic projections presented as presented in Table 5, indicate that the coal transportation requirements will grow from 21.2 million tons in 2006-07 to 47.4 million tons by the year 2021-22.

18. Considering the significance of coal transportation and its downstream usage for thermal power generation, an analysis of GHG emissions contributed by the coal transport is carried out. In order to ensure the accuracy of coal transportation requirements, the analysis has considered all the thermal projects either in construction, planning or in the pipe line stage.

19. The analysis, as presented in Table 6 indicates that transportation of coal by DFC could lead to the emission of about 4.35 million t CO_2 , as against the 12.34 million t CO_2 emitted to transport the same amount of coal through IR network. The project hence would lead to a reduction of about 64.76 percent in GHG emissions to transport the same amount of coal.

Table 6: GHG Emissions contributed due to Coal Transport – Eastern Freight Corridor

Scenario	Total GHG Emissions, million t CO_2	% over total emissions
DFC Case	4.35	41.50
No-DFC Case	12.34	53.00
% reduction in GHG Emissions	**64.76**	

Source: DFCCIL, GHG Emission Analysis

20. It needs mention that, that the proposed DFC project is not expected to trigger the development of thermal plants. On the contrary, the project is expected to mitigate the high GHG emissions generated through the saturated IR network (which in any case considering the long haulage and large volumes of coal traffic, will have to transport the coal through rail network).

G. Opportunities for further reduction of GHG Emissions

21. Further to generating lower GHG emissions, the project by virtue of being a green field project, offers number of opportunities for further reduction of GHG emissions. A broad assessment of these potential opportunities is carried out for the project and some of the important measures are presented in Table 7.

Table 7: Further Opportunities to Reduce GHG Emissions from DFC

Opportunity	Technology Penetration	Emission Reduction, tons/ annum	% emission reduction over base line	CDM Potential
1.Reduction in Wheel diameter	Low	8556.00	1.09	Moderate
2.Stainless Steel Wagon	Moderate	25282.00	3.23	Moderate
3.Aluminium Wagon	Moderate	62210.00	7.94	Moderate
4.Double Stack container – 5 car articulated unit	Low	1358.00	0.17	Moderate
5. Double Stack container – 5 car flat unit	Low	4576.00	0.58	Moderate
6.On board rail and wheel lubrication	Low	16354.00	2.09	Moderate
7.Aerodynamic Profiling	Low	8177.00	1.04	High
8.Regenerative Breaking	Moderate	40886.00	5.22	High
9.Bathtub and Monocoque Design for Gondola Cars	Moderate	33345.00	4.26	Moderate
10.Stub Centre Still Design	Moderate	120.00	0.02	Moderate
11.Communication Based Train Control	High	16354.00	2.09	High
12.Adtoption of Green Building Features	Moderate	584.00	40.00	High
13.Solpar Power	High		100.00	High
14.Wind Power	Moderate		100.00	High

Source: DFCCIL, GHG Emission Analysis

22. The important opportunities for reducing the emissions include energy efficiency measures such as regenerative breaking, communication based train control, etc. which can be implemented in the immediate term, where as other engineering modifications such as reduction of wheel diameter, change wagon material (steel or aluminum), adoption of double stack containers, etc. can be considered over a long term.

H. Summary:

23. In summary, the proposed DFC eastern corridor is expected to cause 2.25 times less carbon emissions compared to emissions from the freight transportation through Indian Railways (DFC generates about 10.5 million tons of GHGs, as against 23.3 million tons of GHGs by the existing rail network). In addition to the operational efficiency, the lack adequate capacity to cater to the increasing freight transport requirements are the main factors influencing the higher GHG emissions (accounting about 23 percent and 46 percent of GHG emissions respectively) in No-DFC scenario. Coal constitutes to about the 70 percent of the total freight to be transported by the proposed corridor. In the absence of the DFC, IR is expected to generate 64 percent higher GHG emissions for transporting coal (12.3 million tons of GHGs as against 4.3 million tons of GHGs by DFC).

Annex 13: Project Preparation and Supervision

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

	Planned	Actual
PCN Review Meeting	10/03/2008	03/02/2010
Initial PID to Infoshop	11/25/2008	04/05/2010
Initial ISDS to Infoshop	11/25/2008	03/29/2010
Appraisal	04/04/2011	04/15/2011
Negotiations	04/21/2011	
Board / RVP approval	05/31/2011	
Planned date of effectiveness	08/31/2011	
Planned date of MTR	07/01/2014	
Planned Closing Date	06/30/2017	

Key institutions responsible for preparation of the project:

