Structuring the Dedicated Freight Corridor Project
A Lost Opportunity

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A new large railway project offers opportunity for structuring in a manner that best value can be delivered towards transportation. This is more so in the context of an existing large integrated railway system (Indian Railways (IR)) directly under the Government. The structuring issues include ownership, role and market access, scope and design, financing, revenue and risk, and contracting strategies. The structures on the various dimensions evolve over time, driven by different stakeholders under an overall framework. This paper explores the evolution of two dedicated freight corridors in India (covering a distance of around 3300 kilometers), and critique them from the perspective of delivering the intended rail transportation. It identifies how the structures have moved in a direction where the autonomy of DFCCIL has been reduced to make the IR the sole owner and sole customer. The unbundling that has happened in other infrastructure sectors (aviation, maritime and road) to bring in greater autonomy and accountability has not yet happened in the railways. There is no unbundling of roles in terms of policy making and licensing, operations, and regulations. The critique brings out that the structuring of DFCCIL has been a lost opportunity in terms of opening up the railways sector.

1. Introduction

A major investment was happening for rail transportation in India with two Dedicated Freight Corridors (DFCs)[1] being constructed, one along the western corridor between Jawaharlal Nehru Port Trust (JNPT, near Mumbai) and Dadri (near Delhi), and the other along the eastern corridor between Ludhiana and Dankuni (near Kolkata). The project was being managed by a Special Purpose Vehicle (SPV) called Dedicated Freight Corridor Corporation of India Limited (DFCCIL), under the Ministry of Railways (MOR). Though the project was conceptualized in 2005 and estimated to cost of ₹28000 crores[2] (cr) in January 2007 with an expected duration of five years, it finally got underway in 2008. As per a revised deadline and scope set in 2009, this

[1] See Glossary at the end of this paper.
[2] 1 Crore = 10 million; US $ 1 was equivalent to ₹40 in 2005

project was expected to be completed by 2016-17[3] at an estimated cost of ₹80,000 cr. Over the years, the organization structure including relationship with the Indian Railways (IR), the project scope, the funding structure and risk sharing have been undergoing change. The purpose of this paper is to explore these changes and critique them from the perspective of delivering the intended rail freight transportation.

Prior to conceptualization of the project, key stakeholders of railway transportation including MOR, Ministry of Shipping (MOS), Planning Commission (PC) and various others commodity specific ministries and user industries felt that the economic development story of India would be better facilitated through investments in rail transport capacity. Further, the energy efficiency of rail over road and carbon impact clearly pointed in the direction of promoting increased share of rail transport. However, the trend of the actual share of rail transport was in the opposite direction largely due to capacity constraints and customer service considerations. IR's share as the primary mode in the freight transportation market in originating tons had declined from 89 per cent in 1950-51 to around 30 per cent in 2007-08[4]. The corresponding share in terms of billion tonne kms (BTKM) for 2007-08 was 36%[5]. The highways had been the prime gainers with its share in originating tons increasing from 11 per cent to around 55 per cent during the period[6]**.** The share of IR in the passenger traffic market had also declined from 75% in 1950-51 to 18% in 2001-02[7]. The Government had to create additional capacity in the network and improve service levels to increase the rail share and to meet the growing demands for freight and passenger traffic.

Following the success of the National Highway Development Program, significant discussion towards increasing rail capacity on critical corridor was taking place in the relevant government circles in 2004-05. The growth in actual rail traffic from 1950-51 to 2004-05 is given in **Exhibit 1**[8]. The IR had just crossed 600 million tons of freight traffic in 2004-05. IR's Golden Quadrilateral (GQ), including the diagonals (Source: Indian Railway Year Book 2007-08

Exhibit 2) linking the four metropolitan cities of Delhi, Mumbai, Chennai and Kolkata, adding up to a total route length of 10,122 kms carried more than 55% of revenue earning freight traffic of IR. The existing trunk routes of Mumbai-Delhi on the western corridor and Howrah-Delhi on the eastern corridor were highly saturated with line capacity utilization varying between 150% and

[3] DFCCIL, Modified Concession Agreement, dated 21.02.2011
[4] Source: Government of India, PC, "Total Transport System Study on Traffic Flows and Modal Costs"
[5] Ibid.
[6] Source: Gupta, J, Jha, A and Ray, R. Dedicated Freight Corridor on Indian Railways: A Catalyst for Industrial Growth, Rites Journal (January 2010)
[7] Source: Gupta, S. P. (Chairman) " Report of the Committee on India Vision 2020" PC, (December 2002)
[8] Indian Railway Year Book 2007-08

115%[9]. The western corridor rail traffic was growing due to the trade growth to and from ports in the Mumbai area and Gujarat. JNPT in Mumbai, which accounted for over 50% of India's container trade, was set to grow further with investment in additional terminal capacity. Such investments were also being made in the Mumbai port and in atleast five ports in Gujarat. These were expected to generate huge volume of traffic for movement of containers into the northern hinterland. On the eastern corridor, apart from the port traffic, there was a need to move coal from the coal fields in eastern India to power plants in northern India.

The railway freight traffic was projected to cross 1100 million tons by the end of the 11th Five Year Plan[10] in 2011-12. The growing demand for increase in freight transport was putting additional pressure on the existing railway tracks which were also being shared with passenger transport. The PC and MOR envisaged that additional capacity will be required along the GQ with immediate priority on the Delhi-Mumbai and Delhi-Kolkata corridors.

In the 2005-06 Budget presentation[11], the Honorable Minister of Railways, announced in the Parliament, the need and planning for a mega project to provide additional rail capacity on the Delhi-Mumbai and Delhi-Kolkata corridors. This was followed by the Prime Ministers of India and Japan making a joint declaration of co-operation for a feasibility study and possible funding of the DFCs by the Japanese Government.

On 30 June 2005, the Committee on Infrastructure (COI)[12] chaired by the Indian Prime Minister constituted a task force under the chairmanship of Shri Anwarul Hoda, Member, PC to prepare a concept paper on the eastern and western DFC projects with special focus on organizational structure. It was interesting that the terms of reference also included the examination of whether the new corridors should be dedicated to freight or passengers, releasing capacity for the other in the existing corridors. The task force included experts and representatives from Railway Board, PC and Ministry of Finance (MOF). Immediately thereafter, in July 2005, MOR entrusted RITES[13] with the feasibility study of both the western and eastern corridors.

In January 2006, RITES submitted the feasibility study report to the MOR. Around the same time, the task force submitted its report to the COI. The Cabinet approved the task force report in February 2006, and directed that an SPV should be set up to construct and operate the DFCs. The

[9] Source: Gupta, J, Jha, A and Ray, R. Dedicated Freight Corridor on Indian Railways: A Catalyst for Industrial Growth, Rites Journal (January 2010)
[10] 'Dedicated Freight Corridor to boost Transportation", Business Economics (March 1, 2011) Retrieved from http://www.businesseconomics.in/?p=984 on 7 November 2011
[11] Source: DFCCIL Website, June 2011. www.dfccil.org
[12] The Committee on Infrastructure was set up on 31st August, 2004 under the chairmanship of Prime Minister.
[13] A Government of India Enterprise, and provides comprehensive engineering, consultancy and project management services in the transport infrastructure sector. (http://www.rites.com/web/index.php)

task force had also provided the rationale as to why the corridors should be dedicated to freight rather than 'high speed' passengers:

- "The investment requirement to build passenger corridors is five times that required for freight corridors
- Simultaneously significantly heavy investments would be required to augment capacity on existing networks to cater to the freight business.
- Even after these investments physical limitations imposed by the restrictive space envelope[14] would remain
- Investment for the dedicated high-speed passenger corridors would have relatively lower returns on capital, which the country can ill-afford[15]."

The Cabinet Committee on Economic Affairs (CCEA) gave an 'in principle' approval to the RITES report, asking the MOR to proceed with a Preliminary Engineering cum Traffic Survey (PETS) for the two corridors, firm up the cost of the project and work out the financing options[16]. RITES submitted the PETS report in January 2007.

The task force recommendations were duly discussed and approved by the Cabinet (6th July 2006), and by a Group of Ministers (GoM) consisting of Minister of Railways, Finance Minister and Deputy Chairman, PC.

The GoM (in their note to the Cabinet dated 18 August 2006[17]) unanimously recommended the setting up of the SPV as recommended by the task force but also approved various modifications. In consonance with the above recommendations, DFCCIL was incorporated on 30 October 2006 under the Indian Companies Act 1956.

Subsequent to this, various issues related to ownership, role and market access, scope and design, funding structure, and the revenue and risk model were discussed and evolved in various board meetings. A draft business plan was brought out in October 2010. This was followed by a Concession Agreement (CA) and Track Access Agreement (TAA), prepared with the help of a consultant. Various versions of this were brought out. The authors had access to the versions brought out on 16 November 2010 and 21 February, 2011.

This paper examines the above documents starting with the task force recommendations in early 2006 until the CA and TAA of early 2011. Section 2 of this paper describes the ownership structure of DFCCIL. Section 3 discusses the role and market access of DFCCIL. Section 4 focuses on the scope and design. The funding structure and use of PPP is described in Section 5.

[14] The moving dimensions for the freight trains which were viewed as being less than optimal in the existing network
[15] Source: Report of the Task Force "The Delhi-Mumbai & Delhi-Howrah Freight Corridors" (May 2006), pp. 20
[16] Source: DFCCIL Website, June 2011. www.dfccil.org
[17] Government of India, MOR (Railway Board), "Note for the Cabinet" No. 2005/PL/33/3 dated 17.08.2006

The revenue and risk model is covered in Section 6. Section 7 examines the contracting strategy in existence till 2009. Section 8 concludes.

2. Ownership Structure

It was envisaged that the DFC would be a surplus generating activity and have the capability to provide high service levels to its customers. The task force recognized that, "the DFC presents a good opportunity to make a beginning by setting up an independent organization for its establishment and operation.[18]" This would also provide independence from the dual role played by the IR, in terms of commercial and social responsibilities which often compromised efficiency.

The task force[19] had debated whether the SPV should be owned fully by the IR or should it have a more diversified ownership. The task force considered that a diversified ownership would be better both in the interest of efficient management of the corridor and mobilization of required funds.

