



1. Project Data

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| Project ID P114338 | Project Name IN: Eastern Dedicated Freight Corridor-I | |
| Country India | Practice Area(Lead) Transport | |
| L/C/TF Number(s) IBRD-80660 | Closing Date (Original) 30-Jun-2017 | Total Project Cost (USD) 530,809,460.47 |
| Bank Approval Date 31-May-2011 | Closing Date (Actual) 31-May-2019 | |
| | IBRD/IDA (USD) | Grants (USD) |
| Original Commitment | 975,000,000.00 | 0.00 |
| Revised Commitment | 530,809,460.47 | 0.00 |
| Actual | 530,809,460.47 | 0.00 |

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2. Project Objectives and Components

a. Objectives

The Dedicated Freight Corridor (DFC) program was planned and implemented in three phases. The World Bank funding for Eastern Dedicated Freight Corridor (EDFC) was operationalized as a series of three projects: EDFC -1 (P114338), EDFC -2 (P131765), and EDFC -3 (P150158), to be delivered sequentially but with considerable overlap in their construction schedules. The ICR notes that the three projects were managed by the Government of India (GOI) as a single program with the same project development objectives. GOI used the flexibility of the program to shift project activities among the three projects to use



loan savings and better manage project activities. Thus, this ICR Review is based on the ICR, which presents a combined review of all three projects.

The Project Development Objective (PDO) as stated in the Loan Agreement (Schedule 1, page 5) and in the Project Appraisal Document (PAD, page II) for EDFC - 1 is:

- (i) provide additional railroad capacity, improve service quality and higher freight throughput on the 343 Kilometer (km) Khurja to Kanpur section of the Eastern Rail Corridor; and
- (ii) develop the institutional capacity of Dedicated Freight Corridor Corporation of India Limited (DFCCIL) to build and maintain the DFC infrastructure network.

Revised PDO for EDFC - 2 (Restructuring Paper, December 2019):

- (i) provide additional railroad capacity, improve service quality and higher freight throughput on the Khurja to Pandit Deen Dayal Upadhyaya Station (DDU) of the EDFC.
- (ii) develop the institutional capacity of DFCCIL to build and maintain the DFC infrastructure network.

Revised PDO for EDFC - 3 (Restructuring Paper, September 2021):

- (i) provide additional railroad capacity, improve service quality and higher freight throughput on the Ludhiana - Khurja and Kanpur - DDU section of the EDFC; and
- (ii) develop the institutional capacity of DFCCIL to build, maintain and operate the entire dedicated freight corridor network.

This review is based on the combined review of all three phases of the EDFC program. That is:

- (i) provide additional railroad capacity, improve service quality and higher freight throughput along the EDFC. and**
- (ii) develop the institutional capacity of DFCCIL to build, maintain and operate the entire dedicated freight corridor network.**

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

15-Sep-2021

c. Will a split evaluation be undertaken?

No



d. Components

There were two components:

1. Design, Construction and Commissioning of the three links. The total estimated cost for the three links was US\$4,134.15 million. The actual cost was US\$5758.90 million. This component financed construction of 1,184 kilometer (km) of electrified railway capacity capable of freight operation with 25 ton axle loads at 100 Km/hour.

2. Institutional Development: The total estimated cost for the three links was US\$74.00 million. The actual cost was US\$44.00 million. Activities in this component planned to provide capacity building of the DFCCIL and the Ministry Of Railways (MOR) to better utilize the heavy haul freight systems.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project cost. According to the ICR (page 2), the total estimated cost for the three phases of the project was US\$1,458,440,000. The actual cost was US\$1,083,500,000.

Project financing. The total Bank financing for the three phases of the project was US\$2735.00 million (US\$975.00 million for EDFC -1, US\$1,110.00 million for EDFC- 2 and US\$650.00 million for EDFC-3). According to the clarifications provided by the team, the total amount disbursed for the three phases was US\$1,725.54 million (US\$530.80 million for EDFC-1, US\$653.63 million for EDC-2 and US\$541.11 million for EDFC -3). Savings were realized during implementation due to factors such as exchange rate changes and competitive bidding. The balance of the unutilized loan for the three phases was cancelled.

Borrower contribution. According to the ICR (page 2), the borrower contribution was estimated at US\$483.440,000. Their actual contribution was US\$552.690,540.

