

# Case Study

RailTel<sup>301</sup>

## 1 Introduction

This case study describes how Indian Railways (IR) profitably commercialized its telecom assets and rights-of-way through the creation of a separate subsidiary entity, RailTel Corporation of India Limited (RailTel). RailTel has become a pre-eminent example of infrastructure sharing between the railway and telecommunications sector. In addition to partly managing IR's internal telecommunications needs, RailTel delivers telecommunications services to a large number of external users.

The case of RailTel illustrates that a state-owned railway can set up a separate, viable entity to commercialize and operate its rights-of-way and existing telecommunications infrastructure. Doing so can create additional revenues for the railway, while allowing for the professional management of its telecom assets, thereby supporting and improving national telecommunications.

This case study describes the situation prior to the emergence of RailTel and the situation subsequent to its emergence. It then describes RailTel's current infrastructure and service offerings, as well as the Indian telecommunications industry's market structure and institutional and regulatory framework. The case then discusses RailTel's financial performance, and concludes with a summary of the lessons to be drawn from IR's approach to developing RailTel.

## 2 Situation Prior to the Emergence of RailTel

In the early 1970s, Indian Railways (IR) began deploying its own internal communications systems to increase circuit efficiency on its rail lines<sup>302</sup>. Prior to that time, IR was entirely reliant on the Department of Telecommunications, then the state-owned monopoly provider of telecommunications, for its internal communications needs.

In 1983, the Railway Reforms Committee decided to install a dedicated fiber optic network for IR, replacing its existing communications systems. The aim was to increase safety, reliability, availability and serviceability. In 1988, IR commissioned its first fiber optic network in Mumbai. The network comprised 60 route-km across 28 stations and was used only for train operation and control.

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<sup>301</sup> This case study is largely based on Lawrence, Martha; Ollivier, Gerald. 2015. *Attracting Capital for Railway Development in China*. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23800> License: CC BY 3.0 IGO. URI: <http://hdl.handle.net/10986/23800>

<sup>302</sup> It used overhead telephone lines, quad cables, microwave systems and other available technologies.

Initial expansion of the IR fiber optic network was slow, growing to approximately 4,000 route-km over the next decade. Though IR was only using a small portion of the network's available capacity, it was not in a position to commercialize this excess fiber optic capacity under the then-prevailing policy and regulatory environment.

As part of the New Telecom Policy of 1999, the Government of India opened up national long-distance communications services to private operators, introducing competition in the market. To support this new competitive environment, cross-sector infrastructure sharing by public utilities was encouraged. This allowed for the use of existing backbone networks belonging to public and private power transmission companies, IR, and oil and gas companies for national long-distance data communication and national long-distance voice communications<sup>303</sup>.

Motivated by this policy change, IR decided to form a separate entity to market and exploit the excess capacity on its fiber optic network, generating additional revenues, which could be used to further expand the network. This separation of telecoms from rail operations would permit IR to maintain its focus on its core activity of rail operations.

### 3 The Emergence of RailTel

RailTel was formed in September 2000 as a public sector undertaking, with a mandate to both modernize the IR communications network and to significantly contribute to realizing the goals and objectives of the New Telecom Policy of 1999. RailTel was established as a commercial organization, independent from IR.

The existing fiber optic network of IR, then approximately 4,500 route-km, was transferred to RailTel upon its formation. In 2001, RailTel began rolling out fiber optic cables along national railway routes, laying over 25,000 route-km by 2006 and over 47,000 route-km by April 2016. In August 2016, work was underway on another 6,700 route-km.

Through a contractual arrangement with the Ministry of Railways, RailTel has been able to use the rights of way of IR (approximately 63,000 route-km of railway track passing through 7,000 railway stations across India) to lay fiber optic cable and install other telecom infrastructure<sup>304</sup>. For its last mile and other access networks, RailTel has acquired rights of way directly from local authorities. As of August 2016, the network reached over 4,600 cities and towns across India, including many in remote and rural areas.

#### *RailTel's infrastructure and services*

RailTel's fiber optic network consists of armored 24-fiber cables, deployed in ducts. Four fibers in each cable are dedicated for use by IR, although they are maintained by RailTel. A centralized network management system in New Delhi manages the network, with a backup system in Secunderabad/Kolkata.

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<sup>303</sup> Government of India (1999), *New Telecom Policy 1999*. Retrieved from <http://pib.nic.in/focus/fomar99/fo3103991.html>

<sup>304</sup> Indian Railways has over 65,000 route-km of track, which is one of the largest railway track networks in the world.

In addition to its fiber optic backbone network, RailTel has rolled out:

- An MPLS-IP [Multiprotocol Label Switching - Internet Protocol] backbone network with points of presence in 40 cities to provide virtual private network services, broadband internet access and multicast services;
- A Next Generation Network in 36 cities for carrying voice-based traffic as well as data and value added services; and
- A fiber access network in over 100 major cities in India.

