

Track and Bridges

As on 31.03.2011, the route length of Indian Railways covered 64,460 kms. with running track length of 87,040 kms. The total trackage including yards, sidings etc. stood at 113,993 kms. The table below shows the changing size of IR's rail network over the years.

Year	Route kms.		Running track kms.		Total track kms.#	
	Electrified	Total	Electrified	Total	Electrified	Total
1950-51	388	53,596	937	59,315	1,253	77,609
1960-61	748	56,247	1,752	63,602	2,259	83,706
1970-71	3,706	59,790	7,447	71,669	9,586	98,546
1980-81	5,345	61,240	10,474	75,860	13,448	104,480
1990-91	9,968	62,367	18,954	78,607	25,305	108,858
2000-01	14,856	63,028	27,937	81,865	36,950	108,706
2007-08	18,274	63,273	34,700	85,158	47,296	111,599
2008-09	18,559	64,015	35,471	86,937	47,862	113,115
2009-10	18,927	63,974	35,811	87,087	48,639	113,617
2010-11	19,607	64,460	36,000	87,040	49,489	113,993

Includes track in yards, sidings, crossings at stations, etc.



A view of train passing through a railway bridge on Jammu-Srinagar section.

State-wise Route kms:

Following table shows route kms. of railway lines across various States/Union Territories at the end of 2010-11.

State/Union Territory	Route kms.	State/Union Territory	Route kms.
Andhra Pradesh	5,264	Mizoram	2
Arunachal Pradesh	1	Nagaland	13
Assam	2,434	Odisha	2,461
Bihar	3,612	Punjab	2,134
Chhatisgarh	1,187	Rajasthan	5,784
Delhi	183	Tamil Nadu	4,062
Goa	69	Tripura	151
Gujarat	5,271	Uttarakhand	345
Haryana	1,540	Uttar Pradesh	8,763
Himachal Pradesh	296	West Bengal	3,937
Jammu & Kashmir	256		
Jharkhand	1,984		
Karnataka	3,073		
Kerala	1,050	Union Territory	
Madhya Pradesh	4,955	Chandigarh	16
Maharashtra	5,602	Pondicherry	11
Manipur	1		
		Total	64,460

Note: The remaining States/Union Territories have no railway line.

New Lines:

During 2010-11, 709 kms. of new lines were constructed as indicated below:

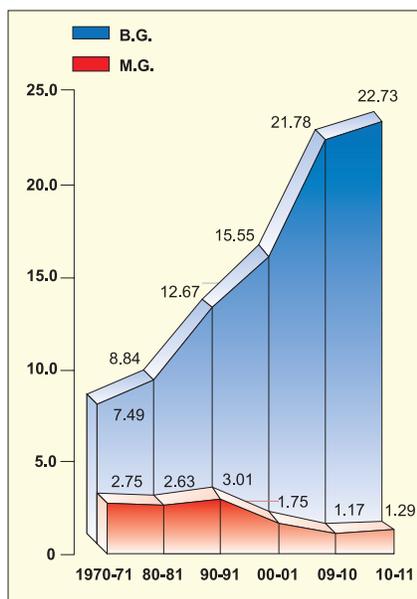
Railway	Section	Length (kms.)
Central	Chandurbazar-Narkhed of Amravati-Narkhed	85
	Lonand-Phaltan of Lonand-Baramati	27
Eastern	Tarakeshwar-Bishnupur	17
	Deogarh-Dumka	67
	Deogarh-Chandan	15
	Rampurhat-Pirargarhia	17
East Central	Mandarhil-Kumradol of Mandarhil-Hansdiha project	18
	Barkakhana-Kuju	15
	Phulwarisharif-Patliputra (6 km) of	6
	Patna-Ganga Bridge	
Northern	Nawadih- Dhanwar (15 km) of Giridih-Koderma	15
	Abohar-Fazilka	42
	Taran Taran-Goindwal	21
North Central	Jhajjar-Rohtak of Rewari-Rohtak	30
	Agra-Fatahabad of Agra-Etawah (110 km)	35
North Frontier	Part of New Coochbehar-Golakganj	37
North Western	Ajmer-Pushkar	31
Southern	Nagore-Karaikkal	10
	Salem-Namakkal of Salem-Karur (51 km)	51
South Central	Gadwal-Pandurangswami	36
	Khanapur-Homnabad	38
	Jagityal-Metpalli	30
	Vishnupuram-Jahanpad	11
South Western	Kadur-Kanvihalli (32 km)	16
RVNL	Ramganjmandi-Jhalawar	30
	Venkatachallam-Kommarapudi	9
	Total	709