The task force recommended that the *SPV*[20] *should be owned jointly by the IR and the users of bulk freight services like port operators, shipping* companies, commodity based companies in the oil, coal, iron ore, steel and power sectors, largely *in the public sector*. The task force believed that it was difficult to attract private sector investors, and therefore were explicit that the partners would be mainly from public sector. Participation of the public sector undertakings (PSU) who were bulk users of the infrastructure would help in reducing the equity investment burden on IR. Adequate equity base would help the SPV in raising funds through market borrowings.

The GoM recommended the following modifications to the task force recommendations:

"*Initially the SPV may be constituted with 100% equity by MOR*. The equity in the SPV may be offered to PSUs/Government institutions in case they evince interest in future subject to retention of majority stake by MOR."

"Legal and Management Structure: The SPV should be registered as a company under Companies Act, 1956 and managed by a Board of Director (BoD), which would include the Managing Director, four full time functional Directors. Chairman, Railway Board may be the ex-officio Chairman of the BoD."

[18] Source: Report of the Task Force "The Delhi-Mumbai & Delhi-Howrah Freight Corridors" (May 2006), pp. 6
[19] Ibid.
[20] Ibid.

"The constitution and manning of the Board should be as per the guidelines of Public Enterprises Selection Board. However, the first-time appointees [will be for a tenure of 5 years subject to overall age limit of 65 years] to the posts of Managing Director and the four functional Directors may be selected through a Search and Selection Committee headed by Chairman, Railway Board ... One of the Government nominees to the BoD may be from MOR and the other from the PC. The independent Directors should be selected carefully …"

As per a version of the Business Plan dated 11 October 2010[21], it was decided that *DFCCIL would be 100% owned by MOR*. As per the version of CA dated 21 February 2011, it was stated that the ownership of the new railway (the infrastructure) would be with DFCCIL[22] until the 40-year concession period, after which the ownership would transfer to MOR. In the Board Meeting of 26 February 2011, it was agreed to modify the CA so that the *new railway (assets) would be owned by the MOR*, which would grant a 40-year concession to DFCCIL since the entire land, funding and operational charges for the project were being provided by IR

In terms of ownership, it is interesting that the task force did not consider the option of a non IR owned entity, presumably based on the premise that synergy on various dimensions (such as access to the existing network and land acquisition, construction and operations expertise and market development) could be leveraged only through IR. Reinforcing such a premise has its problems since then there may never be a context when organizations other than IR can be expected to enter the rail transport business. Further, an opportunity of having a clean break from the bureaucratic mindset of the IR would never arise.

The task force did not consider a third party ownership through an open competitive bid, a model that has been adopted in the roads, ports and airports sector. This could have brought in a stronger commercial and entrepreneurial energy into the project. However, to ensure that such parties would have had the appetite to fund the project and bear the risk, the project may have had to be unbundled into smaller segments like in road projects. Also, selecting partners through an open competitive bid has the benefit of greater due diligence in the definition of roles, relationship and contracts.

While the task force did recommend a diversified ownership including MOR, a significant change was made by the GOM[23] that initially MOR hold 100% of the equity with interested PSUs being offered equity later. This further got modified in the business plan of 11 October 2010 that MOR would have sole ownership of DFCCIL.

[21] Source: DFCCIL, Draft Business Plan for DFCCIL Version - V, October 2010.
[22] DFCCIL, Modified Concession Agreement, dated 21.02.2011 after incorporating Changes/Review of the CA discussed on 26.02.2011 at the 21st Board Meeting
[23] Government of India, MOR (Railway Board), "Note for the Cabinet" No. 2005/PL/33/3 dated 17.08.2006

With IR playing the sole ownership role, there was no scope for other entities to be a strategic partner in shaping DFCCIL. However, DFCCIL was assured of funds and the return on investment through track access charges from IR.

3. Role and Market Access of DFCCIL

The task force considered the structures related to separation of infrastructure and the above rail operations. They reviewed various structures followed across countries at that time, which were as under[24]:

a. Vertically integrated structure where railway systems had both infrastructure and above-rail operations. These were run either by the government (directly by Ministries or organizations owned by Government such as in Russia, China and India) or by private corporate units (such as in Brazil, and Argentina).
b. Vertically integrated structure with incremental users who may be another integrated railway and/or an above rail operator. Incremental users would pay access fees determined by commercial negotiations or by a regulator. This structure existed in the US, Japan, Canada, and other countries. In the United States, there were many privately owned vertically integrated **freight** railway systems, which apart from providing access to trains from other integrated systems also provided access to Amtrak which was an above rail state owned passenger operator. In Japan, the situation was the reverse, wherein privately owned vertically integrated **passenger** railway systems, which apart from providing access to trains from other integrated systems also provided access to Japan Rail Freight Corporation which was an above rail state owned freight operator. In 2005-06, India also moved in a small way towards this structure by allowing non IR owned above rail container train operators as incremental users.
c. Infrastructure was separated from the above rail operators, but remained accessible to all operators under an access regime. This structure was adopted by the European Union. It has traditionally been the structure in road, aviation and maritime transport.

As concluded in the task force report[25], "The vertically integrated model has its own advantage by way of synergy between infrastructure and operation but the disadvantage is that it does not allow above rail competition."

The task force recommended[26] the mechanism of an SPV which was to be entrusted with the task of planning, construction and maintenance of infrastructure (DFCs). The SPV would also be responsible for movement of trains on its system. It recommended that the MOR should be the

[24] Source: Report of the Task Force The Delhi-Mumbai & Delhi-Howrah Freight Corridors (May 2006), pp. 11
[25] Ibid. pp. 11
[26] Ibid.

administrative Ministry for the SPV, but the SPV should have effective independence in decision making and be able to function with a market focus and business orientation. It should have sufficient autonomy, delegation and flexibility in conducting its business.

The task force recommended[27] *"the adoption of the organizational model in which the SPV builds, owns and maintains the infrastructure and moves the train within the corridors on its system, while allowing non-discriminatory access to IR and other qualified private and public sector operators of goods trains within a regulatory framework. The SPV would not own or lease any rolling stock nor do any freight business directly with clients"*. This was justified on the ground that separation of infrastructure from above rail operations (option (c) above), on the grounds of higher above rail competition for greater efficiency and equality of access.

The GoM[28] recommended the following modifications to the task force recommendations:

"It was recognized that the DFC would be a complementary and not competitive corridor to IR as most of the traffic would continue to originate and terminate on IR's network. Actual train operation including provision of motive power would continue to be vested in the IR and therefore SPV would not deal directly with freight customers/qualified operators. However, the SPV would provide non-discriminatory access to freight trains belonging to IR and other qualified operators. It would be paid track access charges in respect of freight trains of IR and other qualified operators in accordance with the principles laid down in the CA."

In terms of access to market, the task force had envisaged that DFCCIL would move trains, while allowing non-discriminatory access to IR and other qualified operators within a regulatory framework. This got modified by the GOM to *(i) IR operating the trains by providing the haulage while DFCCIL would only do the traffic control and (ii) IR being the sole customer and even if other qualified operators were to use the DFCs, it would happen through the IR.*

With IR playing the sole customer role, their motivation to perform on the revenue side and work towards many of the stated objectives would be lost. Thus the DFCCIL, although legally registered as a separate company under the Companies Act, for all practical purpose was operating as a separate arm of the IR.

[27] Source: Report of the Task Force The Delhi-Mumbai & Delhi-Howrah Freight Corridors (May 2006), pp. 17
[28] Government of India, MOR (Railway Board), "Note for the Cabinet" No. 2005/PL/33/3 dated 17.08.2006

4. Scope and Design:

While the task force examined the conceptual issues regarding the two corridors, it kept referring to Delhi-Mumbai and Delhi-Howrah as the segments. Apart from the construction of two corridors, the GoM recommended that[29] "*The SPV shall perform similar functions in respect of future phases of the DFCs, if any, including those connecting the other legs of the GQ and its diagonals. The SPV shall have the status of a Railway Administration under the Railways Act, 1989 and shall exercise powers and discharge the responsibility for the functions assigned to it under the CA.*"

When the PETS study was given to RITES, the Western DFC (WDFC) was defined from JNPT to Dadri with a connection to Tughlaqabad and the Eastern DFC (EDFC) was defined from Ludhiana to Sonnagar (in Bihar), with a connection from Khurja to Dadri. The driving traffic in the WDFC was containers and in the EDFC was coal. The scope was defined when Mr Lalu Prasad Yadav (from Bihar) was the Railway Minister. The EDFC was then extended by 534 kms to Dankuni (near Kolkata in West Bengal) after Ms Mamata Banerjee (from West Bengal) became the Railway Minister in May 2009. This was formalized by the DFCCIL Board in late 2009.

Exhibit 3 shows the alignment and junctions of WDFC and EDFC. The two corridors would meet at Dadri. The alignment had been generally kept parallel to existing lines except provision of bypasses at major densely populated cities, industrial belts and where it would be difficult to acquire land. Since the origins and destinations of traffic did not necessarily fall on the DFC, a number of junctions had been planned to transfer traffic from the existing IR Corridor to the DFC and vice versa.

4.1 WDFC:

WDFC [30] covered a distance of 1483 kms of double line electric segment from JNPT in Navi Mumbai to Dadri in the National Capital Region (NCR) of Delhi via Vadodara-Ahmedabad-Palanpur-Phulera-Rewari, comprising of three different segments (**Exhibit 4**):

- 430 kms between JNPT and Vadodara.
- 920 kms between Vadodara and Rewari
- 140 kms between Rewari and Dadri

[29] Ibid.
[30] Source: DFCCIL Website, June 2011. www.dfccil.org

The State-wise break-up of the total distance is as follows: Maharashtra (150 kms), Gujarat (588 kms), Rajasthan (553 kms) and Haryana (192 kms). In addition, an electrified single line segment of 32 kms between Pirthala and Tughlakabad was also proposed to serve the inland container depot at Tughlakabad.

Junction stations have been provided at Vasai Road, Kosad/Gothangam, Makarpura (Vadodara), Amli Road (Sabarmati), Palanpur, Marwar, Phulera, Rewari and Pirthala Road[31]. Bypasses were planned for Diva, Surat, Ankleshwar, Bharuch, Vadodara, Anand, Ahmedabad, Palanpur, Phulera and Rewari[32].