One of RailTel's objectives is to modernize the telecommunications network of IR, permitting safer and more efficient train operations. Every station on RailTel's network has been provided with links to support IR's data connectivity needs, including its passenger reservation and ticketing systems. RailTel also provides connectivity among IR's field organizations and offices of the Ministry of Railways, among other services.

RailTel obtained an Infrastructure Provider (IP-2) license<sup>305</sup> in 2002 and began offering wholesale bandwidth services to telecom network operators. This license allows RailTel to lease, rent out, and sell end-to-end bandwidth (i.e. digital transmission capacity) for a period of 20 years from the date of license agreement.

RailTel promoted its services through direct marketing and through sales to India's telecom operators. The initial services utilized by these operators were leased lines and co-location of telecom equipment on RailTel's fiber network and towers. RailTel's infrastructure was used extensively by all of India's mobile network operators to roll out their networks. Many of these and other entities have built competing fiber optic networks along public roads, though they often use RailTel's network to provide redundancy along a separate route.

RailTel has other service offerings, including:

- Virtual private network services to enterprises, banks education institutions and government entities;
- Dedicated Internet bandwidth to enterprises and education institutions;
- Dark fiber leasing to cable television operators;
- Data center services;
- Audio/video conferencing services in facilities in major cities;
- Railwire, a retail broadband initiative that utilizes partnerships with local network operators; and
- Consultancy services for the execution of IT and telecom projects.

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<sup>305</sup> IP-2 licenses are granted to applicants so long as the foreign equity of the applicant company does not exceed 74%. There is no entry fee for IP-2 and there is no restriction on the number of licensees.

As RailTel is ultimately owned by the Government of India, it plays a direct role in furthering the Government's telecom policy initiatives. For example, RailTel is one of the implementing partners in laying fiber optic cable, further expanding the National Optical Fiber Network. This project is led by state-owned Bharat Broadband Network Limited. Its goal is to provide connectivity to all the 250,000 Gram panchayat's (village-level units of local government) using the existing fiber optic cables of public utilities, including RailTel, Power Grid and Bharat Sanchar Nigam Limited (the state-owned telecom incumbent)<sup>306</sup>.

## 4 Industry Structure and Institutional/Regulatory Framework

### *The telecommunications market*

India's telecommunications market is fully competitive across all market segments (international and national connectivity, fixed and mobile networks) and is dominated by private firms<sup>307</sup>. As of 31 May, 2016, there were a total of 1.058 billion telephone subscriptions across the country, and 160 million broadband subscribers<sup>308</sup>. The broadband services user-base in India is projected to grow to 250 million connections by 2017<sup>309</sup>.

Driven by strong adoption of data consumption on handheld devices, the total mobile services market revenue in India reached US\$7.5 billion in 2014<sup>310</sup>. India was also estimated to have 371 million mobile internet users in June 2016, a significant rise from 238 million a year earlier<sup>311</sup>.

### *Policy and regulation*

The policy and regulatory regime in India has been evolving since the liberalization of the sector in 1992. Since that date, a number of markets have been opened to private and foreign investment. Between April 2000 and September 2016, the telecommunications sector attracted foreign direct investment worth US\$21.17 billion<sup>312</sup>.

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<sup>306</sup> Bharat Broadband Network Limited, National Optical Fibre Network (NOFN) (2015). Retrieved from <http://www.bbnl.nic.in/content/page/national-optical-fibre-networknofn.php>

<sup>307</sup> The state-owned incumbents currently have about 9 percent of the market for telephone subscriptions.

<sup>308</sup> Telecom Regulatory Authority of India (2016), *Highlights of Telecom Subscription Data as on July 31, 2016*, Press Release No. 18/2015. Retrieved from [http://traai.gov.in/WriteReadData/WhatsNew/Documents/Press\\_Release\\_No.97\\_Eng\\_07\\_10\\_2016.pdf](http://traai.gov.in/WriteReadData/WhatsNew/Documents/Press_Release_No.97_Eng_07_10_2016.pdf)

<sup>309</sup> Economic Time of India, *GSMA expects 250 million broadband connections in India by 2017*. Retrieved from <http://economictimes.indiatimes.com/industry/telecom/gsm-expects-250-million-broadband-connections-in-india-by-2017/articleshow/45096822.cms>

<sup>310</sup> GSMA Intelligence, *India Market Report* (April 2015). This is a subscription service.