Dates. The EDFC - 1 was approved on May 31,2011, became effective on December 30,2011 and was scheduled to close on June 30. 2017. EDFC - 1 closed two years behind schedule on May 31, 2019. EDFC - 2 was approved on April 22, 2014, became effective on January 16, 2015 and was scheduled to close on December 31, 2019. EDFC - 2 closed an year behind schedule on December 31, 2020. EDFC 3 was approved on June 30, 2015, became effective on February 16, 2017 and was to close on November 30, 2021. EDFC - 3 closed sixteen months behind schedule on March 31, 2022.

Other changes. EDFC - 1 was restructured thrice.

The main changes made through the **first project restructuring on November 15, 2015** are:

- The PDO1 was revised to include the 47 km Khurja - Dadri section of the EDFC. This section, originally planned to be financed as EDFC-3, was shifted to EDFC - 1 to utilize the savings realized due to the depreciation of the Indian Rupee (IR) relative to the US\$.
- Component one activity was expanded to include the design, construction and commissioning of the 47 km Khurja-Dadri section. The target values of two PDO indicators were revised upwards to reflect the increase in project scope.



The main changes made through **the second project restructuring in June 20, 2017:**

- Extension of closing date by 18 months (from June 30, 2017 to December 31, 2018) for completing the ongoing activities.
- Cancellation of US\$175 million due to loan savings on exchange rate, unused project preparation advance, and competitive bidding

The main change made through the **third project restructuring in December 2018:**

- Extension of the closing date by six months (from December 31, 2018 to June 30, 2019) for completing the Khurja-Dadri section.
- Cancellation due to loan savings of US\$245 million on exchange rate

EDFC-2 was restructured twice.

The main changes made through **the first project restructuring in December 2019** are:

- Cancellation of US\$250 million from the loan
- Extension of the closing date by an year from December 31, 2019 to January 31, 2020.

The main change made through the **second project restructuring in January 2020:**

- Change in Objective 1 of the PDO from “a) provide additional rail transport capacity, improved service quality and higher freight throughout on the 393 km Kanpur- Mughal Sarai section of the Eastern Dedicated Freight Corridor;” to “(i) provide additional rail transport capacity, improved service quality and higher freight throughput on the Khurja to DDU section of the Eastern Dedicated Freight Corridor”

EDFC -3 was restructured twice.

The main change made **through the first project restructuring of June 20, 2020:**

- Reduction in the original IBRD Loan amount from US\$650 million to US\$560 million due to the cancellation of US\$90 million from the EDFC-3 loan on account of loan savings due to exchange rate fluctuations and repurposing due to the COVID-19 pandemic,

The main changes made through **the second project restructuring of September 2021** are:

- Revised PDO Objective 1 and the relevant PDO indicators to include the completion of the Kanpur – DDU section of EDFC-2
- Extension of the closing date from November 30, 2021 to March 31, 2022.

Split rating. The PDO was revised to reflect the increase in project scope. Therefore, this review is not based on a split rating of objectives.



3. Relevance of Objectives

Rationale

Country and sector context. Since India is a country of long distances, railways are the economical mode for long-haul freight movement. Railways are cost-effective and environmentally more friendly (in terms of reducing greenhouse gas (GHG) emissions) than the road mode.

Railways in India had been losing market share in freight transport to roads due to factors such as chronic and continuing under-investment in the past, which resulted in widespread capacity constraints and low service quality. Road transport, which witnessed an increase in investment since the late 1990s, advanced more rapidly than railways and accounted for 65% and 90% of the freight and passenger markets, respectively, during 2000-2005. However, the increase in the price of oil and growing concerns about GHG emissions favored increasing the use of rails for moving freight.

Government strategy. The Government's Twelfth Five Year Plan for 2012- 2017 set an infrastructure investment target of US\$1 trillion for achieving sustained economic growth over the medium and long term. This included investments in the rail network, whose main corridors were severely congested. Over the past years, although Indian Railways (IR) has implemented several operational improvements to regain modal share (such as increasing the permissible axle-loading for major commodities, rationalizing train examination procedures, and simplifying the tariff system for bulk commodities), large-scale rail capacity expansion was deemed necessary for improving sector performance. The Government established DFC to expand freight capacity, increase operational efficiency, and decrease energy consumption. The Government also established the DFCCIL in 2006 for building and maintaining the DFCs. According to the clarifications provided by the team, the Ministry of Railways (MoR) established DFCCIL as a Special Purpose Vehicle (SPV) under the Company's Act 1956. DFCCIL was incorporated as a separate entity, separate from the MoR, to undertake planning and development, mobilizing financial resources, construction, operations and maintenance and business development for dedicated freight corridors in India.