4.2 EDFC:

EDFC was proposed with a route length of 1839 kms consisting of two distinct segments (**Exhibit 5**), viz., an electrified single track segment of 447 kms between Ludhiana (Punjab) – Khurja – Dadri (Uttar Pradesh) and an electrified double track segment of 1392 kms between Khurja (Uttar Pradesh) and Dankuni (West Bengal) via Kanpur, Mughalsarai and Sonnagar[33].

- 404 kms between Ludhiana and Khurja
- 43 kms between Khurja and Dadri
- 343 kms between Khurja and Bhaupur (Kanpur)
- 393 kms between Bhaupur and Mughalsarai
- 122 kms between Mughalsarai and Sonnagar and
- 534 kms between Sonnagar to Dankuni.

EDFC would pass through seven states, which includes Punjab (88 kms), Haryana (72 kms), UP (1049 kms), Bihar (93 kms) and West Bengal/Jharkhand (538 kms) [34].

Junctions were planned at Dhandarikalan, Sirhind, Rajpura, Kalanaur, Khurja, Daudkhan, Tundla, Bhaupur, Prempur, Naini/Cheoki, Jeonathpur, Mughalsarai, Ganjkhwaja, Sonnagar, Gomoh, Andal, and Dankuni[35]. Bypasses were planned for Sanehwal, Doraha, Sirhind, Rajpura, Ambala, Saharanpur, Meerut, Hapur, Aligarh, Hathras, Barhan, Tundla, Ferozabad, Etawah, Kanpur, Allahabad, and Mughalsarai[36].

[31] Ibid.
[32] Source: DFCCIL Website, June 2011. www.dfccil.org
[33] Ibid.
[34] Ibid.
[35] Ibid.
[36] Ibid.

4.3 Design Parameters

The draft business plan proposed that the design parameters of the new railway tracks would be different from the existing railway tracks. **Exhibit 6** summarizes the proposed design parameters for the DFCs. **Exhibit 7** gives a comparison of the existing standards on IR and the proposed standards for DFC. The proposed design features aimed for increased efficiency in the movement of cargo by providing heavier axle loads, higher track loading density, better speed of movement and larger spacing between stations. It provided for automatic signaling and Mobile train radio which would help in reducing the chances of accidents on the track. Higher average speeds and improved pay-load to tare ratio would help DFCCIL in improving the asset utilization of locos and wagons.

Both EDFC and WDFC had the same technical standards except for the vertical moving dimension. While the moving dimensions of the WDFC were being made for double-stack container operations (7.1 meters), those for EDFC were being made for single stack container operations (5.1 meters). The argument visibly was that significant container traffic would not be expected on the EDFC (whose primary cargo is expected to be coal), and hence it would be wise to save costs in terms of structures.

Our contention is that this appears to be a very short sighted policy, since it would be extremely difficult to anticipate future traffic flows beyond even ten years. One can also argue that the current hinterland container flows were more significant from the western sea board, reaching even into UP and Bihar, but it is not a desirable situation. This was largely due to bottlenecks in Haldia and Kolkata ports, which would increasingly get released with new large port projects being conceptualized near the mouth of the river Hooghly. Container traffic from the eastern seaboard is bound to grow and serve the Northern Indian hinterland. This matter needs to be examined so that we do not bind ourselves for the future. The benefits of moving dimensions permitting double stack container movement on the EDFC will also provide two more important flexibilities. The first would be that double stack container trains from the western sea board can seamlessly move from the WDFC into the EDFC, if the destinations are beyond Dadri (being the current terminus of the WDFC and junction with the EDFC). The second would be that there would be greater throughput should any low density bulk cargo move. However, this will result in an increase in the cost of the EDFC project by about 10 to 15% and will require revision of some of the tender and contract documents which have been prepared.

5. Funding Structure and PPP

The GoM unanimously recommended the setting up of the SPV as recommended by the task force, but also approved the following modifications[37]:

a. "To begin with, the SPV may be set up with a paid up capital of ₹50 cr and authorized capital of ₹4000 cr, which can be increased subsequently as per future requirements. The debt equity ratio may, however, not exceed 2:1. The funding offered by Government of Japan under Special Terms of Economic Partnership (STEP) [38] being coordinated by Japan International Cooperation Agency (JICA)/Japan Bank for International Cooperation (JBIC) should be utilized for the project."
b. "The project may be executed by a mix of EPC[39] and PPP. EPC contracts should, however, be awarded on a lump sum or turnkey basis, rather than on item rate contracts."

The funding requirement, which was originally estimated by RITES in January 2007, was ₹28000 cr. This changed to ₹37000 cr in October 2007 based on the study by JICA. While it created a controversy, it got resolved that the difference was primarily attributable to additional rolling stock requirements. DFCCIL was not responsible for the rolling stock, though fresh rolling stock would be required to effectively use the DFCs. The 2009 DFCCIL estimates were ₹57,667 cr[40] including interest during construction (IDC) for the WDFC and the EDFC upto Sonnagar. With the extension to Dankuni, this figure was then updated in the draft business plan[41] of October 2010 to `77,630 cr, including IDC in 2016-17[42].

As per the CA[43], the base construction cost of DFC was estimated at ₹46,561 cr at 2009 prices inclusive of preliminary expenses but excluding the cost of rolling stock and cost of land as both costs were to be borne by IR. The same had been increased by 5.4% inflation rate, a figure derived from average WPI from 2000-01 up to 2008-09. The figure was then increased by 7% for covering the cost of insurance, taxes etc, 5% towards contingencies and IDC. Working capital equal to three month's O&M expenses had been capitalized. The detailed break-up of the capital expenditure for WDFC and EDFC is shown in **Exhibit 8. Exhibit 9** lists down the key assumptions made and the factors considered while making the financial projections. This assumptions enabled calculation of track access charges payable by IR to DFCCIL.

[37] Government of India, MOR (Railway Board), "Note for the Cabinet" No. 2005/PL/33/3 dated 17.08.2006
[38] "STEP is a scheme created to promote "development assistance with a distinct Japanese profile through technology transfer utilizing advanced Japanese technology and know-how to a development country". http://www.jica.go.jp/english/news/press/2009/091027.html
[39] Engineering, Procurement and Construction
[40] Brief on the Agenda Notes, Undated document
[41] Modified Concession Agreement, dated 21.02.2011 after incorporating Changes/Review of the CA discussed on 26.02.2011 at the 21st Board Meeting
[42] Source: DFCCIL, Draft Business Plan for DFCCIL Version - V, October 2010.
[43] Ibid.

The cost for the project was proposed to be funded by a combination of debt from bilateral/multilateral agencies and equity from MOR and PPP. The capital structure of DFCCIL would entail a debt equity ratio of 2:1[44]. The loans from multilateral/bilateral lending agencies will be given to MOR through the Government of India (GOI). MOR would then pass on the fund to DFCCIL.[45]

The MOR confirmed the initial financing arrangements (including the costs of the DFCCIL works and capitalized interest during construction), estimated to be ₹ 67,596 cr. The finance would be obtained from the following sources[46]:

Element	**₹ (cr)**
MOR Loan	37,265
MOR Equity	17,596
Senior Debt Finance	12,736
Total	**67,596**

The MOR loan and Senior Debt Finance included amount to be funded by JICA and World Bank. WDFC was to be funded by the JICA and EDFC was to be funded through internal generation of funds, the World Bank, and PPP.

5.1 WDFC Funding[47]

The above loan and debt financing component included a STEP loan to the extent of 677 billion Yen (about ₹32,500 cr[48]) from JICA to finance the construction of WDFC as well as procurement of locomotives for the MOR. The loan will be extended on soft terms for a period of forty years with a moratorium of ten years. The remaining portion of the project construction cost will be borne by MOR as equity funding to the DFCCIL.

The amount included ₹21,000 cr for financing Phase I (Rewari- Vadodara, 950 kms) and ₹11,500 cr for financing Phase II (JNPT- Vadodara and Rewari-Dadri, 584 kms). JICA funding was expected to cover 80% of WDFC project cost. The progress of funding from JICA as on December 2011 was as under[49]:

[44] Source: DFCCIL Website, June 2011. www.dfccil.org
[45] Source: DFCCIL, Draft Business Plan for DFCCIL Version - V, October 2010.
[46] Source: Modified Concession Agreement between MOR and DFCCIL, February 2011
[47] "Status of the Dedicated Freight Corridor Project" Indian Railway report dated 08.06.2011. Downloaded from http://www.indianrailways.gov.in/railwayboard/uploads/directorate/infra/downloads/DMU_report_080611.pdf on 1 April 2012
[48] Ibid.
[49] Ibid.

"Phase-I: The loan agreement for Engineering Services for Phase-I for 2.6 billion Japanese Yen (about ₹130 cr) was signed on 27.10.09". "The first tranche of the main loan agreement for the 90.262 billion Japanese Yen (about ₹4500 cr) was signed on 31.03.2010".

"Phase II: Engineering Services loan agreement for 1.60 billion JPY (about ₹80 cr) had been signed on 26.07.2010. Main loan agreement is targeted for signing in March 2012". "JICA Contact Mission visited New Delhi from April 18-28, 2011 to review the progress."

5.2 EDFC Funding

It was proposed that EDFC would be funded by the World Bank, internal generation (by IR) and PPP. Financing for the 725 kms section between Ludhiana and Mughalsarai will be undertaken over three phases by World Bank through a loan. The section from Mughalsarai to Sonnagar was to be funded directly by MOR while the 546 kms section from Sonnagar to Dankuni (added later in 2009) was to be financed through PPP. The first tranche of the loan, aggregating to USD 975 million had already been signed by DFCCIL and World Bank.

The World Bank had committed about US Dollar 2.7 billion, (about ₹12000 cr) for EDFC, which would cover the 1133 kms Mughalsarai-Kanpur-Khurja-Ludhiana Section. The loan had been structured in Adaptable Program Loan (APL) format for three sections. The status of the loan as of December 2011 was as under[50]:

APL 1 (Khurja-Kanpur, 343 kms): "World Bank board had approved the loan of US $975 million for this section on 31 May 2011".