1) Dedicated Freight Corridor Corporation of India Ltd.
2) Ministry of Railways

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Ben L.J. Eijbergen	Lead Transport Specialist	SASDT
G. George Tharakan	Lead Transport Specialist	SASDT
Atul Agarwal	Transport Specialist	SASDT
Nupur Gupta	Sr. Transport Specialist	SASDT
Raghuveer Sharma	Lead Financial Specialist	SASDE
Charles Joseph Cormier	Country Sector Coordinator	SASDI
Abduljabbar Hasan Al-Qathab	Sr. Procurement Specialist	SARPS
Manoj Jain	Sr. Financial Mgmt Specialist	SARFM
Mei Wang	Sr. Counsel	LEGES
Rama Chandra Reddy	Sr. Carbon Finance Specialist	ENVCV
Ramola Bhuyan	Sr. Financial Mgmt Specialist	SARFM
Sudip Mozumder	Sr. Communication Officer	SAREX
Victoria Hilda Rigby Delmon	Sr. Counsel	LEGPS
I.U.B. Reddy	Sr. Social Development Specialist	SASDS
Harinath Sesha Appalarajugari	Environment Specialist	SASDI
Satya N. Mishra	Social Development Specialist	SASDS
Sona Thakur	Communication Officer	SAREX
Santhadevi Meenakshy	Social Safeguard Consultant	SASDT
Paul Amos	Organization Mgmt	SASDT
Graham Smith	Transport Economist	SASDT
Peter Cook	Traffic Management	SASDT
Richard Bullock	Economic/Financial Analyst	SASDT
Rajiv Jaruhar	Railway Engineer, Consultant	SASDT
Jitendra Sondhi	Railway Consultant	SASDT
Paul Amos	Railway Policy Advisor, Consultant	EASCS
Frederick P. Kranz	Procurement Consultant	SARPS
Rajagopal Iyer	Consultant	EAPCO
Neetu Sharda	Program Assistant	SASDO
Asha Matta	Team Assistant	SASDO
Rajesh B. S. Dongol	Program Assistant	SASDO
N. S. Srinivas	Sr. Program Assistant	SASDO

Bank funds spent to date on project preparation:

1.	Bank Resources	US$1,441,694.85
2.	Trust Funds	None
3.	Total	US$1,441,694.85

Annex 14: Documents in the Project File

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

1. Country Assistance Strategy for India, 2009-2012, World Bank, 2009.

2. John Winner, "Case Study: Turnaround of Indian Railways", case study prepared for the World Bank by consultant HWTSK, July 2008.

3. DFCCIL, "Project Consultancy Services for Dedicated Freight Corridor; Draft Business Plan", prepared by consultants IL&FS Halcrow, RITES and Blake Dawson, November 2009.

4. "Integrated Energy Policy; Report of the Expert Committee", Government of India Planning Commission, August 2006.

5. "Study of Issues Related to Supply of Coal and Energy Accounting in the Indian Power Sector", World Bank, April 2009.

6. "Low Carbon Growth in India", power-point prepared by World Bank team led by Kwawu Mensan Gaba, April 2009.

7. "Project Appraisal Document for Fourth Power System Development Project", World Bank, February 2008.

8. DFCCIL, Environmental Assessment (EA) and Environmental Management Framework and Resettlement Action Plan for Bhaupur – Khurja Section of Proposed Eastern Dedicated Freight Corridor – Executive Summary, January 2011.

9. (Social Impact Assessment of 272 km Phase-I section (Khurja-Kanpur)

10. Revised Resettlement Action Plan for 272 km, Dedicated Freight Corridor Corporation of India Limited, January 2011.

11. Revised Resettlement Policy Framework for 71 km, (Tundla detour) Dedicated Freight Corridor Corporation of India Limited, January 2011.

12. Terms of Reference for Social Impact Assessment for 71 km Tundla detour.

13. Communication Plan.

Annex 15: Statement of Loans and Credits

INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P101650	2010	A. P. RWSS	0.00	150.00	0.00	0.00	0.00	150.79	0.00	0.00
P096021	2010	AP Road Sector Project	320.00	0.00	0.00	0.00	0.00	320.00	0.00	0.00
P102771	2010	IIFCL - India Infras Finance Company Ltd	1,195.00	0.00	0.00	0.00	0.00	1,192.01	0.00	0.00
P071250	2010	Andhra Pradesh Municipal Development	300.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00
P110051	2010	Haryana Power System Improv Project	330.00	0.00	0.00	0.00	0.00	302.21	-26.97	0.00
P110371	2010	Sustainable Urban Transport Project	105.23	0.00	0.00	0.00	0.00	105.23	0.00	0.00
P115566	2010	POWERGRID V	1,000.00	0.00	0.00	0.00	0.00	1,000.00	0.00	0.00
P116020	2010	Banking Sector Support Loan	2,000.00	0.00	0.00	0.00	0.00	1,995.00	0.00	0.00
P100101	2009	Coal-Fired Generation Rehabilitation	180.00	0.00	0.00	0.00	0.00	180.00	12.00	0.00
P100735	2009	Orissa Community Tank Management Project	56.00	56.00	0.00	0.00	0.00	105.63	0.43	0.00
P096023	2009	Orissa State Roads	250.00	0.00	0.00	0.00	0.00	237.03	2.33	0.00
P102331	2009	MPDPIP-II	0.00	100.00	0.00	0.00	0.00	87.66	-13.56	0.00
P094360	2009	National VBD Control and Polio Eradication	0.00	521.00	0.00	0.00	0.00	409.93	34.18	0.00
P093478	2009	Orissa Rural Livelihoods Project	0.00	82.40	0.00	0.00	0.00	75.54	3.51	0.00
P112033	2009	UP Sodic III	0.00	197.00	0.00	0.00	0.00	192.60	-3.18	0.00
P095114	2008	Rampur Hydropower Project	400.00	0.00	0.00	0.00	0.00	298.56	49.56	0.00
P101653	2008	Power System Development Project IV	1,000.00	0.00	0.00	0.00	0.00	431.88	-103.79	75.55
P090592	2007	Punjab Rural Water Supply and Sanitation	0.00	154.00	0.00	0.00	0.00	138.27	104.50	0.00
P090764	2007	Bihar Rural Livelihoods Project	0.00	63.00	0.00	0.00	0.00	58.01	0.47	0.00
P090768	2007	TN IAM WARM	335.00	150.00	0.00	0.00	0.00	381.54	122.20	0.00
P102768	2007	Stren India's Rural Credit Coops	300.00	300.00	0.00	0.00	0.00	287.38	188.58	0.00
P096019	2007	HP State Roads Project	220.00	0.00	0.00	0.00	0.00	195.63	55.65	0.00
P099047	2007	Vocational Training India	0.00	280.00	0.00	0.00	0.00	193.85	20.70	0.00
P100789	2007	AP Community Tank Management Project	94.50	94.50	0.00	0.00	0.00	170.77	47.14	0.00
P071160	2007	Karnataka Health Systems	0.00	141.83	0.00	0.00	0.00	73.84	-2.96	0.00
P075060	2007	RCH II	0.00	360.00	0.00	0.00	0.00	208.83	113.17	0.00
P075174	2007	AP DPL III	150.00	75.00	0.00	0.00	0.00	76.61	-77.33	0.00
P078538	2007	Third National HIV/AIDS Control Project	0.00	250.00	0.00	0.00	0.00	167.73	130.27	0.00
P078539	2007	TB II	0.00	170.00	0.00	0.00	0.00	90.69	-19.42	0.00
P083187	2007	Uttaranchal RWSS	0.00	120.00	0.00	0.00	0.00	100.92	60.28	0.00
P090585	2007	Punjab State Roads Project	250.00	0.00	0.00	0.00	0.00	139.73	19.33	0.00
P092735	2006	NAIP	0.00	200.00	0.00	0.00	0.00	161.44	65.38	0.00
P078832	2006	Karnataka Panchayats Strengthening Proj	0.00	120.00	0.00	0.00	0.00	59.59	-48.98	0.00
P079675	2006	Karn Municipal Reform	216.00	0.00	0.00	0.00	0.00	168.05	102.39	0.00
P079708	2006	TN Empwr and Pov Reduction	0.00	120.00	0.00	0.00	0.00	72.98	42.19	0.00
P086414	2006	Power System Development Project III	400.00	0.00	0.00	0.00	0.00	17.46	-62.54	0.00
P083780	2006	TN Urban III	300.00	0.00	0.00	0.00	0.00	174.98	120.73	9.38