Gauge Conversion:

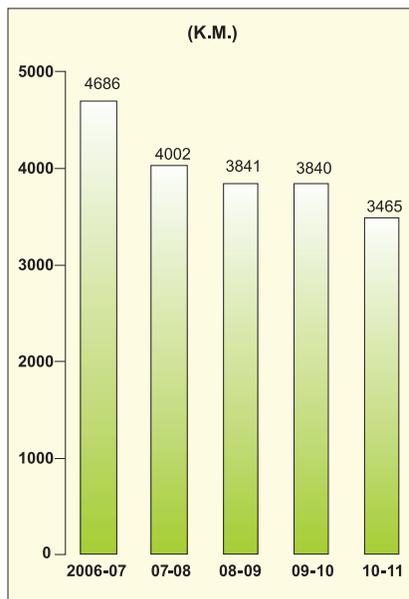
During 2010-11, 837 kms. of track has been converted from MG/NG to BG on the following sections:

Railway	Project/Sections	Length(in kms.)
Eastern	Krishnanagar-Shantipur	15
	Bardhaman-Balgona	25
East Central	Sitamarhi-Bargania	28
East Coast	Parikimindi-Gunupur of Naupada-Gunupur	45
North Central	Mathura-Achnera	35
North Eastern	Aunrihar-Jaunpur	70
	Kaptanganj-Thawe	100
North Frontier	Katihar-Manihari	24
	Aluabari-Siliguri	76
North Western	Mavli-Nathdwara	16
	Ratangarh-Bikaner	141
Southern	Dindigul-Palani	58
	Tirunelveli-Tenkasi	72
South Western	Anandpuram- Talguppa	40
Western	Bodeli-Chhotaudepur	30
RVNL	Bharuch-Samni-Dahej (Part)	62
Total		837

TRAFFIC DENSITY
MILLION GTKMS
PER RUNNING TRACK KM



TRACK RENEWALS
PER ANNUM
(K.M.)



Doubling:

During 2010-11, 769 kms. of track has been doubled from single line to double line.

Gauge-wise Details:

Broad gauge, though forming 85.6% of the route, generated 99.9% of the freight output (NTKms) and 97.9 % of the passenger output (Pkms).

Route length as on 31.03.2011 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)	5,242	30,723	35,965	14,365	4,858	19,223	55,188
Metre (1000 mm)	-	6,809	6,809	-	-	-	6,809
Narrow (762mm/610 mm)	-	2,463	2,463	-	-	-	2,463
Total	5,242	39,995	45,237	14,365	4,858	19,223	64,460

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 2010-11, traffic density (million GTKms. per running track km.) increased from 4.29 to 22.73 on BG.