APL 2 (Mughalsarai – Kanpur, 393 kms) and APL 3 (Ludhiana-Khurja-Dadri, 447 kms): "Funding for this distance would be approved upon achieving predefined milestones related to progress of the project inter alia including land acquisition & EIA/SIA/RRP of existing APL and award of civil works contracts for previous APL".

"The Mughalsarai-Sonnagar (122 kms) section was being implemented with IR's resources and civil construction contract for 109 kms section (New Ganjkhwaja to New Karwandia) was awarded in December 2008."

The Dankuni-Sonnagar (534 kms) sector was planned for execution through PPP mode. This was announced in the budget speech in February 2010, by the then Railway Minister, Ms. Mamta

[50] "Status of the Dedicated Freight Corridor Project" Indian Railway report dated 08.06.2011. Downloaded from http://www.indianrailways.gov.in/railwayboard/uploads/directorate/infra/downloads/DMU_report_080611.pdf on 1 April 2012

Banerjee. As on June 2011[51], the final location survey was complete but the PPP model was yet to be finalized.

5.3 Discussion on JICA Funding

As per the terms of the assistance provided by Government of Japan, and based on the draft loan agreement signed between Japanese Government and Indian Government[52], the loan offered had a term of 40 years with a 10 year moratorium. The JICA funding had a 30% STEP component, implying that at least 30% of the total amount of contract had to be sourced from Japan. A major part of the loan was offered at an interest rate of 0.2%[53].

The JICA loan was routed through the MOR (with simplified terms), rather than to DFCCIL directly. As per the CA, it was a 7% loan in perpetuity with no principal repayment. The interest will accrue and accumulate but payment would be deferred for ten years and would be paid in ten equal installments from 2020.

One can argue that the loan terms are disadvantageous for DFCCIL because of the high interest rate coupled with a commitment to source services/products worth 30% of the value from Japan. The prescribed sovereign guarantee fee is 1.2% per annum[54] on the outstanding amount of principal and interest for External Borrowings. However, as per the existing arrangement, the MOF was bearing the currency risks and the commitment charges for the undisbursed portion of the loan[55]. The total cost (7%) was still lower than the prevailing market rate of interest for similar loans/ infrastructure bonds.

The conditions of JICA loan for WDFC (constituting 80% of WDFC costs) require that 30% of the JICA funding be used for import of equipment and goods from Japan and that all contracts for WDFC must have a Japanese firm as the lead partner. Assuming equipment cost is 40% of the project cost, over 60% of the equipment and goods may have to be sourced from Japan which would significantly narrow the scope of competition. Further, the restriction that only a Japanese firm can be a lead partner in works contracts will also reduce competition in procurement of works. In the bidding process which is currently on-going, only two bidders have been pre-qualified, while in the case of EDFC, about 12 bidders have been pre-qualified for each contract. The obvious consequence is that procurement may not be at the least possible cost.

[51] Ibid.
[52] Salhotra, Bharat "Economics of Western Corridor" Rail Transport Journal, Oct-Dec., 2008.
[53] http://www.jica.go.jp/india/english/activities/activity11.html
[54] "Government Guarantee Policy" MOF, Department of Economic Affairs. Downloaded from "http://finmin.nic.in/the_ministry/dept_eco_affairs/budget/govern_guarantee_policy.pdf"

6. Revenue and Risk Model

As suggested by the task force, efforts were on to develop a CA between the MOR and DFCCIL, which among other things laid down the rules that will govern the relationship between MOR and DFCCIL. The GoM further reinforced that:

"The relationship between the MOR and the SPV should be codified in a CA based on an arm's length relationship between the Railway Board and the SPV. The viability and sustainability of the entire project would depend on the nature and quality of the CA which should be drawn with the help of world class consultants. The documents may be finalized after duly considering the views of PC, MOF and Ministry of Law and with the approval of Minister of Railways."

The CA listed the obligations of both the parties and the major risks accepted by MOR and DFCCIL. **Exhibit 10** lists down the obligations of both the parties (MOR and DFCCIL) as per the CA. **Exhibit 11** lists down the major risks accepted by both the parties as per the CA. While there has been an attempt to clarify the nature of relationship between IR and DFCCIL, there still appear to be gaps.

In the evolution of the concession agreement, the Planning commission, through their representative in the DFCCIL Board, played an important role in fine tuning various clauses. These clarified the role of MOR vis-à-vis DFCCIL. For example, MOR would have overriding powers to conduct inspections and tests, and to resolve disputes regarding variations. The CA was also modified to explicitly include any operators (including private container train operators) recognized by MOR as authorized users. Further, given that MOR was the owner of DFCCIL, land would be licensed but not leased to DFCCIL. Consequently, any assignment of assets created by DFCCIL could only be with written permission from MOR.

In case the project cost exceeds the estimated cost (agreed amount for which funding sources have been identified) on account of DFCCIL, MOR would have the right to consider whether to fund the excess and in what manner. Further, while DFCCIL is expected to make good the funds, it may not be in a position to source funds or even if it can source, may not be able to do so at reasonable costs. MOR being the sole owner of DFCCIL, the consequence of this arrangement will eventually come back to MOR.

It is entirely possible that bid amounts in the EPC contracts could increase project cost since there are no limits on this. The only possible limit is that if there is cost overrun after a contractor bids, the contractor would have to bear the risks. Thus, while a cost limiting arrangement would work between DFCCIL and third party contractors, it is meaningless between two organizations, where one is the sole owner of the other, and the subsidiary is expected to fulfill only the parent's objective without having any other sources of revenue.

In case DFCCIL is not able to perform on any other ground, even though MOR can step-in (early termination), there would be no meaning to penalties on DFCCIL.

In all the above instances, the MOR may have to bail out DFCCIL, rendering a business contract meaningless.

The track access charges are such that there is no incentive to optimize cost by DFCCIL since the charges are based on actual traffic and actual costs incurred every year. DFCCIL bears no risk on this matter. Infact, the track access charges would vary based on the actual traffic, making the 'pricing' of track use appear irrational.

7. Contracting Strategy

As per the agreement with the (World) Bank in 2009, DFCCIL had agreed to adopt International Federation of Consulting Engineers' (FIDIC) Conditions of Contract for Plant and Design-Build (Yellow Book) as the foundation for the bidding, contracting and implementation process. The Yellow Book requires the Contractor to participate in the design work. This essence of such contract was to promote design innovation by the bidders which will help reduce the overall cost through value engineering, especially for high cost components, like embankment and sleepers.

A World Bank mission came to study the contracting strategy followed by DFCCIL in October 2010 following the findings of 'serious irregularities in three multi-crore contracts' by the Central Vigilance Commission. They noticed a significant drift in the contracting strategy. The Mission noticed that the bid documents (BD) were not Design-Build contracting in spirit and had very limited possibility of design innovations by the bidders since most of the designs were already provided as employers' requirements[56]. The Mission commented that,

> "In the submitted bidding documents, the key aspect of our (the bank) agreement has been reduced to incorporating these FIDIC Conditions of Contract in a perfunctory way and without really paying attention to how this FIDIC document clearly and consistently defines the respective roles, obligations and relationship of the Employer, the contractor and the Engineer in a typical design-build contract. Much of the guidance provided by FIDIC in this document has been disregarded, especially where it counts the most: customizing the Particular Conditions of Contract."[57]

[56] India Eastern Dedicated Freight Corridor Project Preparation Mission (December 1 to 16, 2010), Aide Memorie.
[57] Ibid.

The Mission had a discussion with representative from the General Consultant (GC) and Legal Advisor. The GC informed the mission that their clients (DFCCIL) had asked the Contractors to follow RDSO [58] approved designs.

The agreement on contracting strategy required using a 2-stage bidding process in the Bank's Standard Bidding Document (SBD) for Procurement of Plant Design, Supply and Installation, in order to maximize the opportunities for bidders to offer innovative railroad technologies and materials. The mission identified that although the submitted BD had copied the Instructions to Bidders in the Bank's SBD almost verbatim, they were largely contradicted by detailed elaborations (presented as "Employer's Requirements'). The Mission reported that those elaborations, if accepted, would render the 2-stage bidding process unimplementable and leave negligible opportunities for innovation.[59]

The Mission also pointed out that large number of approvals were envisaged during construction which could result in considerable delay. The Mission noticed that a contractor was required to take design approval of the Engineer, even in cases where the complete design was provided by the employer, and in some cases there were discretionary approvals by the Engineer.[60]

In order to reduce (or control) delays and cost-overruns, the Mission suggested the following changes to the BD and the bidding process[61]:

a. The revised BD should incorporate invitation to bidders to submit innovative designs for track components that DFCC should review at the evaluation of First Stage bids. The Mission also requested the use of Design Review Consultants to optimize the design to result into cost effective implementation of the project.
b. Risks should be reallocated to control possible cost and time overruns to the contractors.
c. Engineer's duties and authorities to be rephrased to reduce approvals by the Employers of many of the specific authorities that Engineers should be empowered to exercise;
d. Approval requirements to be specified and reduced to the ones that are truly essential.

The Yellow Book of FIDIC assigned seven risks[62] to the employer. After long discussions with the World Bank, these were removed from the contract conditions and implicitly transferred to

[58] Research Design and Standards Organisation: Ministry of Railways: The Research Design and Standards Organization (RDSO) is a ISO 9001 research and development organization under the Ministry of Railways of India, which functions as a technical adviser and consultant to the Railway Board, the Zonal Railways, the Railway Production Units, RITES and IRCON Internationalin respect of design and standardization of railway equipment and problems related to railway construction, operation and maintenance. (Retrieved from http://en.wikipedia.org/wiki/Research_Design_and_Standards_Organization on 18-December, 2011)
[59] India Eastern Dedicated Freight Corridor Project Preparation Mission (December 1 to 16, 2010), Aide Memorie. (Page 9)
[60] Ibid. (Page 8)
[61] Ibid. (Page 3)

the contractors, who were expected to play a greater role in the project. FIDIC, then brought out another document called EPC/Turnkey (Silver Book) which excluded the seven risks allotted to the employer. This was later on confirmed in a cabinet meeting, which authorized execution of projects by a mix of EPC and PPP contracts. It was also decided that all EPC contracts should be awarded on a lump sum or turnkey basis, rather than on item rate contracts.