P093720	2006	Mid-Himalayan (HP) Watersheds	0.00	60.00	0.00	0.00	0.00	29.34	7.94	0.00
P086518	2005	SME Financing and Development	520.00	0.00	0.00	0.00	0.00	270.08	-128.92	-48.92
P075058	2005	TN HEALTH SYSTEMS	0.00	110.83	0.00	0.00	20.06	15.93	30.41	6.51
P073651	2005	DISEASE SURVEILLANCE	0.00	68.00	0.00	0.00	0.35	49.23	43.62	0.00
P077856	2005	Lucknow-Muzaffarpur National Highway	620.00	0.00	0.00	0.00	0.00	150.57	103.90	0.00
P077977	2005	Rural Roads Project	99.50	300.00	0.00	0.00	0.00	82.73	70.18	0.00
P073370	2005	Madhya Pradesh Water Sector Restructurin	394.02	0.00	0.00	0.00	6.62	266.69	227.66	0.00
P084632	2005	Hydrology II	104.98	0.00	0.00	0.00	0.00	82.18	75.17	54.66
P084790	2005	MAHAR WSIP	325.00	0.00	0.00	0.00	0.00	200.04	148.71	0.00
P094513	2005	India Tsunami ERC	0.00	465.00	0.00	0.00	0.00	369.55	365.36	-38.34
P084792	2005	Assam Agric Competitiveness	0.00	154.00	0.00	0.00	0.00	61.13	51.66	0.00
P078550	2004	Uttar Wtrshed	0.00	69.62	0.00	0.00	0.00	27.40	3.34	0.00
P050655	2004	RAJASTHAN HEALTH SYSTEMS DEVELOPMENT	0.00	89.00	0.00	0.00	0.00	34.85	30.24	-0.22
P082510	2004	Karnataka UWS Improvement Project	39.50	0.00	0.00	0.00	0.00	6.76	6.76	0.00
P050649	2003	TN ROADS	348.00	0.00	0.00	0.00	0.00	29.28	29.28	0.00
P067606	2003	UP ROADS	488.00	0.00	0.00	0.00	0.00	74.95	74.95	0.00
P071272	2003	AP RURAL POV REDUCTION	0.00	315.03	0.00	0.00	0.00	103.13	-79.63	-14.63
P073094	2003	AP Comm Forest Mgmt	0.00	108.00	0.00	0.00	0.00	14.62	-5.75	0.00
P076467	2003	Chatt DRPP	0.00	112.56	0.00	0.00	20.06	47.72	54.97	0.00
P072539	2002	KERALA STATE TRANSPORT	255.00	0.00	0.00	0.00	0.00	76.83	76.83	0.00
P071033	2002	KARN Tank Mgmt	32.00	130.90	0.00	0.00	25.07	108.96	48.33	-5.72
P069889	2002	MIZORAM ROADS	0.00	78.00	0.00	0.00	0.00	5.22	-24.53	-0.55
P040610	2002	RAJ WSRP	0.00	140.00	0.00	0.00	25.84	34.32	22.09	0.00
P050668	2002	MUMBAI URBAN TRANSPORT PROJECT	463.00	79.00	0.00	0.00	0.00	194.62	182.08	195.08
P050653	2002	KARNATAKA RWSS II	0.00	151.60	0.00	0.00	15.04	12.96	0.58	0.00
P050647	2002	UP WSRP	0.00	149.20	0.00	0.00	40.11	45.42	57.14	0.00
		Total:	13,090.73	6,285.47	0.00	0.00	153.15	12,716.88	2,408.63	232.80