The PDO continues to be relevant to the Government strategy. The National Railway Plan (NRP) for 2030 - 2051, carried forward the Government's vision of developing dedicated high-speed, high-axle-load carrying corridors for freight transportation for the next three decades. The EDFC program, as part of the national DFC program, continues to be a government priority and was included in India's Nationally Determined Contributions (NDC) for the Paris Climate Agreement due to its expected positive impact on environmental sustainability.

WB strategy. The PDOs were well-aligned with the Bank strategy for India. At appraisal, the DFC program was aligned with the Country Partnership Strategy (CPF 2009 - 2012) objectives of "*achieving rapid inclusive growth*" and "*removing infrastructure constraints*". The PDOs were relevant to the CPS for 2013-2017. The CPS spelled out the Bank's plans to support integration and inclusion through enhanced transport connectivity, reducing greenhouse gas emissions, and releasing passenger transport capacity on the existing IR network.

The PDOs are highly relevant to the current Country Partnership Framework (CPF) for 2018 - 2022. The PDOs of this project are aligned with Pillar 2 of the CPF focus area and objectives pertaining to "*enhancing competitiveness and enabling job creation*". Objective 2.3 of the CPF underscored the need for "*improving connectivity and logistics*" through developing multi-modal transport with a greater focus on market-oriented



institutions, asset management and logistics supply chain infrastructure. The Performance and Learning Review for the India CPF is currently under preparation.

Previous Bank experience. The Bank has previously financed several highway sector projects in India and the Mumbai Urban Transport Project had a small rail component. However, the EDFC program was the largest and most complex public works project in India's railway sector. The project included activities aimed at improving construction efficiency, increasing infrastructure productivity through innovation, introducing commercial operations by increasing private sector participation and implementing institutional reforms through capacity building in a vertically integrated rail market. The Bank loan addressed the financing gap for the large and critical infrastructure investment for which commercial long-tenor loan were not readily available when this project was prepared.

The overall level of ambition was appropriate, given that the PDO was aligned with the Government strategy of increasing the modal share of railways in the national freight market and with the Bank's current focus on promoting more environmentally friendly transport modes. Therefore, the relevance of the PDO is High.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

PDO 1: Provide additional railroad capacity, improve service quality and higher freight throughput along the EDFC.

Rationale

Theory of change. The casual links between project activities (inputs), outputs and the intended outcomes were logical. The outcomes were monitorable. The outputs of activities such as designing, constructing and commissioning the Khurja-Kanpur, the Khurja_Dadri, the Kanpur-Mughalsarai section and the Khurja-Ludhiana links of the EDFC were expected to increase the rail capacity for moving freight, improve service quality and enable higher freight throughput via: (i) additional freight train paths on the EDFC; (ii) increase in the average speed of freight trains; (iii) increase in the number of express passenger trains and (iv) increase freight throughput on the DRC. These outcomes were likely to contribute to the long-term development outcomes of ensuring an efficient, cost-effective rail network and reducing greenhouse gas emissions.

The outcomes were predicated on these assumptions: (i) DECCIL implements train scheduling for the EDFC; (ii) The IR upgrades the feeder routes and acquires rolling stock; (iv) The IR ensures operation reliability and efficiency; and (v) The IR operates a new passenger train schedule.



Outputs.

- The Khurja - Kanpur, Khurja - Dadri, Kanpur- DDU and Khurja-Ludhiana sections of the EDFC were designed, constructed and commissioned as targeted.

Outcomes.

The output described above were expected to lead to the outcomes of: (i) increasing rail transport capacity (measured by an increase in freight train parts on the IR network); (ii) increase in the number of express trains; (iii) improve service quality (measured in terms of average speed of freight trains); and (iii) achieve higher freight throughput (measured by the net ton-km (NTKM) transported along the corridor).