Due to the earlier 'poor' contracting strategy, DFCCIL has been troubled by delays in the conceptualization stage and in the early implementation stage. As a consequence, the project cost has gone up from ₹ 28000 cr in 2007 to over ₹ 80000 cr in 2012. An expected completion time by 2012 is now pitched at 2017.

8. Conclusion

The proposed relationship between MOR/ IR and DFCCIL leaves much to be desired. As per the draft business plan, *"IR is the sole owner and customer of DFCCIL. By virtue of it being the single owner and controlling its Board, IR is in a position to influence all policy decisions including the charges payable by it to DFCCIL."*[63] The World Bank mission commented that there was an opportunity for India, as a country, to make DFCCIL as an independent institution with performance at par with global infrastructure service providers.

The mission reiterated that DFCCIL should create an organization culture of performance independent of the IR's work culture by incubating a culture of ownership among employees, who should be motivated as stakeholders in institution building, rather than merely as anonymous part of a hierarchical organizational matrix. The mission also envisaged a new organizationally independent entity to even become a role model for IR and its other PSUs to follow.

Exhibit 12 lists down the mission and objectives of DFCCIL as shown in its website in October 2011. While the project delivery and cost related aspects are relevant, the market and rail share related aspects are not relevant. It is interesting that the draft business plan had objectives which were focused just on project delivery, and operation and maintenance.

A key reason provided for IR being the sole owner of DFCCIL is that IR's underutilized assets, especially in terms of land, could be offered to DFCCIL without much complexity.

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[62] These included errors in employer's requirements, errors in setting out, interpretation of site data, unforeseeable conditions, time and cost implications of probably future events, extension of time for completion due to exceptionally adverse climate conditions, shortages in goods or persons due to epidemics or Government action, and risk of any operation of the forces of nature against which an experienced contractor could not have taken precaution.

[63] Source: Draft Business Plan for DFCCIL, October 2010.

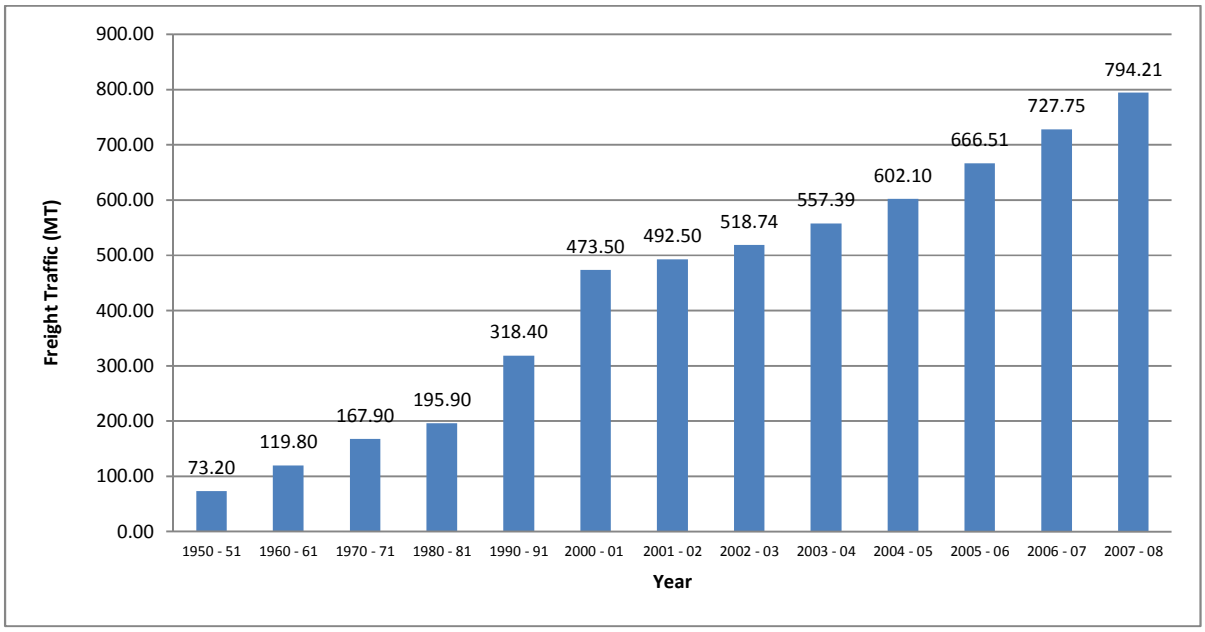
Part of the above problem could have been resolved if there was a separation between MOR (policy making institution) and IR (implementation arm). This issue has been raised in many studies on the IR, since the current bundled position creates conflicts of interest.

Such a separation can rule on under-utilized assets of the IR in a manner that value can be unlocked through alternate use. Part of the assets may have no opportunity cost since excess assets have been vested with IR over the decades, having been viewed as a government body providing critical infrastructure. Part of the assets may have some opportunity costs in terms of possible expansion of activities, but then can be commercially determined and explicitized in a CA.

Due to the funding strategy, especially with respect to the agreement with JICA, the procurement may not be at the least possible cost. As of 2011, the project was expected to be completed by end 2016. **Exhibit 13** indicates the tentative completion dates of various stages of the project. It would be uncertain whether the project would be completed within the cost and the time as estimated in 2012. Apart from the fact that the CA was not structured to give any incentive to DFCCIL to perform, as of May 2012, the CA had still not been finalized.

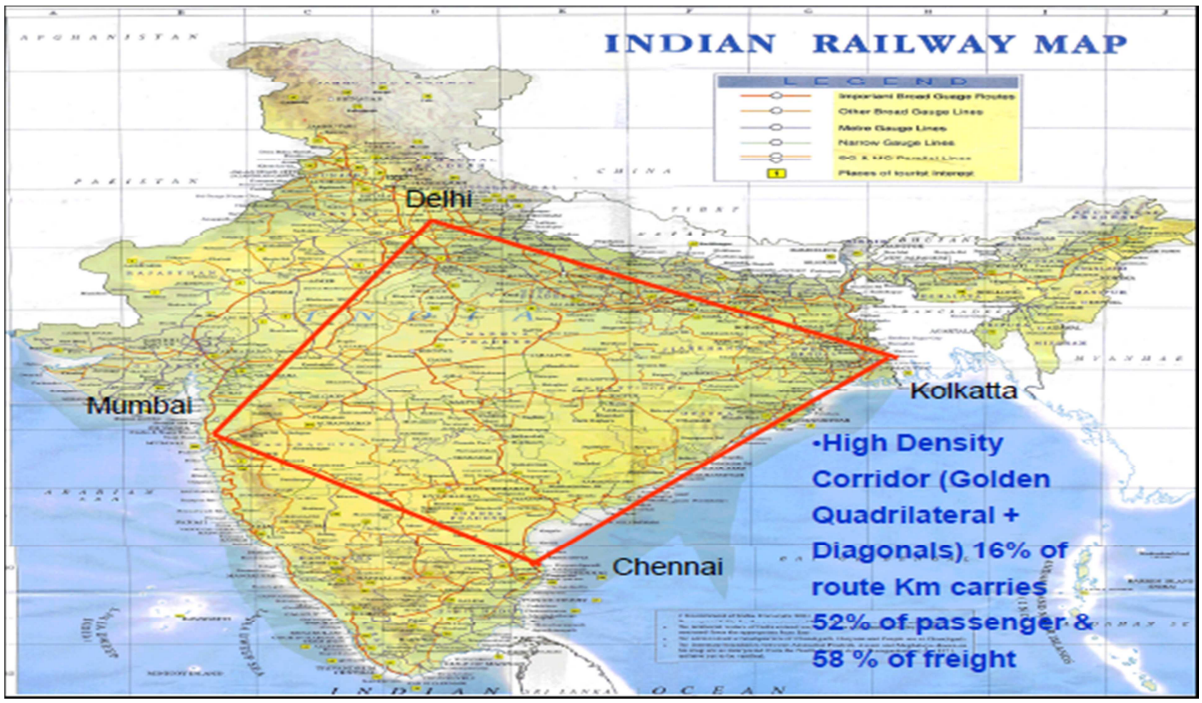
A PPP model with appropriate risk sharing between the IR and the SPV could have contained the cost and guaranteed completion in an assured time frame.

Exhibit 1: Rail Freight Traffic



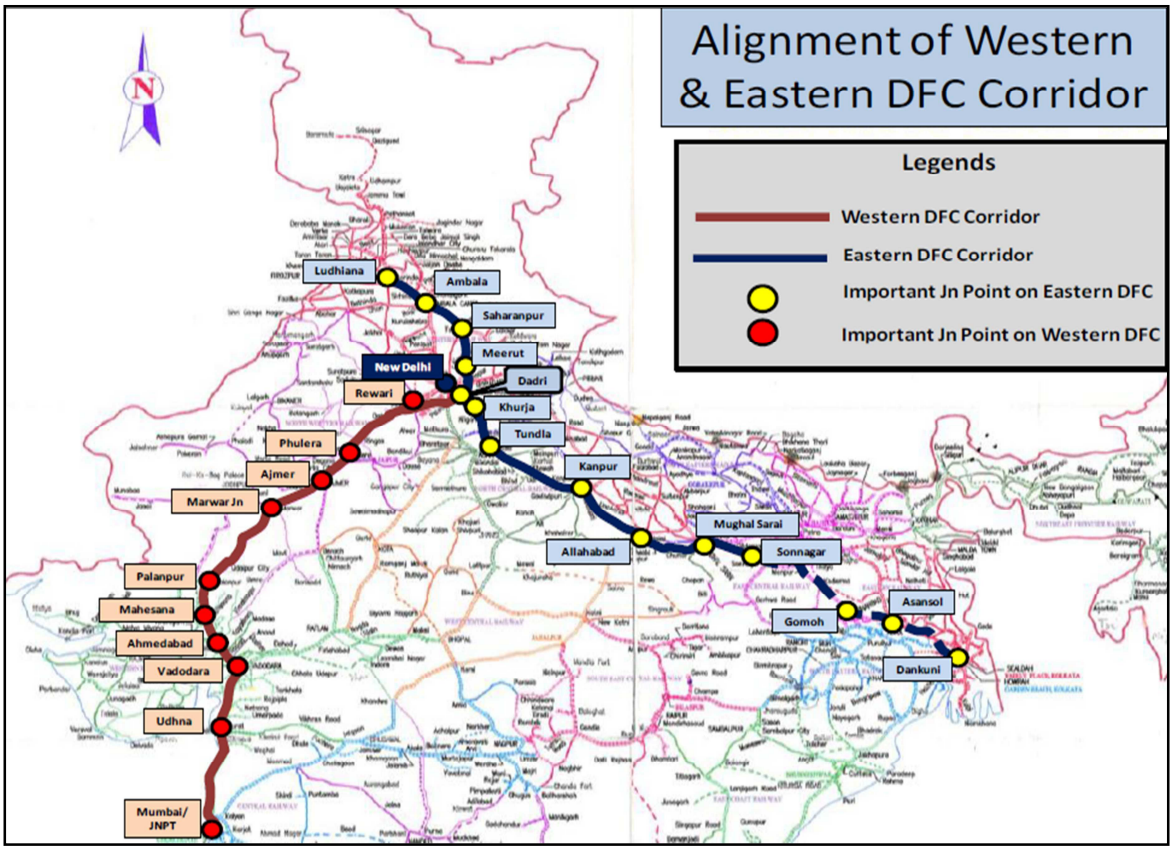
Source: Indian Railway Year Book 2007-08