INDIA
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2005	ADPCL	39.50	7.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	AHEL	0.00	5.08	0.00	0.00	0.00	5.08	0.00	0.00
2005	AP Paper Mills	35.00	5.00	0.00	0.00	25.00	5.00	0.00	0.00
2005	APIDC Biotech	0.00	4.00	0.00	0.00	0.00	2.01	0.00	0.00
2002	ATL	13.81	0.00	0.00	9.36	13.81	0.00	0.00	9.36
2003	ATL	1.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00
2005	ATL	9.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	Atul Ltd	16.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2003	BHF	10.30	0.00	10.30	0.00	10.30	0.00	10.30	0.00
2004	BILT	0.00	0.00	15.00	0.00	0.00	0.00	15.00	0.00

2001	BTVL	0.43	3.98	0.00	0.00	0.43	3.98	0.00	0.00
2003	Balrampur	10.52	0.00	0.00	0.00	10.52	0.00	0.00	0.00
2001	Basix Ltd.	0.00	0.98	0.00	0.00	0.00	0.98	0.00	0.00
2005	Bharat Biotech	0.00	0.00	4.50	0.00	0.00	0.00	3.30	0.00
1984	Bihar Sponge	5.70	0.00	0.00	0.00	5.70	0.00	0.00	0.00
2003	CCIL	1.50	0.00	0.00	0.00	0.59	0.00	0.00	0.00
2006	CCIL	7.00	2.00	0.00	12.40	7.00	2.00	0.00	12.40
1990	CESC	4.61	0.00	0.00	0.00	4.61	0.00	0.00	0.00
1992	CESC	6.55	0.00	0.00	14.59	6.55	0.00	0.00	14.59
2004	CGL	14.38	0.00	0.00	0.00	7.38	0.00	0.00	0.00
2004	CMScomputers	0.00	10.00	2.50	0.00	0.00	0.00	0.00	0.00
2002	COSMO	2.50	0.00	0.00	0.00	2.50	0.00	0.00	0.00
2005	COSMO	0.00	3.73	0.00	0.00	0.00	3.73	0.00	0.00
2006	Chennai Water	24.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2003	DQEL	0.00	1.50	1.50	0.00	0.00	1.50	1.50	0.00
2005	DSCL	30.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2006	DSCL	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	Dabur	0.00	14.09	0.00	0.00	0.00	14.09	0.00	0.00
2003	Dewan	8.68	0.00	0.00	0.00	8.68	0.00	0.00	0.00
2006	Federal Bank	0.00	28.06	0.00	0.00	0.00	23.99	0.00	0.00
2001	GTF Fact	0.00	1.20	0.00	0.00	0.00	1.20	0.00	0.00
2006	GTF Fact	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00
1994	GVK	0.00	4.83	0.00	0.00	0.00	4.83	0.00	0.00
2003	HDFC	100.00	0.00	0.00	100.00	100.00	0.00	0.00	100.00
1998	IAAF	0.00	0.47	0.00	0.00	0.00	0.30	0.00	0.00
2006	IAL	0.00	9.79	0.00	0.00	0.00	7.70	0.00	0.00
1998	IDFC	0.00	10.82	0.00	0.00	0.00	10.82	0.00	0.00
2005	IDFC	50.00	0.00	0.00	100.00	50.00	0.00	0.00	100.00
	IHDC	6.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	IHDC	7.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	Indecomm	0.00	2.57	0.00	0.00	0.00	2.57	0.00	0.00
1996	India Direct Fnd	0.00	1.10	0.00	0.00	0.00	0.66	0.00	0.00
2001	Indian Seamless	6.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
2006	JK Paper	15.00	7.62	0.00	0.00	0.00	7.38	0.00	0.00
2005	K Mahindra INDIA	22.00	0.00	0.00	0.00	22.00	0.00	0.00	0.00
2005	KPIT	11.00	2.50	0.00	0.00	8.00	2.50	0.00	0.00
2003	L&T	50.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
2006	LGB	14.21	4.82	0.00	0.00	0.00	4.82	0.00	0.00
2006	Lok Fund	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	MMFSL	7.89	0.00	7.51	0.00	7.89	0.00	7.51	0.00
2003	MSSL	0.00	2.29	0.00	0.00	0.00	2.20	0.00	0.00
2001	MahInfra	0.00	10.00	0.00	0.00	0.00	0.79	0.00	0.00
	Montalvo	0.00	3.00	0.00	0.00	0.00	1.08	0.00	0.00
1996	Moser Baer	0.00	0.82	0.00	0.00	0.00	0.82	0.00	0.00
1999	Moser Baer	0.00	8.74	0.00	0.00	0.00	8.74	0.00	0.00
2000	Moser Baer	12.75	10.54	0.00	0.00	12.75	10.54	0.00	0.00
	Nevis	0.00	4.00	0.00	0.00	0.00	4.00	0.00	0.00
2003	NewPath	0.00	9.31	0.00	0.00	0.00	8.31	0.00	0.00
2004	NewPath	0.00	2.79	0.00	0.00	0.00	2.49	0.00	0.00
2003	Niko Resources	24.44	0.00	0.00	0.00	24.44	0.00	0.00	0.00

