

Track and Bridges

| As on 31.3.2017, the Indian Railways had | | | (in Kms.) |
|---|---|---|------------------|
| (i) | Route length | - | 67,368 |
| (ii) | Running Track length | - | 93,902 |
| (iii) | Total Trackage | - | 1,21,407 |
| The following works were carried out during 2016-17 | | | |
| (i) | Track renewal | - | 2487 |
| (ii) | Construction of New Line | - | 953.20 |
| (iii) | Gauge conversion from MG/NG to BG | - | 1020 |
| (iv) | Track conversion from single to double line | - | 882 |

New Lines:

During 2016-17, passenger train services were introduced on 953 Kms. of new lines on the following projects/sections:-

| Railway | Section | Km. |
|-----------------------------|--|------------|
| Central | Lonad-Phaltan | 27 |
| | Ahmednagar-Narayandoh | 12 |
| Eastern | Banka-Chandan | 40.36 |
| | Bye Pass Line Jamalpur | 0.85 |
| | Barapalasi-Hansdiha | 28.5 |
| East Central | Hazaribagh-Barkakana | 57 |
| | Jamalpur-Munger-Sabdapur-Sahibpur Kamal + Sabdalpur-Umaheshnagar | 22.89 |
| East Coast | Rajsunakhala-Bolagarh | 13 |
| Northern | Jind-Sonipat | 80 |
| North Central/ West Central | Tikamgarh-Mawai- Chhatarpur-Khajuraho | 114 |
| Northeast Frontier | Etawah-Mainpuri | 58 |
| | New Maynaguri-New Domohani – Y Connection | 6 |
| | Agartala-Udaipur | 44 |
| | Jiribam-Vangaichungpas | 12 |
| South Central | Yerraguntla-Nossam-Banagana Palli | 45 |
| | Banagana Palli-Nandyal | 28 |
| | Lingampet Jagtiyal-Mortad | 51 |
| | Devarkadra-Jaklair | 28 |
| | Morthad-Nizamabad | 45.6 |

| Railway | Section | Km. |
|----------------|--------------------------------|--------------|
| South Eastern | Barkichampi-Tori | 30 |
| South Western | Rayadurga-Kalyandurg | 40 |
| | Kadiridevarapalli-Kalyandurga | 23 |
| | Ginigera-Chikkabenakal | 27 |
| | Nelamangala- Shraavanabelagola | 111 |
| Western | Rau-Tihi | 9 |
| | Total | 953.2 |

Gauge Conversion:

During 2016-17, 1020 Kms of track was converted from MG/NG to BG and passenger train services were introduced as detailed below:-

| Railway | Section | Km. |
|--------------------|--|-----------------------|
| East Central | Banmakhi-Purnia | 37 |
| North Eastern | Bhojipura-Pilibhit | 40 |
| | Chhapra-Masrakh | 40 |
| | Ramganga-Bareilly City | 9 |
| | Thawe-Masrakh | 63.5 |
| | Pilibhit-Majhola Pakariya | 25.5 |
| Northeast Frontier | Kumarghat-Agartala | 109 |
| | Badarpur-Kumarghat | 118 |
| | Arunachal-Jiribam | 50 |
| | Katakhal-Bhairabi | 84 |
| | Karimganj-Maihshashan | 10 |
| | Baraigram-Dullabcherra | 29 |
| | North Western | Suratpura-Hanumangarh |
| | Ratangarh-Sardarshahar | 47 |
| | Sikar-Fatehpur Shekhawat | 47 |
| Southern | Sengottai-Aryankavu | 20 |
| South East Central | Jabalpur(Kachhpura)-Garha-Sukrimangela-Nainpur | 44 |
| | Sukrimangela-Ghunsore | 36 |
| Southern (ERS) | Punalur-Edamann | 8 |
| Western | Indore -Mhow | 23 |
| | Dhowas Loop | 6 |
| | Total | 1020 |

Doubling:

During 2016-17, 882 Kms. of double/multiple lines track were completed and passenger train services were introduced as detailed below:-

| Railway | Section | Km. |
|---------------------|----------------------------------|------------|
| Central | Mohol-Vakav | 23 |
| | Nagothane-Roha | 13 |
| Eastern | Sagardighi-Gosaingram | 13.25 |
| | Mathurapur Rd-Lakshmikantapur | 7.92 |
| | Jiaganj-Cossimbazar | 14.3 |
| | Azimganj-Poradanga | 3 |
| | Azimganj-Gosaingram-Sagardighi | 3.4 |
| | Lebutala-Champapukur | 18 |
| East Central | Gauchari-Pasrah-Narainpur | 20 |
| | Hajipur-Goshwar | 5.5 |
| | Cossimbazar-Beldanga | 22 |
| | Sasaram – Durgawati (Dn line) | 56 |
| East Coast | Jakhpura-Haridaspur 3rd line | 24.17 |
| | Jagdapur-Tokopal | 17 |
| | Radhakishorepur-Machhapur | 2.1 |
| | Ghantikal-Chuvanga garh | 13 |
| | Sargipalli-Handapa | 14 |
| Northern | Bhadohi-Mondh-Suriawan | 15.33 |
| | Shivnagar-Adinpur | 18.5 |
| | Kotfateh- Bhatinda | 16 |
| | Lohta-Chokhandi-Sewapuri | 17 |
| | Asaoti-Ballabgarh | 10 |
| North Eastern | Aunrihar-Sarnath | 24 |
| Northeast Frontier | New Alipurduar-Samuktala Rd | 11 |
| | Gumanihat-Ghoksadanga | 8 |
| North Western | Marwar-Sojat | 21 |
| North Western/ RVNL | Rewari-Kosli | 28 |
| Southern | Tiruchchirappalli Jn-Manaparai | 28.26 |
| | Dindigul-Tamaraipadi | 8 |
| | Mathur-Ariyalur | 26 |
| | Tiruvalla-Chenganur | 10 |
| | Piravam Rd-Kurupuntara | 12.96 |
| | Villupuram-Tiruvannainallur Road | 16 |
| | Ennore-Korukkupet 4th line | 7 |
| | Tiruvallur-Tiruvalagadu | 17 |
| South Eastern | Manoharpur-Posoita | 11.6 |
| | Pandrasali-Jhinkpani | 25 |
| | Sini-Gamharia | 16 |
| South Central | Mntralayam Road-Mtmari | 10 |

| Railway | Section | Km. |
|--------------------|------------------------------|---------------|
| South East Central | Silyari-Urkura | 18 |
| | Harri-Pendra | 9 |
| | Salka Road-Tenganmada | 17.5 |
| Southern (ERS) | Tiruvalla-Changanacherry | 8 |
| Southern/RVNL | Vriddhachalam-Mathur | 28 |
| South Western | Kambarganvi-Alnavar | 11.57 |
| | Bannikoppa-Banapur | 11 |
| Western | Bardoli-Chaltan | 16 |
| | Chichpada-Khanbara-Nandurbar | 41 |
| | Vasadva-Dharangdhra | 15 |
| | Indore-Rau | 12 |
| West Central | Mandi-Bamora-Bina | 17.4 |
| | Sorai-Vidisha | 5.6 |
| | Guna-Ruthiyai | 21 |
| | Keshavpur-Mahisadal | 8 |
| West Central/ RVNL | Diwanganj-Salamtpur | 9.57 |
| | Salamtpur-Sanchi | |
| | Total | 881.86 |

Gauge-wise Details:

Broad gauge, though forming 91.56% of the route, generated 100% of the freight output (NTKms) and 99.22% of the passenger output (Pkms).

Route length as on 31.03.2017 on each gauge, indicating double/multiple line, single line and electrified route, is given below:

| Gauge | Single line | | | Double/multiple line | | | Grand Total |
|-----------------------|--------------------|------------------------|------------------|-----------------------------|------------------------|------------------|--------------------|
| | Electrified | Non electrified | Total | Electrified | Non electrified | Total | |
| Broad (1676 mm) | 7,190.49 | 32,468.77 | 39,659.26 | 18,176.79 | 3,844.18 | 22,020.97 | 61,680.23 |
| Metre (1000 mm) | 0 | 3,479.13 | 3,479.13 | 0 | 0 | 0 | 3,479.13 |
| Narrow (762mm/610 mm) | 0 | 2,208.46 | 2,208.46 | 0 | 0 | 0 | 2,208.46 |
| Total | 7,190.49 | 38,156.36 | 45,346.85 | 18,176.79 | 18,176.79 | 22,020.97 | 67,367.82 |

Almost all Double/Multiple Track sections and Electrified Routes are Broad Gauge. Metre and Narrow Gauges are mostly single line and non-electrified. Between 1950-51 and 2016-17, traffic density (million GTKms. per running track km.) increased from 4.29 to 22.00 on BG.