- The additional freight train paths (pairs/day) on the Khurja - Kanpur, Kanpur-DDU and Khurja - Dadri increased to 100 and 23 train pairs in the Khurja - Ludhiana sections as targeted. The ICR (para 31) noted that prior to the commissioning of EDFC -1, the Kanpur - Khurja section of the IR carried an average of 32 freight train pairs. With the commissioning of EDFC - 1, the freight train capacity increased to 100 freight train pairs.
- Between 2022 - 2023, the number of express passenger trains on this section increased from 69 at the baseline to between 128 - 136 between the Kanpur-Khurja and the Khurja-Dadri sections. The ICR notes that as an increasing number of freight trains are transferred to EDFC, the capacity for operating passenger trains on the parallel IR section is expected to increase further.
- The average speed of freight trains on the Khurja - Kanpur section of the DFC increased from 25 kmph at the baseline to 57 kmph, slightly short of the target of 60 kmph. On the Kanpur - DDU section, freight trains were operating at an average of 47 kmph in the first four months of its operation (22% below the 60 kmph target). During the testing and commissioning of the Khurja-Ludhiana DFC section, freight trains were running at an average of 41 kmph (below the target of 60 kmph). The ICR noted that IR's policy of prioritizing passenger trains over freight trains in the past used to result in slow and unreliable freight services. Also, multiple level-crossings along the IR network further delayed freight services. The DFCs permitted continuous, uninterrupted and reliable train services that would not have been possible over the highly congested mixed and passenger and freight lines of the IR network. The ICR notes that the average speeds of EDFC 1, 2 and 3 are expected to increase further, as traffic ramps up and the complete length of the EDFC is commissioned.
- EDFC - 1 was expected to add around 12.5 billion NTKM of freight traffic to the network, as this section was the critical link between EDFC and WDFC. However, the construction of WDFC to the Jawaharlal Nehru Port on the western coast (financed by the Japan International Cooperation Agency) (JICA) was yet to be commissioned when the project closed. As a result, traffic in 2023 -2024 was less than one billion NTKM. The ICR notes that throughput on the EDFC 1, 2, and 3 corridors is expected to exceed the original traffic, albeit with a delay of a few years.

The operations of EDFC 1, 2, and 3 created significant rail capacity, with the average speed of trains nearing the target speeds at project closing. The planned throughput on the EDFC is expected to be achieved, albeit with a delay. The efficacy of this objective is rated as substantial with moderate shortcomings.

Rating
Substantial



OBJECTIVE 2

Objective

PDO 2. Develop the institutional capacity of DFCCIL to build and maintain the DFC infrastructure network.

Rationale

Theory of change. The casual links between project activities (inputs), outputs and the intended outcomes were logical. The outcomes were monitorable. Activities such as strengthening the staffing of DFCCIL, preparing an institutional strengthening strategy, developing marketing and commercial strategies for the DFCCIL and its catchment areas and preparing a non-discriminatory study were likely to contribute to improving the institutional capacity of DFCCIL for managing its rail assets. These activities were likely to modernize IR in the heavy haul business and aid in the long-term development outcome of developing DFCCIL into a world class service provider.

Outputs.

- The project provided capacity building support to DFCCIL for: (i) incorporating climate resilience in design standards; (ii) undertaking the first project level Green House Gas assessment in the Bank's India Portfolio; (iii) preparing and integrating for the first time a silicosis reduction strategy into bidding and contracting documents on a railway project. (According to the clarifications provided by the team, the construction works of the three EDFC projects required the construction workers to handle significantly large quantities of quarry materials which had the potential to cause "Silicosis" among such workers. Silicosis is defined as an occupational lung disease caused by inhalation of crystalline silica dust); (iv) instituting the first environmental certification requirements in a Bank financed project; and (v) creating the first Social and Environment Management Unit (SEMU) for a railway project in India.
- The concession agreement between Ministry of Railways and DFCCIL was signed in 2014 that gives DFCCIL the concession to create the dedicated freight corridors. It establishes the principals for IR use of DFCCIL lines and payment for that use.
- 30 employees from DECCIL's headquarters and field offices and the contractor's environment and safety staff participated in workshops organized by the Social and Environmental Safeguard Monitoring and Review Consultant every year.
- The DFCCIL staff in officer cadre increased from 200 at the baseline to 584, exceeding the target of 497.
- The project provided support to building institutional capacity for preparing, bidding and contracting India's first Design and Build lump-sum contract. The DFCCIL staff were trained on procurement and contract management.
- Technical assistance was provided for building institutional capacity in commercial business development in areas such as developing auxiliary logistics development along the DFC, climate resilience (in energy-efficient technology) and research and development (establishing India's Heavy Haul Research Institute).
- The project supported the preparation of DFCCIL's Operating Manual for operating and maintaining DFCs and handling multiple train operators. The Safety Management System was developed using a risk management approach.