2001	Orchid	0.00	0.73	0.00	0.00	0.00	0.73	0.00	0.00
1997	Owens Corning	5.92	0.00	0.00	0.00	5.92	0.00	0.00	0.00
2006	PSL Limited	15.00	4.74	0.00	0.00	0.00	4.54	0.00	0.00
2004	Powerlinks	72.98	0.00	0.00	0.00	64.16	0.00	0.00	0.00
2004	RAK India	20.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
1995	Rain Calcining	0.00	2.29	0.00	0.00	0.00	2.29	0.00	0.00
2004	Rain Calcining	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
2005	Ramky	3.74	10.28	0.00	0.00	0.00	0.00	0.00	0.00
2005	Ruchi Soya	0.00	9.27	0.00	0.00	0.00	6.77	0.00	0.00
2001	SBI	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	SREI	3.21	0.00	0.00	0.00	3.21	0.00	0.00	0.00
2000	SREI	6.50	0.00	0.00	0.00	6.50	0.00	0.00	0.00
1995	Sara Fund	0.00	3.43	0.00	0.00	0.00	3.43	0.00	0.00
2004	SeaLion	4.40	0.00	0.00	0.00	4.40	0.00	0.00	0.00
2001	Spryance	0.00	1.86	0.00	0.00	0.00	1.86	0.00	0.00
2003	Spryance	0.00	0.93	0.00	0.00	0.00	0.93	0.00	0.00
2004	Sundaram Finance	42.93	0.00	0.00	0.00	42.93	0.00	0.00	0.00
2000	Sundaram Home	0.00	2.18	0.00	0.00	0.00	2.18	0.00	0.00
2002	Sundaram Home	6.71	0.00	0.00	0.00	6.71	0.00	0.00	0.00
1998	TCW/ICICI	0.00	0.80	0.00	0.00	0.00	0.80	0.00	0.00
2005	TISCO	100.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00
2004	UPL	15.45	0.00	0.00	0.00	15.45	0.00	0.00	0.00
1996	United Riceland	5.63	0.00	0.00	0.00	5.63	0.00	0.00	0.00
2005	United Riceland	8.50	0.00	0.00	0.00	5.00	0.00	0.00	0.00
2002	Usha Martin	0.00	0.72	0.00	0.00	0.00	0.72	0.00	0.00
2001	Vysya Bank	0.00	3.66	0.00	0.00	0.00	3.66	0.00	0.00
2005	Vysya Bank	0.00	3.51	0.00	0.00	0.00	3.51	0.00	0.00
1997	WIV	0.00	0.37	0.00	0.00	0.00	0.37	0.00	0.00
1997	Walden-Mgt India	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
2006	iLabs Fund II	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total portfolio:	956.52	249.41	42.30	536.35	604.74	175.91	38.60	236.35

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2004	CGL	0.01	0.00	0.00	0.00
2000	APCL	0.01	0.00	0.00	0.00
2006	Atul Ltd	0.00	0.01	0.00	0.00
2001	Vysya Bank	0.00	0.00	0.00	0.00
2006	Federal Bank	0.01	0.00	0.00	0.00
2001	GI Wind Farms	0.01	0.00	0.00	0.00
2004	Ocean Sparkle	0.00	0.00	0.00	0.00
2005	Allain Duhangan	0.00	0.00	0.00	0.00
	Total pending commitment:	0.04	0.01	0.00	0.00

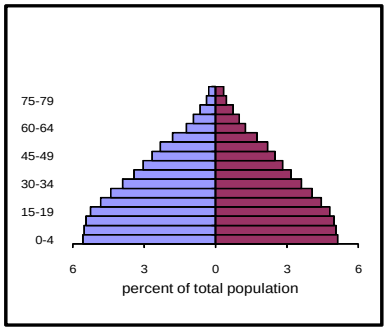
Annex 16: Country at a Glance

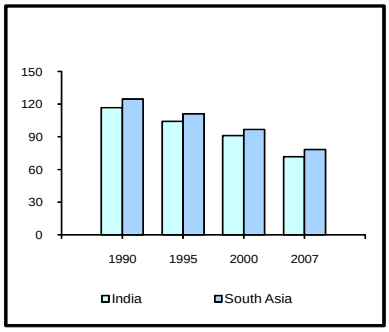
INDIA - Eastern Dedicated Freight Corridor Project (APL 1)

India at a glance

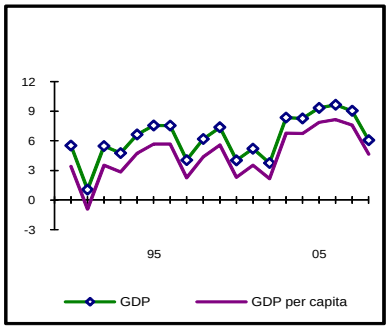
2/25/10

Key Development Indicators	India	South Asia	Lower middle income
(2008)			
Population, mid-year (millions)	1,140.0	1,543	3,702
Surface area (thousand sq. km)	3,287	5,140	32,309
Population growth (%)	1.3	1.5	1.2
Urban population (% of total population)	30	29	41
GNI (Atlas method, US$ billions)	1,186.7	1,522	7,692
GNI per capita (Atlas method, US$)	1,040	986	2,078
GNI per capita (PPP, international $)	2,960	2,733	4,592
GDP growth (%)	6.1	6.9	7.6
GDP per capita growth (%)	4.7	5.3	6.3
(most recent estimate, 2003–2008)			
Poverty headcount ratio at $1.25 a day (PPP, %)	42	40	..
Poverty headcount ratio at $2.00 a day (PPP, %)	76	74	..
Life expectancy at birth (years)	65	65	68
Infant mortality (per 1,000 live births)	54	59	46
Child malnutrition (% of children under 5)	44	41	26
Adult literacy, male (% of ages 15 and older)	77	74	88
Adult literacy, female (% of ages 15 and older)	54	52	77
Gross primary enrollment, male (% of age group)	114	111	112
Gross primary enrollment, female (% of age group)	109	104	106
Access to an improved water source (% of population)	89	87	86
Access to improved sanitation facilities (% of population)	28	33	52