Exhibit 2: IR's Golden Quadrilateral



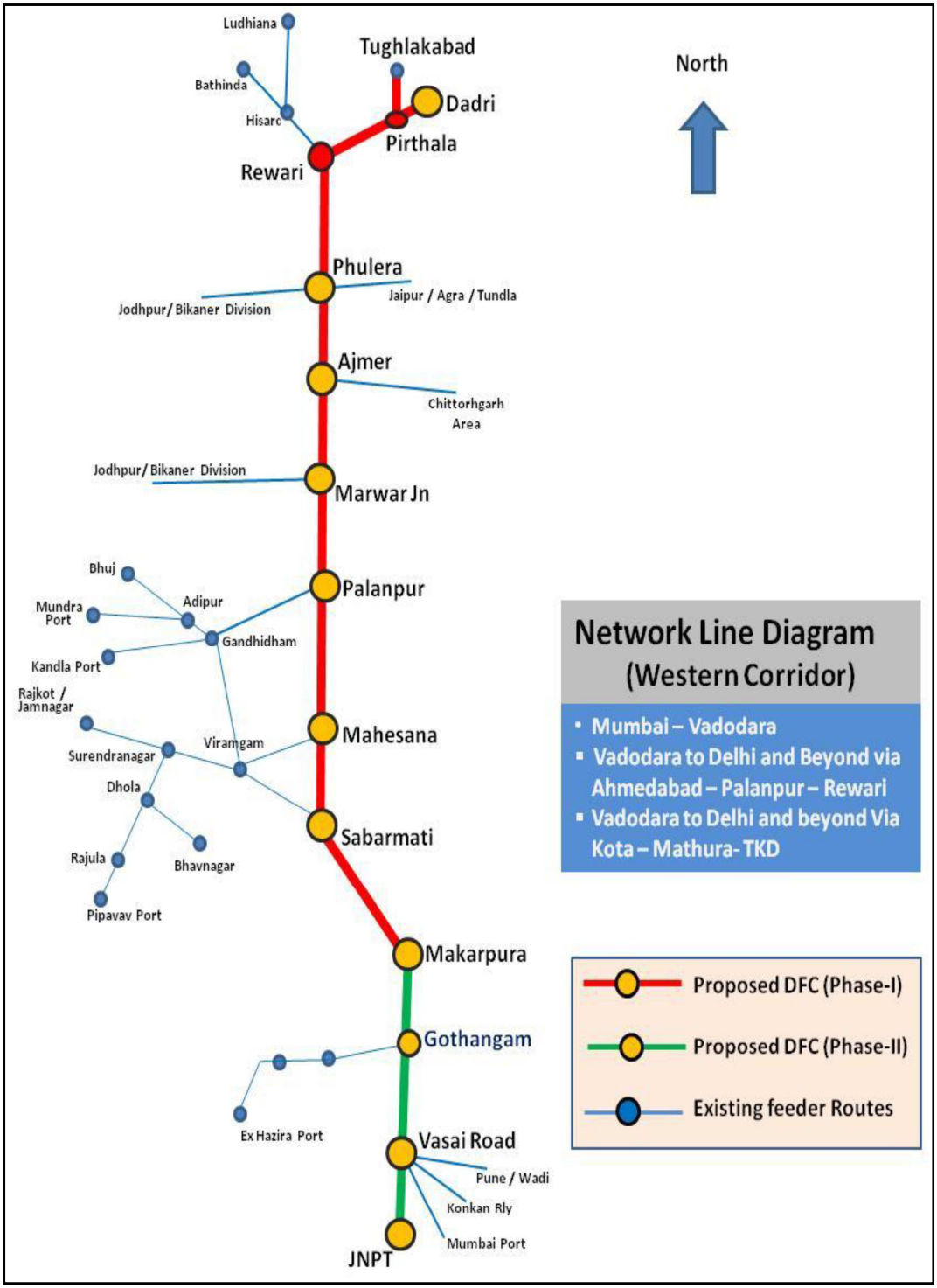
Source: Draft Business Plan for DFCCIL, October 2010

Exhibit 3: Alignment and Junctions of the DFCs



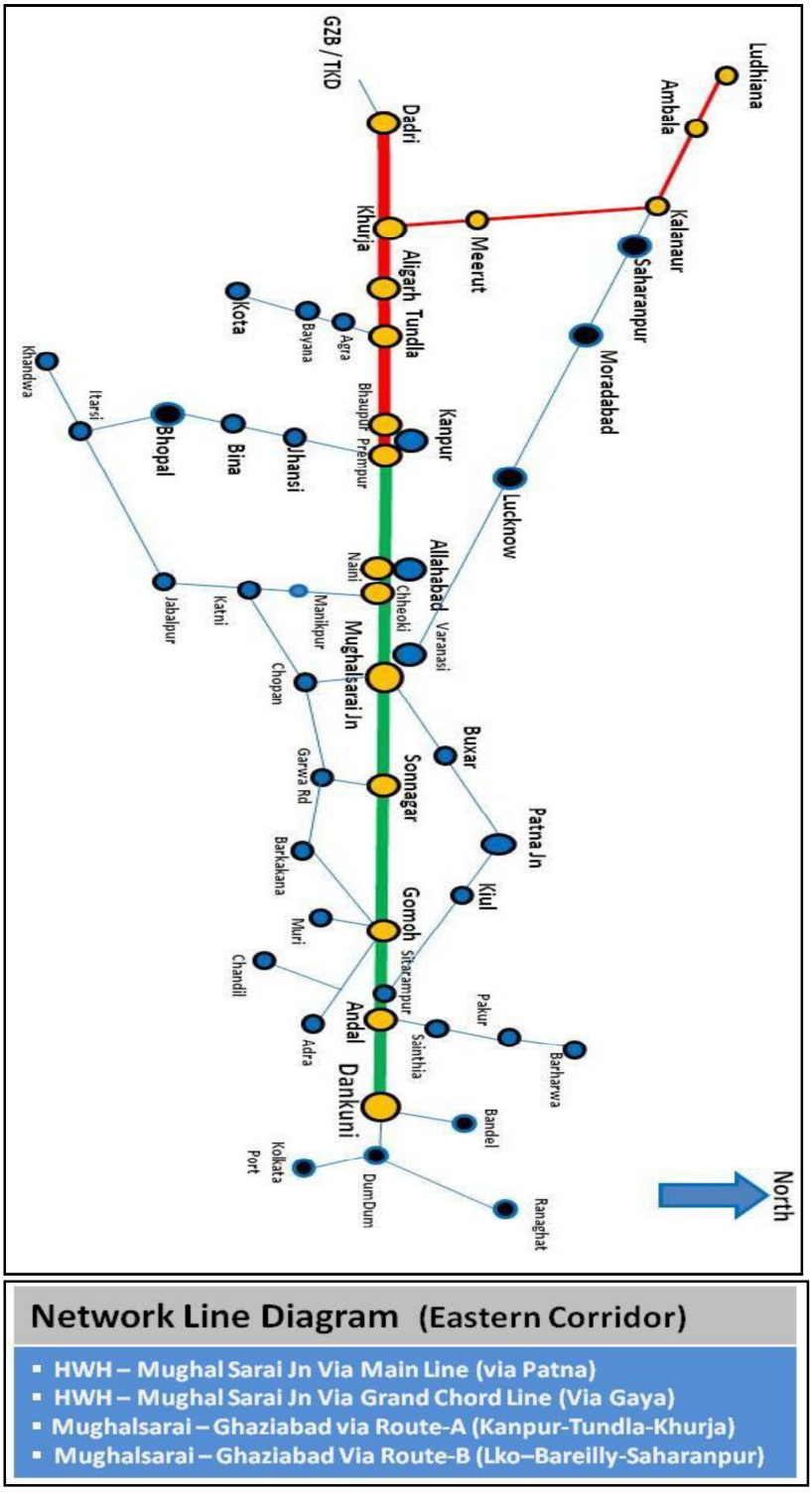
Source: Draft Business Plan for DFCCIL, October 2010

Exhibit 4: WDFC Network



Source: Draft Business Plan for DFCCIL, October 2010

Exhibit 5: EDFC Network



Network Line Diagram (Eastern Corridor)

- HWH – Mughal Sarai Jn Via Main Line (via Patna)
- HWH – Mughal Sarai Jn Via Grand Chord Line (Via Gaya)
- Mughalsarai – Ghaziabad via Route-A (Kanpur-Tundla-Khurja)
- Mughalsarai – Ghaziabad Via Route-B (Lko–Bareilly-Saharanpur)