- These studies were completed as targeted: (i) A study to analyze the safety related aspects of the DFC; (ii) A study on heavy haul specifications and procurement; (iii) Assessment of alternative approaches to non-discriminatory access and development of establishing track access charges;
- The energy optimization study was completed. This study developed the processes for safe and inefficient interchange of trains between IR and DFCCIL. The resulting interchange protocol was approved in July 2021 and has been used since then to guide the interchange of trains to/from commissioned sections of DFCCIL lines.
- Livelihood skills training and vocational trainings were provided to 2,350 Project Affected Persons in areas such as data entry and the project generated about nine million days of employment. Targets were not specified for these indicators.

Outcomes.

- The Ministry of Railways (MORs) and the DFCCIL signed the Memorandum of Understanding (MOU) for 2019 - 2020 on July 2021 (before the whole program closed on March 31, 2022). The agreement formalized the institutional arrangement of DFCCIL becoming an arm's length independent commercial entity for building and maintaining DFC assets and offering non-discriminatory access to qualified operators. According to the clarifications provided by the team, the agreement specified the specific roles, rights and obligations of DFCCIL and MOR and the framework for DFCCIL to construct and operate the DFC. The Track Access Charges for train operators were conceptualized as part of the Agreement and formed the basis of DFCCIL's revenue stream as an infrastructure manager. Rating of the MOU was used as a proxy measure of the institutional development. The MOUs are rated every year and Ministry of Finance, Department of Public Enterprises monitors the status of MOUs. The actual MoU rating achievement for 2019-2020 was "good" as per the target though it was lower than the baseline of "very good" set for EDFC-3. The team clarified that the objective was that DFCCIL maintains the MOU rating at "good" or higher, as an indication that its institutional development in its ability to construct, maintain and operate the Dedicated Freight Corridors. The ICR provides no information on the MoU rating and progress since 2021.

Efficacy of this objective is rated as substantial with shortcomings. Even though the project met the outcome target of "good" rating of MoU for measuring the ability to construct, maintain and operate the Dedicated Freight Corridors, the data is as of only 2019-2020. And the target was set lower than the baseline of "very good".

Rating
Substantial

OVERALL EFFICACY

Rationale

Efficacy of PDO 1 is substantial with moderate shortcomings, since some outcomes pertaining average speeds and increase in freight traffic are expected to be realized in a few years once the construction of WDFC financed by JICA is complete. Efficacy of the PDO 2 is substantial with moderate shortcomings for



lack of recent evidence, and the actual achievement being relatively lower than the baseline set during the last phase of the program. Overall Efficacy is rated as Substantial with moderate shortcomings.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic analysis. An economic analysis was conducted at appraisal and at closure for component one activities which accounted for bulk of the actual cost. The methodology entailed a comparison of benefits "with the project" to "without the project". The benefits were assumed to come from: (i) the economic advantages of transporting large quantities of bulk freight that otherwise could not be carried or would have to be sent by roads with associated social and environmental costs; (ii) savings in IR operating costs due to improved efficiency of the DFC track; (iii) savings in passenger travel time due to the faster movement of passenger trains on the existing track; and (iv) benefits from reduction in GHG emissions.

The Net Present Value (NPV) at 10% discount rate was about Indian Rupee (IR) 112.00 billion and the ex post Economic Internal Rate of Return (EIRR) was 14% as compared to the NPV of US\$174.00 at appraisal and an ex-ante EIRR of about 22%. The ex-post EIRR of 14% was much lower than the appraisal projections due to a combination of implementation delays, resultant cost escalations and demand being lower than the appraisal forecast.

Administrative and operation issues during implementation. The project had implementation delays for these reasons: (i) slow pace of land acquisition due to the large number of shareholders and the change in land acquisition law during the program; (ii) delays in procurement for civil works contracts due to the introduction of the new contract type and lack of experience of DFCCIL in managing Design-Build-Lump sum; and finally (iv) the impact of the COVID - 19 pandemic in the final years (over which the project had no control).

These delays resulted in time overruns, with the operation closing over four years behind schedule. The project realized savings due to a combination of factors including, exchange rate changes and competitive bidding which enabled the Bank to cancel a part of the loan at government request.

In sum, efficiency is modest, given that the ex-post EIRR was well below the ex-ante EIRR and there were implementation delays with the operation closing over four years behind schedule.

Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:



| | Rate Available? | Point value (%) | *Coverage/Scope (%) |
|--------------|-----------------|-----------------|--|
| Appraisal | ✓ | 22.00 | 93.00 <input type="checkbox"/> Not Applicable |
| ICR Estimate | ✓ | 14.00 | 93.00 <input type="checkbox"/> Not Applicable |

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The relevance of the PDO to the Government strategy and the current Bank strategy is High. Overall efficacy is substantial, with moderate shortcomings since there were shortcomings in achievement of both the objectives. Efficiency is modest. Thus, overall outcome is Moderately Satisfactory.

a. Outcome Rating

Moderately Satisfactory

7. Risk to Development Outcome

Institutional Risk. The ICR (para 112) notes that in the short-term, anticipated traffic volumes depends on trains being diverted by IR from the existing IR network to the EDFC corridor and this risk is mitigated by the concession agreement. There is however risk to the sustained strengthening of institutional capacity in the medium term, as many senior officers at DFCCIL are on secondment from IR or MOR for an average tenure of three to five years. From a program perspective, frequent movement of senior officials could potentially disrupt institutional knowledge. This risk is expected to be moderate, given that DFCCIL has started recruiting entry and mid-level staff and is training them for strengthening institutional capacity for managing EDFC in the medium-term.

8. Assessment of Bank Performance

a. Quality-at-Entry

The Bank prepared this project based on the Bank's recent experience with a large portfolio of previously financed transport projects in India and the lessons from the Bank's experience with railway projects in China. The important lessons incorporated at design included: (i) Given the limited implementation capacity, the design included simple project components and strengthening DFCCIL's institutional capacity; (ii) gradually modernizing IR by focusing on its heavy haul business: (ii) increasing DFCCIL staffing by qualified and experienced managers: and (iii) requiring the DFCCIL to establish a Social and Environmental Unit (SEMU) with capacity to carry out the Environmental Management and Land acquisition activities in a timely manner. The program's legal covenants included provisions for signing of



a concession agreement at the start of implementation and prior to the commissioning of facilities. The Bank prepared this project in close collaboration with JICA which was financing the parallel WDFC project.

Unlike traditional contracting arrangements, this project used a modified contract type - the Design - Build - Lump sum contract to incentivize the contractors to contain costs and speed up construction. (According to the clarifications provided by the team, under this contract, the contractor is responsible for preparing detailed designs and constructing according to those designs. Payment to the contractors was made based on achievement of milestones (such as, approval of designs, construction of embankment, laying of rails, and so on). This contract was adopted with the objective of incentivizing time and cost-bound delivery and minimizing cost and time savings. The team also clarified that in a traditional contract, these risks would be with the customer, but in the Design Build Lump sum contract, these risks are shared with the contractor and since design responsibility is vested with the contractor, any variations and delays on account of poor designs were the contractor's responsibility. The Design-Build-Lump sum contract proved to be the appropriate, as it resulted in fostering competition and generating cost savings.

DFCCIL was overall in charge of implementing the project. DFCCIL had set up a Social Environmental Management Unit (SEMU) at appraisal to oversee implementation of the environmental management and resettlement action plans. The implementation arrangement made at appraisal was appropriate as the project performance was not undermined by the arrangements made at appraisal.

The Bank identified several risks at appraisal including high risk with procurement and contract management and substantial risks with financial management and implementing the land acquisition and resettlement processes. The Bank incorporated several mitigation measures. Even with mitigation measures, the overall project risk was rated as substantial, given the project size. The arrangements made at appraisal for safeguards and fiduciary compliance were appropriate (discussed in section 10).

There were moderate shortcomings at Quality-at-Entry: One, the Bank did not fully anticipate the challenges encountered in executing the Design-Build-Sum contracts. The Bank underestimated the need for significant capacity building during the contracting process. Although this issue was rectified during implementation, it contributed to implementation delays; and there were shortcomings in M&E design (discussed in section 9).

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Fourteen Implementation Status Results (ISR) were filed over the project lifetime (implying twice a year supervision missions). The Bank prepared the subsequent EDFC 2 and EDFC 3 projects based on the experiences from implementing EDFC 1. The ICR (para 76) noted that the implementation support included frequent visits by the Bank's senior management for discussions with DFCCIL officers, senior officials of the MOR and the Government for adopting innovative mechanisms for incorporating benchmarking and comparative analysis. The restructurings of the three EDFC projects enabled the Bank to engage effectively with the Government in developing heavy-haul freight and undertake timely course correction during the long tenure of the EDFC program and to utilize the Bank financing for EDFC efficiently. The



Borrower's ICR (Annex 5) notes that the Bank team was cooperative and responsive and provided guidance during implementation, given that DFCCIL was executing a large infrastructure project on Design Build Lump sum basis for the first time.