Net Aid Flows	1980	1990	2000	2008 [a]
(US$ millions)				
Net ODA and official aid	2,186	1,399	1,463	1,298
Top 3 donors (in 2007):				
United Kingdom	134	97	204	511
Germany	35	169	16	128
Japan	37	87	368	100
Aid (% of GNI)	1.2	0.4	0.3	0.1
Aid per capita (US$)	3	2	1	1



Long-Term Economic Trends					1980–90	1990–2000	2000–08
					(average annual growth %)		
Consumer prices (annual % change)	12.3	12.4	3.7	8.0			
GDP implicit deflator (annual % change)	11.5	10.7	3.5	6.2			
Exchange rate (annual average, local per US$)	7.9	17.9	45.7	45.9			
Terms of trade index (2000 = 100)	..	..	100	89			
Population, mid-year (millions)	687.3	849.5	1,015.9	1,140.0	2.1	1.8	1.4
GDP (US$ millions)	183,799	317,467	460,182	1,159,171	5.5	5.9	7.9
		(% of GDP)					
Agriculture	35.7	29.3	23.4	17.5	3.1	3.2	3.2
Industry	24.7	26.9	26.2	28.8	6.0	6.1	8.4
Manufacturing	16.7	16.7	15.6	15.8	6.0	6.7	7.8
Services	39.6	43.8	50.5	53.7	6.8	7.7	9.5
Household final consumption expenditure	74.6	65.6	64.1	54.1	4.7	5.8	6.6
General gov't final consumption expenditure	10.0	11.7	12.6	11.6	7.3	6.6	5.0
Gross capital formation	18.5	24.2	24.2	39.7	7.2	6.9	15.0
Exports of goods and services	6.2	7.1	13.2	22.7	4.9	12.3	15.2
Imports of goods and services	9.4	8.5	14.2	28.0	6.1	14.4	19.5
Gross savings	17.1	22.1	25.0	37.6			

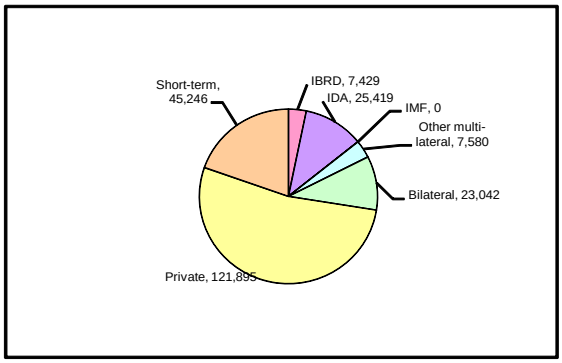
Note: Figures in italics are for years other than those specified. 2008 data are preliminary. .. indicates data are not available.
a. Aid data are for 2007.

Development Economics, Development Data Group (DECDG).

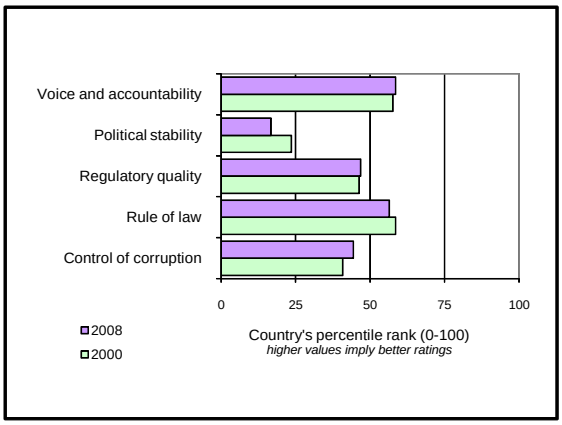
Balance of Payments and Trade	2000	2008
(US$ millions)		
Total merchandise exports (fob)	44,560	190,000
Total merchandise imports (cif)	57,912	296,614
Net trade in goods and services	-10,768	-69,585
Current account balance	-2,918	-30,049
as a % of GDP	-0.6	-2.6
Workers' remittances and compensation of employees (receipts)	12,890	51,974
Reserves, including gold	42,281	351,259

Central Government Finance		
(% of GDP)		
Current revenue (including grants)	..	20.9
Tax revenue	..	18.1
Current expenditure	..	28.5
Overall surplus/deficit	..	-9.6
Highest marginal tax rate (%)		
Individual	30	*30*
Corporate	40	*30*

External Debt and Resource Flows		
(US$ millions)		
Total debt outstanding and disbursed	100,243	230,611
Total debt service	10,920	31,076
Debt relief (HIPC, MDRI)	–	–
Total debt (% of GDP)	21.8	19.9
Total debt service (% of exports)	14.3	9.0
Foreign direct investment (net inflows)	3,584	41,169
Portfolio equity (net inflows)	2,345	-15,030