<sup>311</sup> Indian Express, *Mobile Internet users in India to reach 371 mn by June 2016*, Retrieved from <http://indianexpress.com/article/technology/tech-news-technology/mobile-internet-users-in-india-to-reach-371-mn-by-june-2016/>

<sup>312</sup> Department of Industrial Policy & Promotion, *Fact Sheet on Foreign Direct Investment (FDI)*, Retrieved from [http://dipp.nic.in/English/Publications/FDI\\_Statistics/2016/FDI\\_FactSheet\\_April\\_Sep\\_2016.pdf](http://dipp.nic.in/English/Publications/FDI_Statistics/2016/FDI_FactSheet_April_Sep_2016.pdf)

The Telecom Regulatory Authority of India (TRAI) is the regulator of telecom service providers in India, but does not regulate cross-sector infrastructure sharing per se. The TRAI does set ceilings on the tariffs that can be charged for leased line services. RailTel has indicated that its tariffs use high discount structures and therefore effectively are negotiated freely in the market. Although RailTel's pricing is not otherwise directly regulated, its telecom operator customers have aspects of their pricing to customers and other operators regulated, and this regulation has an impact on how RailTel prices its services to these customers.

The Department of Telecommunications, under the Ministry of Communications, is responsible for granting telecom licenses. RailTel is an Infrastructure Provider Category 2, which allows it to provide passive assets for telecom use such as dark fiber, rights of way, duct space and towers. No license is required, but registration with the Department is mandatory. RailTel also holds a National Long Distance license, for its provision of leased line, voice transit and virtual private network services, and an Internet Service Provider (Class-A) license, for its provision of internet services across India.

As a wholly state-owned entity, RailTel is subject to public procurement policies and falls under the jurisdiction of the Central Vigilance Commission, a government body established to prevent corruption in government institutions and public administration. A Telecommunications Dispute Settlement and Appellate Tribunal has been established to adjudicate disputes, including those between two or more service providers or between a service provider and a group of consumers.

IR is a state-owned and Government-controlled monopoly, with oversight provided by the Ministry of Railways. The Indian Railways Act had to be amended to allow for the use of the telecommunications assets of the railway network for commercial purposes; the original Act only permitted these assets to be used for internal telecommunications purposes.

RailTel manages the administrative communications of the IR, but all mission critical aspects of IR communications continue to be managed internally.

## 5 Financial Performance

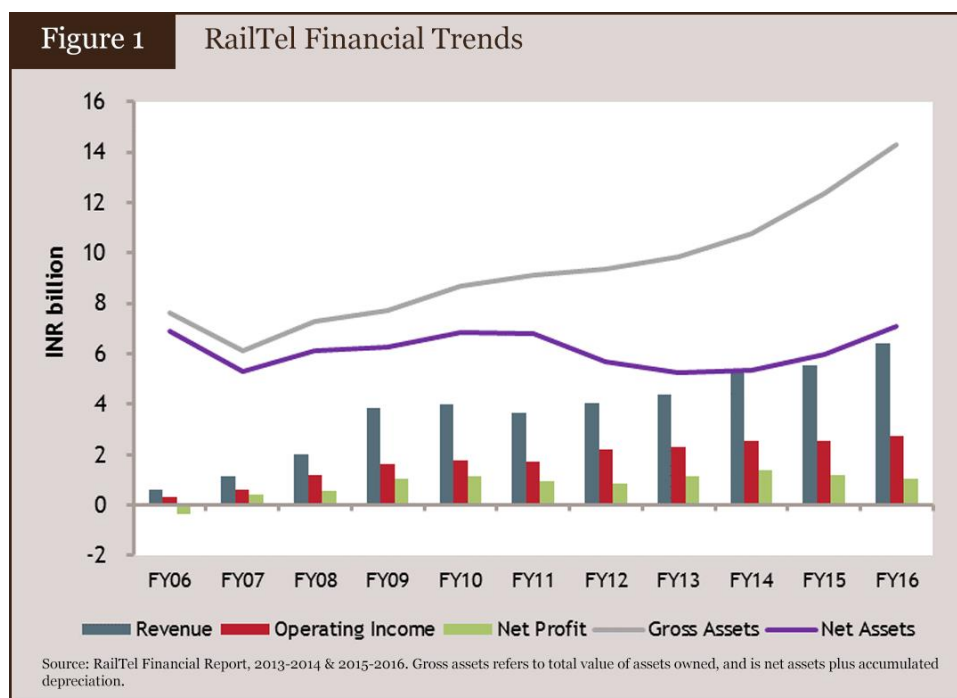
RailTel's network roll-out was financed with Indian Rupees (INR) 4 billion (US\$ 62 million in 2015 US\$<sup>313</sup>), provided by a consortium of banks led by the State Bank of India. These loans were repaid in full by January 2013, and today RailTel is debt-free. RailTel achieved its first profitable year in 2007, after seven years in operation.