Track Renewal and Maintenance:

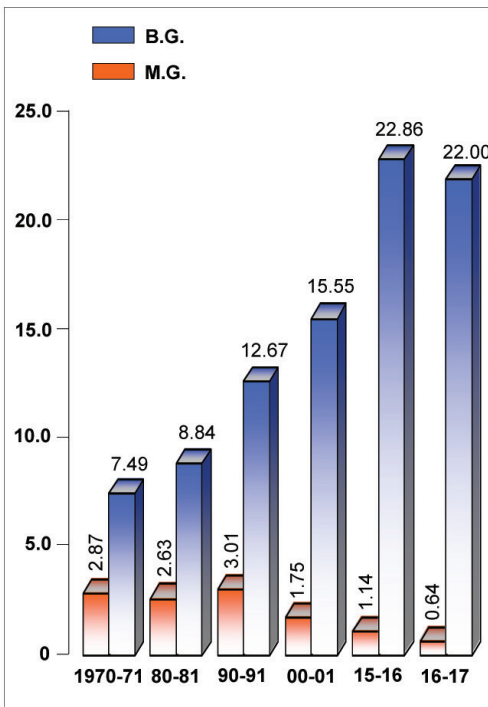
During 2016-17, 2487 kms of track renewal was carried out. The year wise details of Track Renewals done and expenditure incurred thereon are as under:

| Year | Gross expenditure (₹ in cr.) | Track Renewal done (kms.) |
|----------------|---------------------------------|------------------------------|
| 2014-15 | 5371.55 | 2424 |
| 2015-16 | 5586.03 | 2794 |
| 2016-17 | 6397.97 | 2487 |

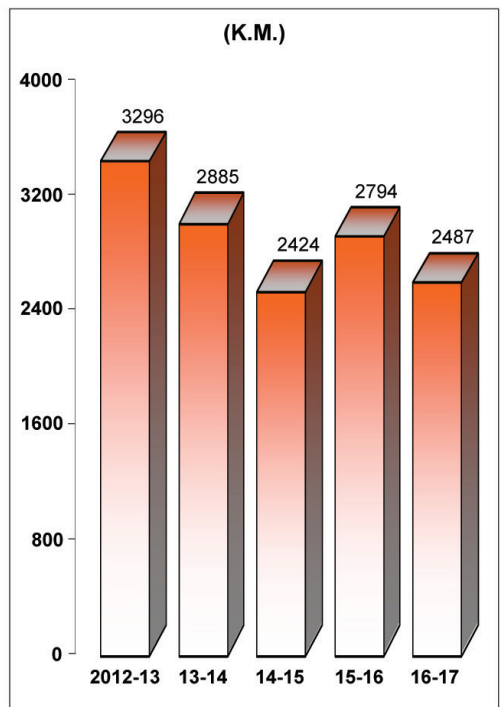
Track Upgradation:

The track constitutes the basic infrastructure of a railway system and bears the burden of coping with ever increasing traffic. Higher speed and heavy axle load operation of IR has necessitated up-gradation of the track structure. Several policy initiatives have been taken in order to modernize the track.

TRAFFIC DENSITY
MILLION GTKMS
PER RUNNING TRACK KM



TRACK RENEWALS
PER ANNUM
(K.M.)



Track structure is upgraded at the time of renewals. Sleepers are being upgraded from wooden, steel and CST-9 to PSC sleepers. Heavier section and high tensile strength 52kg/60kg 90UTS rails are used in place of 90R/52kg 72UTS rails. Similarly, long rail panels or welded rails are predominantly used in place of earlier fish plated joints. The sturdier turnouts using thick web switches is gradually introduced on trunk routes and high density routes. As on 31.03.2017, on BG main lines of IR, about 89.79% of the length is covered by long welded rails, 99.03% with PSC sleepers and 95.67% with 52kg/60kg 90 or higher UTS rails.

Welded Rails:

On most of BG track, rails have been converted into long welded rails. Short-welded rails of 39m length and single rails are limited to locations, where welded rails are not permitted on technical grounds. As on 31.03.2017, track of 76,791 km length on main lines of Indian Railways was with long welded rails and 9,956 km length of track on main lines was with short-welded rails.