Private Sector Development	2000	2008
Time required to start a business (days)	–	30
Cost to start a business (% of GNI per capita)	–	70.1
Time required to register property (days)	–	44
Ranked as a major constraint to business (% of managers surveyed who agreed)	**2000**	**2008**
Electricity	..	*30.5*
Tax rates	..	*12.5*
Stock market capitalization (% of GDP)	32.2	55.7
Bank capital to asset ratio (%)	5.7	*6.4*



Technology and Infrastructure	2000	2008
Paved roads (% of total)	47.5	..
Fixed line and mobile phone subscribers (per 100 people)	4	34
High technology exports (% of manufactured exports)	5.0	*5.3*

Environment		
Agricultural land (% of land area)	61	*61*
Forest area (% of land area)	22.7	*22.8*
Nationally protected areas (% of land area)	..	*5.1*
Freshwater resources per capita (cu. meters)	*1,202*	*1,121*
Freshwater withdrawal (billion cubic meters)	645.8	..
CO2 emissions per capita (mt)	1.1	*1.3*
GDP per unit of energy use (2005 PPP $ per kg of oil equivalent)	3.8	*4.7*
Energy use per capita (kg of oil equivalent)	453	*510*

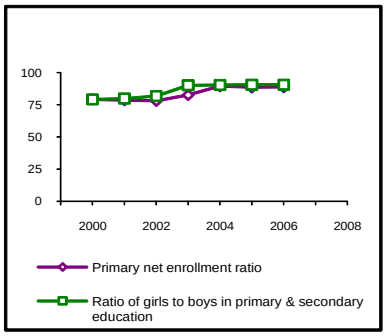
World Bank Group portfolio	2000	2008
(US$ millions)		
IBRD		
Total debt outstanding and disbursed	7,078	7,429
Disbursements	706	1,122
Principal repayments	994	390
Interest payments	428	313
IDA		
Total debt outstanding and disbursed	18,888	25,419
Disbursements	1,054	961
Total debt service	506	970
IFC *(fiscal year)*		
Total disbursed and outstanding portfolio	742	2,278
of which IFC own account	622	1,672
Disbursements for IFC own account	52	453
Portfolio sales, prepayments and repayments for IFC own account	51	118
MIGA		
Gross exposure	–	–
New guarantees	–	–

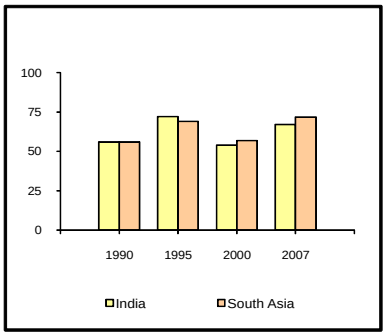
Note: Figures in italics are for years other than those specified. 2008 data are preliminary. 2/25/10
.. indicates data are not available. – indicates observation is not applicable.

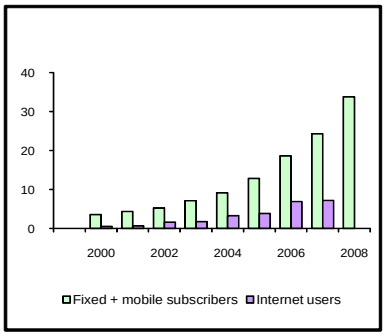
Development Economics, Development Data Group (DECDG).

With selected targets to achieve between 1990 and 2015
(estimate closest to date shown, +/- 2 years)

	India			
Goal 1: halve the rates for extreme poverty and malnutrition	**1990**	**1995**	**2000**	**2008**
Poverty headcount ratio at $1.25 a day (PPP, % of population)	*53.6*	*49.4*	..	*41.6*
Poverty headcount ratio at national poverty line (% of population)	..	*36.0*	28.6	..
Share of income or consumption to the poorest quintile (%)	..	..	..	*8.1*
Prevalence of malnutrition (% of children under 5)	..	..	*44.4*	*43.5*
Goal 2: ensure that children are able to complete primary schooling				
Primary school enrollment (net, %)	..	..	79	*89*
Primary completion rate (% of relevant age group)	*64*	74	72	*86*
Secondary school enrollment (gross, %)	41	46	46	*55*
Youth literacy rate (% of people ages 15-24)	*62*	..	*76*	*82*
Goal 3: eliminate gender disparity in education and empower women				
Ratio of girls to boys in primary and secondary education (%)	*70*	..	79	*91*
Women employed in the nonagricultural sector (% of nonagricultural employment)	13	14	17	*18*
Proportion of seats held by women in national parliament (%)	5	*7*	9	9
Goal 4: reduce under-5 mortality by two-thirds				
Under-5 mortality rate (per 1,000)	117	104	91	*72*
Infant mortality rate (per 1,000 live births)	80	74	68	*54*
Measles immunization (proportion of one-year olds immunized, %)	56	72	54	*67*
Goal 5: reduce maternal mortality by three-fourths				
Maternal mortality ratio (modeled estimate, per 100,000 live births)	..	..	..	*450*
Births attended by skilled health staff (% of total)	..	*34*	43	*47*
Contraceptive prevalence (% of women ages 15-49)	*43*	*41*	47	*56*
Goal 6: halt and begin to reverse the spread of HIV/AIDS and other major diseases				
Prevalence of HIV (% of population ages 15-49)	*0.1*	0.2	0.5	*0.3*
Incidence of tuberculosis (per 100,000 people)	168	168	168	*168*
Tuberculosis cases detected under DOTS (%)	..	0	12	*68*
Goal 7: halve the proportion of people without sustainable access to basic needs				
Access to an improved water source (% of population)	71	77	82	*89*
Access to improved sanitation facilities (% of population)	14	18	23	*28*
Forest area (% of total land area)	21.5	22.1	22.7	*22.8*
Nationally protected areas (% of total land area)	..	..	..	*5.1*
CO2 emissions (metric tons per capita)	0.8	1.0	1.1	*1.3*
GDP per unit of energy use (constant 2005 PPP $ per kg of oil equivalent)	3.2	3.4	3.8	*4.7*
Goal 8: develop a global partnership for development				
Telephone mainlines (per 100 people)	0.6	1.3	3.2	3.3
Mobile phone subscribers (per 100 people)	0.0	0.0	0.4	30.4
Internet users (per 100 people)	0.0	0.0	0.5	*7.2*
Personal computers (per 100 people)	0.0	0.1	0.5	*3.3*