Track Renewal and Maintenance:

During 2010-11, 3,465 kms. of track renewal was carried out. The year-wise details of track renewals done and expenditures incurred thereon during XIth Plan are as under:

XIth Plan	Gross expenditure (₹ in crore)	Track Renewal done (Kms.)
2008-09	5,248.99	3,841
2009-10	4,105.60	3,840
2010-11	4,984.53(P)	3,465

IR is working towards progressive mechanization. Induction of high output tamping machines for packing of plain track as well as turnouts, ballast cleaning machines and shoulder ballast cleaning machines for improving drainage of track, dynamic track stabilizer for controlled consolidation of newly laid/maintained track, point and crossing changing machines for laying concrete sleeper turnouts, etc. is a step in this direction. During 2010-11, 29 track machines were procured taking the total at the end of the year to 616. Track recording cars are deployed for electronic monitoring of track parameters at periodic intervals to enable planning of maintenance. As on 31.3.2011, IR has 6 track recording cars. During 2010-11, a total of 1,56,870 kms. recording was carried out.

Track Upgradation:

Track constitutes the basic infrastructure of a railway system and bears the burden of coping with ever increasing traffic. High speed and heavy axle load operation on IR has necessitated upgradation of the track structure. Several policy initiatives have been taken to modernize the track.

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 rails are being used. Presently, 52 kg/60 kg 90 UTS rails are being used in place of 90R/52 kg 72 UTS rails. Similarly, long rail panels or welded rails are predominantly used in place of earlier fish plated joints. As on 31.3.2011, on BG main lines of IR, about 87.38% of the length is covered by long welded rails, 97% with PSC sleepers and 89.3% with 52 kg/60 kg 90 or higher UTS rails.

Welded Rails:

On most of BG track, rails have been converted into long welded rails and short welded rails of 39m length. Single rails are limited to locations where welded rails are not permitted on technical grounds. As on 31.3.2011, total length of welded track

on main lines of IR was 78,181 kms. of which 65,957 kms. was with long welded rails and 12,224 kms. with short-welded rails.

Concrete Sleepers:

Concrete sleepers are economical and technically 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. During the year, about 75.73 lakh Broad Gauge mono-block concrete sleepers and 6,473 sets of PSC turnout sleepers were produced.

Bridges:

IR has 1,33,160 bridges, out of which 720 are important, 10,828 are major and 1,21,612 are minor bridges. In 2010-11, 1,197 bridges including 16 distressed bridges were rehabilitated/rebuilt.

Road Over/Under Bridges:

To improve the safety and reduce inconvenience to road users, busy level crossings are being replaced by Road Over/Under Bridges (ROBs/RUBs) gradually. The works of ROBs/RUBs in lieu of busy level crossings are sanctioned on cost sharing basis with the concerned State Governments/Local Authorities.

As on 31st March, 2011 there are total 951 ROBs/RUBs sanctioned on cost sharing basis. These are at various stages of planning and execution. 67 ROBs/RUBs were completed during 2010-11.

Level crossings:

As on March 31, 2011, IR maintained 32,735 level crossings, out of which 17,839 had gate-keepers and 14,896 crossings were unmanned. In 2010-11, 434 unmanned level crossings were provided with gate keepers. And during 2011-12, total 187 unmanned gates have been provided with gatekeepers till June, 2011.

Land Management:

IR owns about 4.59 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)
Track and structures including stations, colonies, etc.	3.61
Afforestation	0.48
'Grow More Food' scheme	0.04
Commercial licensing	0.04
Other uses like pisciculture	0.03
Encroachment	0.01
Vacant land	0.38
Total	4.59

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's land-use policy.

In pursuance of Railways' commitment towards environmental improvement through afforestation and also with a view to safeguarding the precious railway land against unauthorized occupation, tree plantation is being undertaken on vacant railway land with active participation of railway employees. In some States, railway land in mid-sections has been entrusted to the Forest Departments for plantation so as to ensure purposeful utilization and prevention against encroachments.

Besides, railway land is also licensed to railway employee belonging to Group 'C' and 'D' category and weaker section 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 licensed to schools, welfare organizations and for developing shopping complexes in railway colonies for the welfare of railway employees. Apart from this, sharable railway land is licensed to Oil Companies for setting up retail outlets and is also leased to Central/State Governments/Public Sector Undertakings on long term basis.

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. So far, 135 sites have been entrusted to the Authority for commercial development.