The deficiencies of the M&E framework were not rectified during implementation.

Overall Bank performance is rated as moderately satisfactory.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The results framework clearly illustrated the causal links between project activities, outputs and desired outcomes. External factors outside the control of the project which could affect the outcomes, such as (i) rolling stock acquisition by IR; (ii) IR's train operation performs; and (iii) capacity upgradation of the IR feeder network and their potential impact were clearly identified in the PAD.

However, there were shortcomings in the PDO indicators even after multiple restructurings. The target value for the PDO indicator "increased number of express passenger trains on the section" were not specified. However, this indicator was subsequently dropped for EDFC -2 and EDFC -3 projects. The PDO indicator for PDO 2 "Improve institutional capacity of DFCCIL to build and operate the entire DFC network" focused on the concession agreement and the MOU with MOR was inadequate to fully assess the achievement of this objective. The target values for the Khurja - Ludhiana single line section were the same as for the Khurja _ DDL double line section, even though the rationale for developing the Khurja-Ludhiana section as single line, was mainly due to the significantly lower traffic demand projections on this link. The targeted increase in traffic (48%) when the Khurja - Dadri section was added to EDFC-1 was not realistic.

b. M&E Implementation

DFCCIL was responsible for coordinating data collection, analysis and periodic reporting. The ICR (para 87) notes that DFCCIL and the project stakeholders diligently and regularly collected M&E data and provided progress reports. The ICR (para 88) also noted that the M&E implementation incorporated a robust mechanism for monitoring quality during implementation. During COVID-19 physical travel was restricted, the Bank teams along with DFCCIL representatives undertook missions to assess physical progress and identify potential implementation bottlenecks.

The deficiencies in M&E framework were not rectified during implementation.



c. M&E Utilization

M&E provided adequate information of the formal results framework to assess the achievement of PDOs. M&E data and reports served as an important tool for DFCCIL and the Bank to track and communicate progress, flag emerging issues and determine necessary course actions and prioritize resources to support implementation (ICR, para 84).

In sum, the overall quality of M&E is rated as modest, due to the shortcomings in M&E design, which remained despite multiple restructurings.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

The project was classified as a Category A (Full Assessment) project under the WB safeguard policies: Three safeguard policies were triggered at appraisal: Environmental Assessment (OP/BP 4.01): Physical Cultural Resources (OP/BP 4.11): and Involuntary Resettlement (OP/BP 4.12) (PAD, page ii).

Environmental Assessment and Physical Cultural Resources. An Environmental Assessment (EA) that was conducted at appraisal, identified the following potential impacts: (i) acquisition of small land parcels; (ii) cutting of trees; (iii) increased noise and vibrator levels in sensitive receptors close to the alignment; (v) impacts on cultural projects; and (vi) health and safety issues due to the construction activities (PAD, para 84). The EA included an Environmental Management Plan (EMP) an Environmental Management Framework (EMF) to address issues to environmental safeguards and safeguards on physical cultural resources, (PAD, para 87).

The ICR (para 90) noted that the project complied with the environmental safeguards. There were no pending issues when the project closed. The required noise barriers were constructed; borrow areas were rehabilitated; storm water drainage works were completed; forest clearance obtained and compensatory afforestation carried out by the forest department. The ICR does not report of any issues with the safeguards on physical cultural resources.

Involuntary Resettlement. A Social Impact Assessment (SIA) conducted at appraisal concluded that the project was expected to cause loss of land for a number of farmers and families. A Resettlement Plan Framework (RPF) and a Resettlement Action Plan (RAP) were prepared and publicly-disclosed at appraisal for addressing land acquisition and resettlement issues and a Grievance Redress Mechanism (GRM) was established for addressing Project-Affected People's grievances (PAD, paras 94 and 95).

The ICR (para 92) noted that the third-party Social and Environmental Safeguards Monitoring and Review Consultant monitored land acquisition and resettlement activities to ensure compliance with the RAP. DFCCIL hired Non Governmental Organizations (NGOs) to assist in community participation, income



participation and grievance resolution. There were no pending land acquisition issues when the project closed.