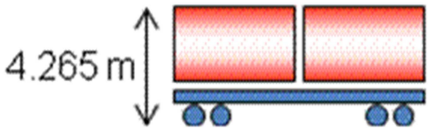
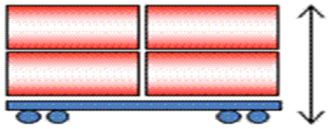
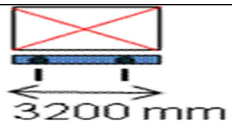
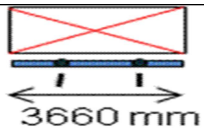
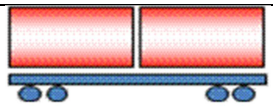
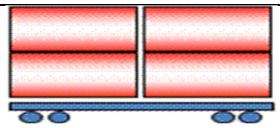
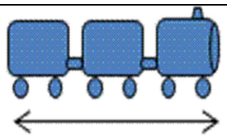
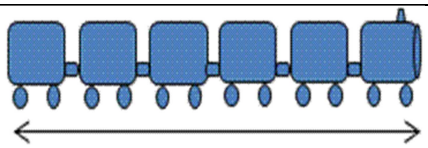
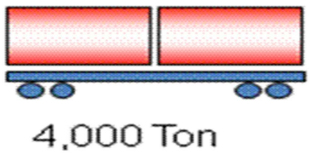
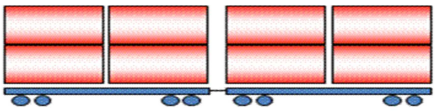
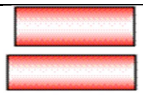
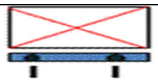
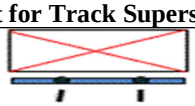
Source: Draft Business Plan for DFCCIL, October 2010

Exhibit 6: Design Parameters for DFCs

Parameter	Specifications
Axle Load	25 tonne, with Bridges of 32.5 ton.
Traction	Electric, 2x25 KV, 50 HZ single phase AC
Maximum Permissible Speed	100 kmph
Rolling Stock	Locomotives: 9000 HP and 12000 HP Wagons: 25 ton axle load Double-stack container train operation on the Western Corridor
Track	60 kg/m UIC/90 UTS rail; PSC sleepers, 1660 nos./km density.
Points and Crossings	60 kg rail, 1 in 12 curved switches
Ballast	300 mm cushion
Ruling Gradient	1 in 200 (compensated)
Curves	Maximum degree of curvature of 2.5 (700m radius) will be provided to keep speed potential of 100kmph; curve compensation @ 0.04% per degree of curvature
Formation	Double-line configuration; band width for double line of 13.5 m; blanketing to 0.60m depth
Moving Dimensions	Vertical MMD of 7.1 m on Western Corridor and 5.1 m on Eastern Corridor
Track Centres	6.0 m on DFC and min.7.0 m between existing tracks and DFC;
Bridges	Standard of loading of 32.5 tonne axle load, 12 tonne/m trailing load
Loop Length	Normal loop length 750m except nominated loops of 1500m long.
Signalling	Double Line: Automatic Block, with Multiple Aspect Colour Light Signalling (MACLS) Single line: Absolute Block, with 10 kms station spacing and Multiple aspect colour-light signalling.
Station Spacing	40 kms apart on double line and 10 kms on single line

[**Source:** Draft Business Plan for DFCCIL, October 2010]

Exhibit 7: Standards Existing on IR vs. Proposed for DFCs

Feature	Existing	On DFC
	Moving Dimensions	
Height		 **7.1 m for Western DFC** **5.1 m for Eastern DFC**
Width		
Container Stack	 **Single Stack**	 **Double Stack**
Train length		
Train Load		
Axle Load	 **22.9t/25t**	 **32.5t/25t for Track Superstructure**
Track Loading density		
Maximum Speed	75 Km/ hour	100 Km/hr
Grade	Up to 1 in 100	1 in 200
Curvature	Up to 10 degree	Up to 2.5 degree
Traction	Electrical (25 KV)	Electrical (2x25 KV)
Station Spacing	7-10 Km	40 Km
Signalling	Absolute/Automatic with 1 Km spacing	Automatic with 2 Kms spacing
Communication	Emergency Sockets/ Mobile Train Radio	Mobile Train Radio

Source: http://dfccil.org/wps/portal/DFCCPortal

Exhibit 8: Break-up of Project Cost

Project Cost	**Eastern DFC**	**Western DFC**	**Total DFC**
Construction Costs (₹ cr)			
Land Cost	-	-	-
Civil (Tracks)	17288	17356	34644
Signal & Telecommunication	2676	2031	4707
Electrical	3526	3463	6989
Mechanical	115	106	221
Total Construction Costs	**23605**	**22956**	**46561**
Cost Escalation	**5210**	**5426**	**10636**
Working Capital	**536**	**505**	**1041**
Soft Costs (₹ cr)			
Insurance, Taxes etc.	2017	1987	4004
Contingency	1441	1419	2860
Interest During Construction	6318	6210	12528
Total Soft Costs	**9775**	**9616**	**19392**
Total Project Cost	**39127**	**38503**	**77630**

Source: Draft Business Plan for DFCCIL, October 2010

Note:

1. Land is to be provided by MOR. Hence, cost is zero.

2. Expenditure of capital nature which might arise during the operation phase in order to meet demands for further facilities by new customers and/or necessitated to facilitate the operations. This is estimated to be ₹100 cr p.a. after five year of operations. It is expected to be met from internal resources of DFCC.

3. Depreciation provision has been made from the commencement of operations based on Schedule XIV of the Companies Act. Renewal of assets has been provided according to the life of assets given in IR Engineering Code.

Exhibit 9: Factors and Assumptions Underlying the Financial Projections

Factors Considered while making the Financial Projections[64]:

a. An arm's length relationship between DFCCIL and IR
b. IR is the sole owner (and controls the Board) and customer of DFCCIL. Therefore, IR is in a position to influence all policy decisions including the charges payable by it to DFCCIL.
c. DFCCIL's role will primarily be that of the infrastructure provider. DFCCIL has been charged with the responsibility of constructing, maintaining and operating two corridors along with all attendant infrastructures, to enable IR to run freight trains on them.
d. DFCCIL will not own any rolling stock or crew, nor have any role in fixing tariffs or collection of revenue.
e. The DFCCIL will - accept freight trains on its system, operate them on the DFC and then hand them back to IR at the other end. ***DFCCIL will not run trains offered to it by any other operator. In fact, at present, no other operator is legally allowed to run train services.*** However, since almost parallel railway lines will continue to exist, IR will have the option of running a train on its own system or on the DFCC system. Thus DFCC will be a captive supplier of its services to a single buyer although the buyer has choices.
f. DFCCIL will receive from IR a user charge (TAC) in return for its services. However, TAC is sought to be fixed in a manner that all costs of DFCCIL get covered. At the same time the structure of TAC will be such as to incentivize DFCCIL towards better performance.

Key Assumptions made in framing the Financial Projections for the Business Plan[65]:

a. "Base Construction Cost has been taken as Rs. 46,561 crores excluding the cost of land Rs.4200 Crores. This cost is based on detailed estimates received from the field offices and is based on 2009 10 prices.
b. Project phasing has been assumed based on estimated progress of construction during the construction period.
c. Cost escalation factor of 5.4% per annum has been assumed. This is based on the average WPI from 2000-2001 to 2008-2009.
d. Project completion cost consists of escalated construction cost, soft costs like insurance, IDC, contingency etc. Land will be acquired by IR under Railway Amendment Act 2008 and leased to DFCC; hence cost of land has not been included in DFCCIL"s financial rate of return and in Project Cost.
e. Soft costs include Contingencies @ 5% of escalated construction cost and Insurance & Taxes have been takes @ 7% of escalated construction cost.
f. Working Capital has been assumed to be three month"s estimated O&M costs plus 1% of Project Construction Cost (less cost of land) for inventories to allow DFCCIL to work its first operating cycle and includes maintenance spares, traction bill and O&M expenses during the operating cycle. This will be financed partly from LOAN and partly from MoR Equity as DFCC will have no income of its

[64] Source: Draft Business Plan for DFCCIL, October 2010, pp. 47-48 (Minor editing done by authors)
[65] Taken verbatim from Draft Business Plan for DFCCIL, October 2010, pp. 48-49

own to meet its operating expenses in the initial period. Alternatively DFCCIL may raise short term funds from the market for this purpose.

g. Additional capital expenditure of Rs. 100 Cr. per annum for both the corridors has been assumed to meet demand for further facilities from customers. This expenditure would be made on annual basis starting from fifth year of commencement of operations and will be met from internal resources.

h. The Project commences from 2009-10. Although the different sections would get completed in 2016 it is envisaged that operations will start from 2017-18.

i. The project will be financed through loan from Ministry of Railways which will be extended on back-to back basis based on the General Budgetary Support received by MoR against the multilateral/bilateral financing. As of now, the loan from MoR will be 37,265 crore comprising of Rs.10,800 cr of loan received by MoR from World Bank for Eastern Corridor and Rs. 26,465 Cr of LOAN received from JICA for the Western Corridor.

j. Loan from MOR will be in the form of a 7% loan in perpetuity with no principle repayment. Interest will accrue and accumulate but payment would be deferred for ten years and would be paid in ten equal instalments from 2020. Interest @7% would be paid annually.

k. Any additional funding required by DFCCIL will be undertaken through commercial borrowings. Commercial Bonds with a 10 year tenor and interest rate of 9.5% have been assumed. Interest on commercial bonds, payable during the period of construction, will be financed from additional equity provided by MoR. Repayment of principal will be made in full at the end of ten years in the year of maturity.

l. In respect of Equity from IR, dividend payment will be decided by the Board of Directors of DFCC from time to time. Since DFCC is a corporation registered under the Companies Act, 1956, depreciation has been provided in accordance with Schedule XIV of the Companies Act. However, actual renewals have been provided according to life of assets given in Indian Railway Engineering Code.

m. All traffic moving over two or more consecutive junctions on the existing route will be assigned to the Dedicated freight corridor.

n. DFCC will receive Track Access Charges (TAC) from IR for the services rendered. TAC consists of Variable component consisting of – Traction Power, Staff and Materials - and Fixed component consisting of Staff, Material, Depreciation, cost of Debt (including interest on Loan from MoR as well as on Commercial Borrowings, and cost of Equity."

