A Key development issues and rationale for Bank involvement

1. India’s economy now ranks fourth in the world on a purchasing power parity basis, and is also the world’s second fastest growing economy. It is well recognized that infrastructure deficiencies have become a severe constraint to India’s continued economic growth. To sustain recent GDP growth rates of 9 percent p.a., the Planning Commission estimates that investments in infrastructure would have to be substantially augmented. This has been particularly true since the manufacturing sector began to exhibit high growth rates in recent years (22% in FY2006). According to Government estimates, India would need about $320 billion worth of investments (at 2006 prices) in various infrastructure sectors during the Eleventh Five Year Plan (2007-12). Transport, and in particular rail transport, would have a significant role in this large-scale infrastructure development effort. The Dedicated Freight Corridor (DFC) is planned as the centerpiece of the railway’s medium term development program.

2. Chronic – and continuing – under investment in infrastructure for all modes of transport has resulted in widespread capacity constraints, and low levels of service quality. In some ways, the under-investment in transport has been favorable for the railways, sheltering it from competition from road transport that sharply reduced the role of railways elsewhere. Nonetheless, road transport now accounts for about 65% of the freight market and 90% of the passenger market, and those shares are growing. Recent increases in the price of oil and escalating concerns about greenhouse gas emissions are, however, beginning to favor a greater reliance on rail transport. The Government’s DFC program responds to just such concerns and priorities.

India’s Railway System

3. Indian Railways (IR) operates a national rail network of about 63,000 route kilometers, which is about the same size network as China’s. In 2007, IR carried a total freight traffic of 726 million tonnes, which generated about 400 billion freight ton-km (average lead 550 km) placing it fifth among the world’s freight railways - behind USA, China, Russia and Canada. IR is also by far the largest employer in India with a workforce of around 1.4 million. Starting in 2005, IR has been generating an operating surplus, with the 2007 figures showing a surplus of about US$5 billion, and a very respectable operating ratio near 78 percent. This achievement has been hailed internationally as a major turnaround of Indian Railways.

The Dedicated Freight Corridor (DFC) Program

4. As a result of the rapid growth of IR’s freight traffic, from close to 500 million tonnes in 2005 to 726 million tonnes in 2007, line capacity utilization on IR’s most heavily trafficked routes exceeds 100% by a
significant margin, based on the “charted” line capacities\(^3\). The four routes, that form a quadrilateral connecting Delhi, Mumbai, Chennai and Kolkata, are the most heavily trafficked. While they account for just 16% of the network’s track length, they carry more than 60% of the total freight transported by IR. With freight traffic in the country projected to grow at more than 7% p.a., IR urgently needs to add capacity on these routes. Recognizing this, the Government approved an IR proposal to establish dedicated freight-only lines, mostly paralleling the existing Quadrilateral routes. In addition to expanding freight capacity, this would also enable enhanced passenger services on the existing routes where service has suffered due to the mixing of the faster passenger services with slower freight traffic. The DFC program, which will eventually cover the full Quadrilateral, is proposed to be completed in stages. The first phase includes the Western Corridor (Delhi-Mumbai) and the Eastern Corridor (Ludhiana-Delhi-Kolkata), which will be the first two DFCs developed.

**Dedicated Freight Corridor Corporation (DFCC) of India Ltd.**

5. The Government of India (GOI) established DFCC in 2007 under the Companies Act of 1956 as a Special Purpose Vehicle wholly owned by IR. DFCC has been mandated to build and operate the infrastructure for the DFCs and provide non-discriminatory access to IR and other qualified train operators. The relationship between IR and DFCC will be governed by a concession agreement, whereby IR would pay DFCC suitably structured track access charges. Since almost all of the traffic using the DFCs would originate and/or be destined for points outside the DFCs, i.e. on IR’s larger network, the concession agreement, its operating arrangements, and the risk sharing implied therein between IR and DFC, will be a critical aspect of the future institutional arrangements for the project.

**Rationale for Bank Assistance**

6. Bank support for the DFC program is justified for three reasons. **First,** the Project aims at increasing railways’ share of the freight market and thus reducing transport costs as well as fuel consumption, which could directly contribute to reductions in carbon emissions. This objective matches well with the Bank’s goal of promoting environment-friendly infrastructure, in particular reducing Greenhouse Gas emissions in the Transport Sector\(^4\). **Second,** the project is a typical large, lumpy infrastructure investment which could take about seven years to complete and another few years to attain reasonable capacity utilization. Commercial loans offering reasonable rates of interest are not easily available for such large amounts with the necessary long tenors, and the Bank’s loan would bridge a crucial funding gap complementing the support offered to DFCC by other donors\(^5\). **Third,** the Project would contribute to consolidating key institutional capacities of DFCC critical to the future development of the DFC program. A successful DFCC could also become a catalyst for introducing improved practices to IR by serving as a demonstration pilot.