Some good social safeguards practices of the project included: (i) efforts to minimize the impact of land acquisition by exploring alternative alignment options; (ii) establishing a dedicated Social and Environment Unit for managing impacts; (iii) aligning the RPF with India's new law; (iv) operating a joint dedicated Bank with the state government, where funds for land acquisition were maintained; (v) including informal settlers for resettlement assistance; and (vi) using NGOs to support PAPs and engaging independent consultants for monitoring and reporting of land acquisition and resettlement.

b. Fiduciary Compliance

Financial Management (FM). The Bank conducted a FM assessment of DFCCIL at appraisal. The assessment concluded that although DFCCIL had experienced finance professionals on deputation from IR, DFCCIL had not executed an IBRD loan in the past, and thus had limited experience with the Bank's FM policies and procedures. The financial management risk was rated as substantial at appraisal.

The ICR (para 98) noted that overall DFCCIL's FM was acceptable and complied with the statutory corporate reporting and accounting requirements, as well as agreed project-specific requirements. The financial reports submitted in a timely fashion, were deemed to be satisfactory.

Procurement Management. The Bank conducted an assessment of DFCCIL's procurement arrangements at appraisal (PAD, para 78). The key findings were: (i) limited procurement capacity and staff with no experience in Bank projects; (ii) no standard bidding documents for the recommended Design-Build contracting strategy; and (iii) the weak procurement system could potentially result in delays. Procurement risk was rated as High at appraisal.

Although the three projects had multiple, high-value and complex procurements, the ICR (para 100) noted that overall, DFCCIL performed well in executing a complex and challenging procurement plan. The EDFC program complied with the WB's procurement policies and procedures.

c. Unintended impacts (Positive or Negative)

There were no unintended impacts.

d. Other

11. Ratings

| Ratings | ICR | IEG | Reason for Disagreements/Comment |
|---------|-----|-----|----------------------------------|
|---------|-----|-----|----------------------------------|



| | | | |
|------------------|--------------|-------------------------|---|
| Outcome | Satisfactory | Moderately Satisfactory | Shortcomings in Efficacy and Efficiency |
| Bank Performance | Satisfactory | Moderately Satisfactory | Shortcomings in Quality at Entry and Supervision |
| Quality of M&E | Substantial | Modest | Shortcomings in M&E design that were not adequately addressed during implementation |
| Quality of ICR | --- | Substantial | |

12. Lessons

The ICR draws the following three main lessons from the experience of implementing this project, with some adaptation of language.

1. The Bank's long-term strategic support may raise the potential for success in enabling State Owned Enterprises (SOEs) harness commercial financial markets and introducing fundamental changes in a country's rail sector. The time frame for large-scale, long-term reforms in a country's rail sector are typically long. These strategic reforms require the SOEs to evolve from a traditional government-funded organization to a commercial, market-focused and operationally efficient entity. Likewise, long-term engagement by the Bank can enable the Bank to facilitate adoption of sound social, environmental and fiduciary policies. The lesson is that Bank's long-term support may be necessary to facilitate such reforms.

2. Careful planning for managing and coordination of land acquisition may be required, in countries where subnational entities are involved in land acquisition. In India, national-level projects rely on state governments for the complex process of land acquisition. The process in this project required intensive coordination between the Dedicated Freight Corridor Corporation Limited (DFCCIL), the state government land offices, the contractors and local governments. Over time, as land acquisition delays impeded construction, DFCCIL became much more systematic in coordinating land acquisition as it came to realize that coordination with local authorities was in the interest of timely project completion.

3. A careful assessment of the World Bank's capacity and the contractor's capacity may be required when new contracting structures are introduced for the first time. This project conceptualized the Design-Build lump sum contract to ensure equitable risk sharing between DFCCIL and the contractors. However, the project failed to foresee the time required for Bank's internal approvals, financial challenges faced by contractors and delays in land acquisition by DFCCIL. This contributed to the delays in the initial years.

13. Assessment Recommended?

No



14. Comments on Quality of ICR

The ICR is well-written and clear. The theory of change provided in the text clearly articulates the casual links between project activities, outputs and the intended outcomes. The text also explicitly states the assumptions underlying the theory of change and states the factors which could affect the outcomes over which the project had no control. The ICR provides adequate evidence and analysis to assess project performance. The ICR clearly acknowledges the challenges faced while implementing the Design-Build lump sum contracts. The Borrowers ICR provided in Annex five provides useful information.

Overall the ICR quality is rated as Substantial.

a. Quality of ICR Rating Substantial