Exhibit 10: Obligations of DFCCIL and MOR as per the CA

Obligations of DFCCIL[66]

a. Assist MOR in the acquisition of land and interests in land in the New Corridor
b. Develop the design, construct and commission the New Railway (other than the MOR Improvements) during the Construction Period which meets the Minimum Performance Criteria
c. Operate, maintain and repair the New Railway during the Operation Period so that the New Railway meets the Minimum Performance Criteria on a continuous basis
d. Hand over the New Railway to the MOR on the Handover Date: Any amount outstanding as per the CA has to be paid by MOR to DFCCIL on the Handover Date"
e. "Minimize disruption: In the implementation of the Project, DFCCIL must use reasonable endeavours to minimize disruptions and overall delays to passenger and freight services on any railway corridor used by MOR which is closely proximate to the New Corridor and New Railway"
f. "DFCCIL must comply with, and must ensure that the construction companies comply with all laws applicable to their respective obligations in respect of the project

Obligations of MOR[67]

a. **Grant of concession:** MOR grants to DFCCIL for the Concession Period the right to implement the Project subject to and upon the terms of the CA. MOR and DFCCIL will at the end of each period of 5 years of the Concession Period review the performance by DFCCIL of its rights and obligations under the Project Documents having regard to the Project Objectives and any other matters as agreed between MOR and DFCCIL.
b. **Land:** MOR will license to DFCCIL under the MOR license all land in the New Corridor and associated Railway Infrastructure as agreed by the MOR and DFCCIL and at the time required to comply with the Construction Programme.
c. **MOR Improvements:** The MOR will procure the design and construction of the MOR improvements in accordance with the MOR Works Design Brief and must ensure the completion of each stage of the MOR improvements so as to allow DFCCIL to comply with the Construction Programme.
d. **Equity Subscription:** To facilitate the funding of the project, MOR agrees to subscribe to and pay par value of equity shares of DFCCIL and DFCCIL agree to allot the share.
e. **Financing:** MOR confirms the initial financing arrangement of ₹67,596 cr, and subject to the specific terms of the project finance documentation the total amount to be initially financed prior to Completion of the Project for the purposes of the construction phase of the Project (including the costs of the DFCCIL Works and capitalised interest during construction), to be arranged from: MOR Loan (37,265 cr), MOR Equity (17,596 cr), Senior Debt Finance (12,736 cr).

   If at any time the MOR Loan, MOR Equity and Senior Debt Finance is insufficient to fund capex of DFCCIL on implementation of the Project or expenditures required during the Operation Period and

[66] Taken verbatim from Modified Concession Agreement between MOR and DFCCIL, February 2011.
[67] Modified Concession Agreement between MOR and DFCCIL, February 2011 (Minor editing has been done by authors)

such shortfall in funds is not the result of a negligent act or omission of DFCCIL or a breach by DFCCIL of this document then MOR must in good faith consider whether to fund such shortfall on notice from DFCCIL (accompanied by all necessary supporting documents) and should MOR agree to do so MOR will determine the appropriate form of such funding (including by way of soft loan or a further equity subscription).

f. **Alternative Financing Support:** MOR must assist DFCCIL to obtain financing on attractive terms from external credit providers (including multilateral agencies) including by assisting in obtaining relevant Tax exemptions and waivers.

g. **Autonomy of DFCCIL:** MOR acknowledges and agrees that DFCCIL is to have autonomy and independence from MOR in relation to its management of the implementation of the Project and the performance of its obligations and exercise of its rights under the Project Documents"

h. **"Reasonable assistance:** To the extent reasonably and lawfully possible, the MOR must use all reasonable endeavors to ensure that any third party in relation to whom it has the authority or a contractual right to request or direct (in connection with the Project), provide reasonable assistance to, co-operate with, and do not unnecessarily or unreasonably prevent, hinder, disrupt, delay or otherwise interfere with DFCCIL and its Associates in undertaking the Project as contemplated by this document.

i. **Zonal Railways.** MOR must ensure that each Zonal Railway with geographical jurisdiction adjacent to any section of the New Corridor or New Railway co-operates with DFCCIL and the Construction Companies in the implementation of the Project in accordance with the terms of mutually agreed program.

Exhibit 11: Major Risks Accepted by MOR and DFCCIL as per the CA[68]

Risks accepted by MOR

The risks and obligations accepted by the MOR as set out in the CA, including in relation to:

a) The cost of its funding the MOR Loan and other funding to be made available by it to DFCCIL increasing and its inability to recover such increase in cost from DFCCIL
b) A delay in its funding of the MOR Loan and other funding to be made available by it to DFCCIL and any corresponding rise in costs
c) A delay in giving, or a failure to give, within a reasonable period any Approval required from MOR or to be procured by MOR
d) Failure to lease to DFCCIL under the MOR Lease all the land in the New Corridor at the time such land is required to comply with the Construction Program
e) The Undisclosed Interests
f) Pre-Existing Contamination and MOR Subsequent Contamination
g) Material Adverse Effect (MAE) Events
h) Damage to the New Railway caused by defective trains run by Authorised Rail Users
i) Loss of traffic or inability to carry traffic as a result of corresponding MOR Improvements not being completed as planned, and
j) An error in the Design Brief affecting operations of the New Railway (including that the New Railway is not Fit for Purpose because of an error in the Design Brief).

Risks accepted by DFCCIL

The risks and obligations accepted by DFCCIL as set out in the CA, including in relation to:

a) The actual cost of the Project (including inflation, cost increases and interest costs) being greater than the cost estimated by DFCCIL unless caused by MOR, any Associate of MOR or a Government Authority
b) The New Railway not satisfying the Minimum Performance Criteria
c) Obtaining of Approvals (other than approvals from MOR and its Associates)
d) The availability and quality of any materials to be provided by DFCCIL or the Construction Companies for use for the Project
e) The use of any work previously performed by others in respect of the design and alignment of the New Railway (including any geological, hydrological or engineering studies)
f) The New Railway not being fit for Purpose at any time (other than by reason of an error in the Design Brief).
g) An error in the Design Documentation (other than by reason of an error in the Design Brief).
h) Technical obsolescence occurring during the Concession Period in relation to the equipment or systems used in the operation, maintenance or repair of the New Railway unless it is the result of MOR failing to make or agree the terms of a DFCCIL Works Variation intended to address the same or such equipment or systems were used at the request of MOR.

[68] Taken verbatim from Modified Concession Agreement between MOR and DFCCIL, February 2011.

i) Inclement weather (which is not a Force Majeure Event) causing the incurring of delay, increased cost or decreased revenue.
j) Changes to the DFCCIL Works causing the incurring of delay, increased cost or decreased revenue unless caused by an act, omission or breach by MOR.
k) The ability of DFCCIL to obtain any Services, labour and materials.
l) A loss of revenue caused by a fall in or inability to service Authorized Rail Users as a consequence of a delay in Completion of a New Railway Stage (but excluding any MOR Improvement).
m) A failure by DFCCIL to obtain any funds being made available to it by a third party other than MOR or its Associates together with any corresponding rise in costs; and
n) A failure to obtain access to land not included in the New Corridor to which access is required for construction or commissioning of the New Railway.

DFCCIL was not entitled to and must not make any Claim against the MOR arising out of or in connection with any such risk having eventuated except to the extent to which such risk gives rise to a Claim as the result of a deliberate or negligent act or omission of MOR or its Associates, any breach by MOR of its obligations under the Project Documents or breach of law by MOR.

Exhibit 12: Mission and Objectives of DFCCIL

The mission of DFCCIL[69] as on October 2011 was:

a. "To build a corridor with appropriate technology that enables IR to regain its market share of freight transport by creating additional capacity and guaranteeing efficient, reliable, safe and cheaper options for mobility to its customers.
b. To set up MLP along the DFC to provide complete transport solution to customers.
c. To support the government's initiatives toward ecological sustainability by encouraging users to adopt railways as the most environment friendly mode for their transport requirements."

The broad objectives of DFCCIL[70] as on October 2011 were:

a) "Reduce unit cost of transportation by speeding up freight train operations and higher productivity
b) Increase rail share in freight market by providing customized logistic services
c) Create additional rail infrastructure to cater to high levels of transport demand
d) Introduction of time tabled freight services and guaranteed transit time
e) Introduction of high end technology and IT tracking of freight services
f) Segregate freight infrastructure for focused approach on both passenger and freight business of Railways."

Exhibit 13: Estimated Date of Construction of the DFCs

Project Description		**Expected Completion Date**
Western Corridor		
Phase I	Rewari – Vadodara (950 km)	December 2016
Phase II	Vadodara – JNPT (425 km)	December 2016
Phase II	Rewari – Dadri (127 km) & TKD – Pirthala (32 km)	December 2016
Eastern Corridor		
Phase IA	Sonnagar – Mughalsarai (123 km)	July 2015
Phase IB	Mughalsarai – Khurja – Dadri (743 km)	December 2016
Phase II	Khurja – Ludhiana (400 km)	December 2016
Phase II	Sonnagar – Dankuni (534 km)	December 2016

Source: Modified CA between DFCCIL and MOR, February 2011

[69] DGCCIL Website. http://dfccil.org/wps/portal/DFCCPortal Retrieved on 18 October 2011
[70] Ibid.

Glossary of Abbreviations Used

APL: Adaptable Program Loan
BD: Bid Documents
BoD: Board of Directors
BTKM: Billion Tonne Kms
CA: Concession Agreement
CCEA: Cabinet Committee on Economic Affairs
COI: Committee on Infrastructure
DFC: Dedicated Freight Corridors
DFCCIL: Dedicated Freight Corridor Corporation of India Limited
EDFC: Eastern Dedicated Freight Corridor
EIA: Environmental Impact Assessment
FIDIC: International Federation of Consulting Engineers
GOI: Government of India
GoM: Group of Ministers
GC: General Consultant
GQ: Golden Quadrilateral
IDC: Interest during Construction
IR: Indian Railways
JBIC: Japan Bank for International Cooperation
JICA: Japan International Cooperation Agency
JNPT: Jawaharlal Nehru Port Trust
MLP: Multmodal Logistic Parks
MOF: Ministry of Finance
MOR: Ministry of Railways
MOS: Ministry of Shipping
NCR: National Capital Region
PC: Planning Commission
PETS: Preliminary Engineering cum Traffic Survey
PPP: Public Private Partnership
PSU: Public Sector Undertakings
RRP: Rehabilitation and Resettlement Plan
SBD: Standard Bidding Document
SIA: Social Impact Assessment
SPV: Special Purpose Vehicle
STEP: Special Terms of Economic Partnership
TAA: Track Access Agreement
WDFC: Western Dedicated Freight Corridor