**II. The Proposed Program**

7. The Eastern DFC Program proposed for World Bank support consists of a 1129 km section of the Ludhiana-Delhi-Kolkata Eastern Dedicated Freight Corridor. It runs from Dhandari Kalan near Ludhiana (in Punjab) to Khurja near Delhi (397 km) to Kanpur in Uttar Pradesh (342 km), and then on to Mughal Sarai in Uttar Pradesh (390 km). It is the most heavily congested section of the Eastern corridor. The Indian authorities have completed two feasibility studies one by RITES, and another by Nippon Koei of Japan under JICA funding. Deliberations between the Ministries of Railways, Finance and the Planning Commission on various modalities for project implementation culminated in a Cabinet decision to establish DFCC as the implementing agency for the program; the key elements of the Cabinet decision are in Annex-2.

**Program Development Objectives**

8. The development objectives for the proposed Program are threefold: (i) meet growing freight and passenger demand in the railway corridor Dhandari Kalan - Khurja – Kanpur - Mughal Sarai, with a

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\(^3\) Charted line capacities are the capacities derived by a planner for optimal operation of a railway line.

\(^4\) Clean, Safe, Affordable Transport, World Bank, 2007

\(^5\) Government of Japan has offered 450 billion yen ($4.5 billion) in low-interest loans to build the Delhi-Mumbai DFC
substantially improved level of service; (ii) reduce greenhouse gas emissions through fuel savings achieved by modal shifts of freight from trucks to the DFC, and rail transport efficiencies of the DFC itself; and (iii) develop institutional capacity of DFCC to build and operate the DFC network.

**APL Phasing and Triggers**

9. The three sections to be constructed under the program and their key details are presented in Table 1. The most suitable sequencing of these sections based on their likely readiness could be: (1) Khurja – Kanpur; (2) Ludhiana – Khurja; and (3) Kanpur – Mughal Sarai.

<table>
<thead>
<tr>
<th align="left">Table 1: Eastern DFC Program</th>
</tr>
</thead>
<tbody>
<tr>
<td align="left"><strong>Sr No</strong></td>
</tr>
<tr>
<td align="left">1.</td>
</tr>
<tr>
<td align="left">2.</td>
</tr>
<tr>
<td align="left">3.</td>
</tr>
</tbody>
</table>

Note: 1US$ = INR 45.00

10. Each phase of the APL would be comprised of a loan for one of the three sections and technical assistance for DFCC. The sequence of the loans and their timing is envisaged to be: FY11 APL1 for Khurja – Kanpur; FY 12 APL2 for Ludhiana – Khurja; and FY13 APL3 for Kanpur-Mughal Sarai. The timing is appropriate since the pre-construction activities (primarily land acquisition) on the second two sections are lagging the first by about one and two years respectively.

11. APL triggers based on which subsequent phases (APL2 and APL3) would be approved are linked to DFCC performance in the implementation of the program. Since the success of the DFC program critically depends on DFCC being able to (a) complete pre-construction activities on schedule, and (b) award and effectively manage the major construction contracts, it is proposed that the triggers for each subsequent APL should focus on DFCC performance on these two success factors in the prior APL as follows:

- **Trigger 1**: Land Acquisition - at least 80 percent of the required land for each contract has been acquired, of which at least half is in continuous encumbrance free blocks of no less than 10 km.
- **Trigger 2**: Contract Management in the preceding loan - all major civil works contracts for the preceding APL have been successfully awarded and the contractors have mobilized well.

**APL Phase 1 Description:**

12. APL1 would finance: (i) design, construction and commissioning of the 342 km Khurja – Kanpur section ($1245m, details in Table 2); (ii) construction of 11 Road Over Bridges ($55m); and (iv) institutional strengthening of DFCC ($40m see details in Annex 3) and technical assistance for investment planning by Indian Railways ($10m details in Annex 4).

13. Achievement of the APL Phase 1 outcomes will be assessed through measurement of specific indicators for freight and passenger volumes realized and passenger and freight travel times. Specifically, the following the performance indicators are proposed to be monitored for the Khurja-Kanpur (K-K) Section: (i) average number of freight train pairs operated per day on the DFC K-K Section; (ii) average number of passenger train pairs operated per day on the existing line between Khurja and Kanpur; (iii) average speed of freight trains operated on the DFC and existing line; (iv) average speed of express passenger trains operated on the existing line; and (v) carbon footprint and savings of the Project (Annex-5).
14. The 342 km K-K section to be financed under Phase 1 is expected to be constructed under three design/build lump sum\(^6\) contracts for civil work and track, and one design-build lump sum contract for system (electrical, signals), which have been determined considering traffic demand, size of contract and handover schedule of the site. Table 2 below describes the main D-B contracts envisaged, with associated Road Over Bridge (RoB) contracts. Organizational arrangements proposed for the implementation of the project are in Annex-6.