RailTel is financially self-sufficient and does not receive any funding from the Government of India. It finances network expansion from its revenues. Because RailTel is independent from IR, its sole shareholder, it files its own annual reports in accordance with Indian accounting rules.

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<sup>313</sup> All conversions from INR to USD in this section are based on an exchange rate of 1 USD = 64.15 INR. See [http://data.worldbank.org/indicator/PA.NUS.FCRF?end=2015&locations=IN&start=2004&view=chart&year\\_high\\_desc=false](http://data.worldbank.org/indicator/PA.NUS.FCRF?end=2015&locations=IN&start=2004&view=chart&year_high_desc=false) for more information.

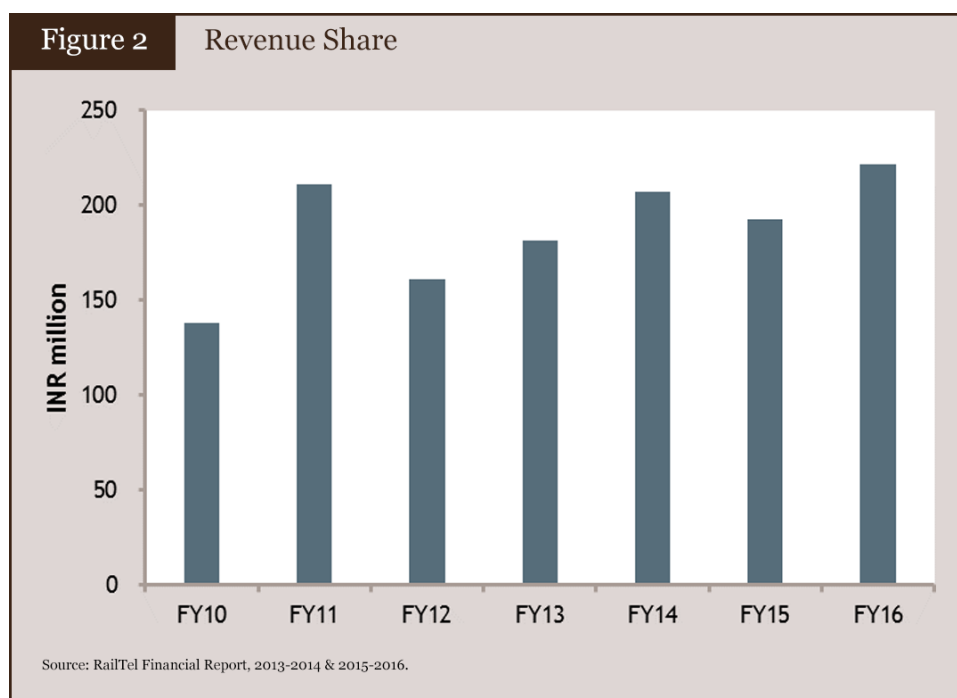
In its 2015-16 financial year, RailTel declared total gross revenues of INR 6.41 billion (US\$ 99.9 million) with a net profit of INR 1.04 billion (US\$ 16.2 million)<sup>314</sup>. Details on the financial trends for RailTel are in the Figure 1.



RailTel shares a portion of its revenue with IR, as compensation for use of its rights of way. For RailTel's 2015-16 financial year, this sharing amounted to INR 220 million (US\$ 3.4 million). This 'revenue share' over time is in Figure 2. As IR utilizes four fibers in each 24-fiber cable, it bears a proportionate cost of capital expenditures for network deployment. RailTel also pays annual dividends to its government shareholder. Between 2005 and 2016, RailTel paid a total dividend of INR 1.46 billion (US\$ 22.8 million) to its only shareholder, the Government of India<sup>315</sup>.

<sup>314</sup> RailTel, *Annual Report (2015-2016)*, Retrieved from [http://www.railtelindia.com/uploads/financialresult/1473836519\\_RailTel%20Annual%20Report%202015-16%20English%20Version.pdf](http://www.railtelindia.com/uploads/financialresult/1473836519_RailTel%20Annual%20Report%202015-16%20English%20Version.pdf)

<sup>315</sup> Ibid.



## 6 Conclusion

When the Government of India opened up long-distance telecommunications services to the private sector, IR saw the opportunity to sell unneeded capacity on its telecommunications network and to use the proceeds to further expand its fiber optic network.

Through the creation of RailTel, IR was able to successfully share its infrastructure across sectors and to realize the inherent value of the railway's rights-of-way and telecommunications assets, in addition to the strong technical expertise and management capacity of IR staff. As a result, RailTel has played a significant role in the proliferation of telecommunications services in India. The Company's extensive fiber network has permitted telecom operators to provide services with limited capital expenditures in large areas of the country that were previously unserved or underserved.

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This case study includes information provided by RailTel through an interview conducted in March 2015.

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