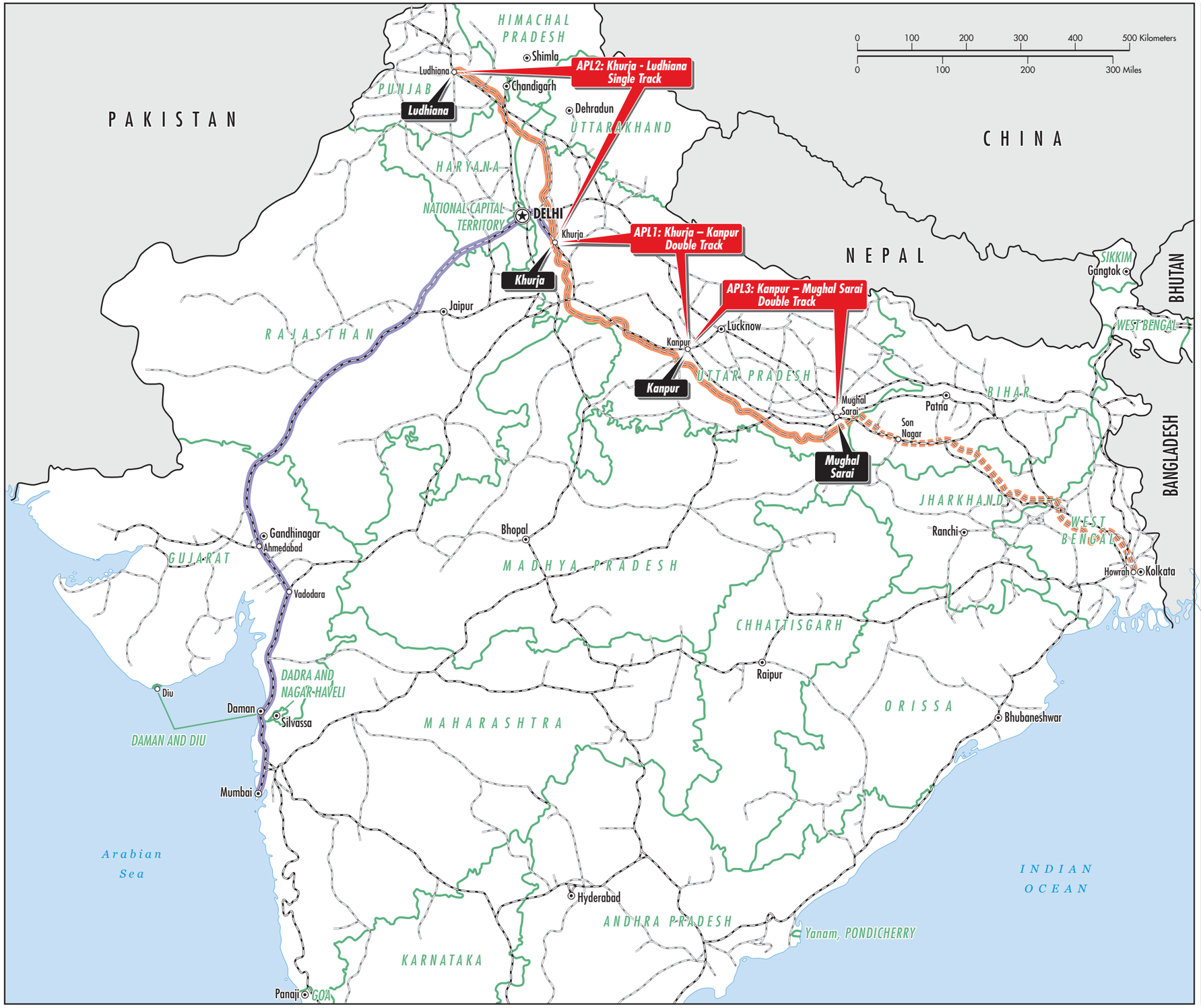




Note: Figures in italics are for years other than those specified. .. indicates data are not available. 2/25/10

Development Economics, Development Data Group (DECDG).

IBRD 37656



INDIA
EASTERN DEDICATED FREIGHT CORRIDOR PROGRAM

- WORLD BANK FINANCED APL PHASES
- PRIMARY RAILROADS TO BE CONSTRUCTED

DEDICATED FREIGHT CORRIDORS:

- WESTERN CORRIDOR (1468 km.)
- EASTERN CORRIDOR (1816 km)
- MAIN CITIES AND TOWNS
- PROVINCE CAPITALS
- NATIONAL CAPITAL
- EXISTING PRIMARY RAILROADS
- EXISTING SECONDARY RAILROADS
- PROVINCE BOUNDARIES
- INTERNATIONAL BOUNDARIES

APRIL 2010