Concrete Sleepers:

Concrete sleepers are economical and functionally best suited for high speed and heavy density traffic. Adequate capacity has been developed for production of concrete sleepers to meet the present requirement of IR and only concrete sleepers are being used for all renewals, new lines, doubling, gauge conversion etc.

Bridges:

As on 01.04.2017, IR has 1,44,698 bridges out of which 680 are important, 11,915 are major and 1,32,103 are minor bridges. In the year 2016-17, 753 bridges were strengthened/ rehabilitated/rebuilt.

Road Over/ Under Bridges:

To improve safety of train operation and reduce inconvenience to road users, level crossings are being replaced by Road Over/Under Bridges/ Subways (ROBs/RUBs) in a phased manner based on the quantum of traffic.

There are 2207 of sanctioned works of ROBs/RUBs appearing in Pink Book 2017-18 which contains 1670 ROBs and 6213 RUBs/Subways. These are at various stages of planning, estimation and execution.

During the year 2016-17, 171 ROBs and 1183 RUBs/subways have been constructed under cost sharing, railway cost/accommodation works, Deposit/BOT term and by NHAI over Indian Railway.

Level Crossings:

Level crossings are meant to facilitate the smooth running of traffic in regulated manner governed by specific rules & conditions. Status of level crossings on IR as on 01.04.2017 is as under:

| | | | |
|------------------------------------|---|--------|-------|
| Total number of level crossings | : | 27,181 | |
| Number of manned level crossings | : | 19,480 | (72%) |
| Number of unmanned level crossings | : | 7,701 | (28%) |

Indian Railway has decided to progressively eliminate the level crossings for the safety of road users and train passengers. During the year 2016-17, 1503 Nos. of unmanned level crossings and 509 Nos. of manned level crossings have been eliminated.

Land Management:

As on 31.03.2017 Indian Railways (IR) owns about 4.76 lakh hectares of land. About 90% of this land is under Railways' operational and allied usages such as laying of new lines, doubling, gauge conversions, track, stations, workshops, staff colonies etc. The break-up of the land is as under:-

| Description | Area (in lakh hectares) |
|--|----------------------------|
| Tracks and structures including Stations, colonies, etc. | 3.66 |
| Afforestation | 0.41 |
| 'Grow More Food' scheme | 0.03 |
| Commercial Licensing | 0.04 |
| Other uses like pisciculture | 0.09 |
| Encroachment | 0.01 |
| Vacant land | 0.52 |
| Total | 4.76 |

Creation of various infrastructure facilities for development of future rail network largely depends on the availability of land. Therefore, preservation and meaningful interim use of Railway land is the main objective of IR land-use policy.

During 2016-17, Railway did mass plantation of 1.25 crores trees. Now, Railway has finalized a model agreement with Ministry of Environment & Forest to be entered by Zonal Railways with State Forest Department, to protect Railway land being declared as protected forest by Forest Department. Moreover, now instructions have been issued to all Zonal Railways to make

provision of 1% in all estimates to environment related matter. This will help in meeting the cost of plantation.

Besides, Railway land is also licensed to Railway employees belonging to Group 'C' and 'D' category under 'Grow More Food' scheme, for growing vegetables, crops etc.

Licensing of railway land is permitted for the purposes directly connected with railway working. Plots of railway land at stations goods sheds and sidings are licensed to other parties for stacking/storing of goods either received or to be dispatched by rail. Railway land is also leased to Kendriya Vidyalaya Sangathan to open the Kendriya Vidyalayas. Apart from this, land is also leased to Central/State Governments/Public Sector Undertakings on long term basis for public utility purpose like ROB/RUB, construction/widening of roads etc.

Railways have also taken up commercial use of such land which may not be required by the Railways for its immediate future use. Through an amendment to Railways Act, 1989, Rail Land Development Authority (RLDA), under the Ministry of Railways has been constituted on 1st November 2006 to undertake all tasks related to commercial development on railway land/ air-space under the control of Ministry of Railways. At present, 49 sites have been entrusted to RLDA, for commercial development.

Necessary action for development of these sites is under process by RLDA. Besides, commercial development of vacant Railway land, RLDA has also been assigned the task of development of Multi Functional Complexes (MFCs).



Goods Train Crossing Kali Bridge near Karwar Station at Karnataka KRCL