Table 2: Details of the Works Contracts Khurja-Kanpur Section

<table>
<thead>
<tr>
<th>Item</th>
<th>D-B Civil Works1</th>
<th>D-B Civil Works2</th>
<th>D-B Civil Works3</th>
<th>D-B Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (kilometers)</td>
<td>105</td>
<td>127</td>
<td>110</td>
<td>342</td>
</tr>
<tr>
<td>Number of RoBs</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Contract for RoBs (US$m)</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>D-B contracts (US$m)</td>
<td>315</td>
<td>370</td>
<td>360</td>
<td>200</td>
</tr>
<tr>
<td>Total Cost (US$m)</td>
<td>330</td>
<td>390</td>
<td>380</td>
<td>200</td>
</tr>
</tbody>
</table>

D. Safeguard policies that might apply

Environment Impacts

11. The prevailing environmental regulations of GoI do not mandate that IR secure environmental clearances from the Ministry of Environment & Forests (MoEF), though IR does try to minimise the environmental impacts of its projects. However, JICA as part of its feasibility study of the DFC carried out Environmental and Social Impact Mitigation Studies (ESIMS) and prepared individual reports for each district the DFC passes through. A quick review of these reports indicates that the environmental studies were predominantly based on secondary data, though a number of public consultations were undertaken. These ESIMS studies of JICA concluded that other than noise and vibration at sensitive locations, no significant impacts are anticipated due to the Eastern DFC. The existing 342 km section from Khurja to Kanpur and also many of the greenfield detour sections designed to avoid land acquisition in built-up areas have been visited by Bank missions, and while sensitive features such as sanctuaries / reserve forests, etc. are not affected in this section, issues of severance and increased noise levels are expected to be the key environmental issues. Considering the nature and scale of the project, some environmental and safety issues are also expected during the construction phase.

12. A detailed environmental assessment (EA) of the Khurja – Mughal Sarai section financed under the Project is being initiated by DFCC and includes the Environmental Management Plan (EMP) which must be incorporated into the bidding documents. An Environmental Management Framework will also be developed and adopted by DFCC for the overall Eastern Corridor. The EMF would set out a framework to carry out EA studies for subsequent phases of the Eastern Corridor development, and also integrated environmental management during the operation and maintenance phase of the Eastern Corridor.

Social Impacts

13. GOI recently amended the Railways Act, 1989 in order to streamline the process of land acquisition (LA) for Special Railway projects such as the DFC. DFC-East has been declared a special project through Gazette Notification of February 19, 2008. The Ordinance has also brought about improvements in the determination of compensation. IR has also adopted GOI’s recent National Policy on Resettlement and Rehabilitation (NPRR 2007) for assistance to Project Affected Persons (PAPs).

14. The provisions in the Railways Amendment Act (RAA), 2008 and the NPRR-2007 are broadly in line with the Bank’s Operational Policy on Involuntary Resettlement. A key difference, however, is the cut-off date for non-title-holders eligibility to resettlement and rehabilitation (RR) benefits, which is set at 3 years prior to the date of project notification, whereas the Bank uses the date of the socio-economic survey (census) as the cut off date. To address this difference, DFCC proposes to treat the date of public

\(^6\) Under a design/build lump sum contract -- the Contractor is given freedom to carry out the work in his chosen manner, provided the end result meets specified performance criteria, especially in terms of timely delivery and final cost.
notification as the cut-off date, which coincides with the date of the baseline census survey. For LA & RR the following key documents would be produced: Social Impact Assessment (SIA) including baseline socio-economic survey, a Social Management Framework (SMF), and a Resettlement Action Plan (RAP). A Tribal Action Plan (TAP) will also be prepared if any tribal populations are affected.

15. DFCC has finalized the alignment for the Khurja to Kanpur section with some minor and major detours to avoid thickly populated locations, which has significantly reduced physical displacement of families. According to a land survey undertaken by DFCC, for a 180 kilometer long alignment running parallel to the existing rail lines, about 220 structures located alongside the railway tracks were found to be affected. The exact number of families affected will be clear when the census survey is carried out as part of the Resettlement Action Plan (RAP). DFCC has taken the following measures to minimize land acquisition and consequent social impacts: (i) maximize use of existing railway land within the existing ROW; (ii) negotiate with IR to transfer unutilized loop-lines and yards to DFCC where available; and (iii) use detours at busy stations to avoid physical displacement and acquisition of structures.

E. Tentative financing

16. The total cost of the 1129 km section including interest during construction (IDC) is estimated to be about Rs. 16,200 Cr. (US$3.6 billion). This is a preliminary estimate subject to revision. As mentioned earlier, the financing would come from IR equity (1/3rd) and the remaining from debt sources, including the World Bank. IR would provide the entire equity from its own cash surplus, and would prefer that the World Bank cover, if possible, the entire debt portion. The Bank will look into various financing options, including domestic and international market borrowings, and possible supplier credits. The amount of Bank financing is yet to be discussed, and additional sources may need to be sought. It is proposed that the Bank loan be made to Indian Railways. Financing for Phase 1, which is the Khurja – Kanpur section is envisaged as follows:

<table>
<thead>
<tr>
<th>Source:</th>
<th>($m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrower</td>
<td>450</td>
</tr>
<tr>
<td>International Bank for Reconstruction and Development</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1350</strong></td>
</tr>
</tbody>
</table>

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