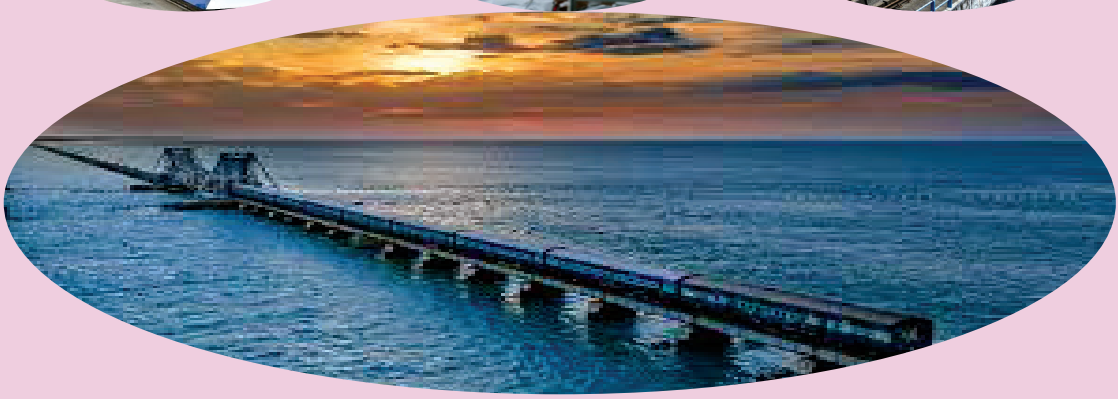
INDIAN RAILWAYS YEAR BOOK 2020 - 21



Azadi Ka Amrit Mahotsav

सत्यमेव जयते

Bharat Sarkar
Government of India
Rail Mantralaya
Ministry of Railways
(Railway Board)

INDIAN RAILWAYS

YEAR BOOK
2020-21

सत्यमेव जयते

BHARAT SARKAR
GOVERNMENT OF INDIA
RAIL MANTRALAYA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

Contents

Key Statistics

	Unit	2019-20	2020-21
PLANT & EQUIPMENT:			
Capital Investment	₹ in crore	@3,74,591.87	**#3,87,689.69**
Total Investment	"	6,40,408.27	**6,70,725.28**
Route Length	Kms.	67,956	**68,103**
Locomotives	Nos.	12,729	**12,734**
Passenger Service Vehicles	"	*70,378	**71,733**
Other Coaching Vehicles	"	*6,611	**8,102**
Wagons	"	*2,93,011	**3,02,624**
Railway Stations	"	7,325	**7,337**
OPERATION:			
Passenger: Train kms.	Millions	*770	**245**
Vehicle kms.	"	*26,398	**8,114**
Freight: Train kms.	"	397	**418**
Wagon kms.	"	18,846	**19,020**
VOLUME OF TRAFFIC:			
Passengers Originating	Millions	8,086	**1,250**
Passenger kms.	"	10,50,738	**2,31,126**
Tonnes Originating:$			
Revenue Earning Traffic	"	1,208.41	**1,230.94**
Total Traffic (incl. non-revenue)	"	1,212.22	**1,233.85**
Net Tonne kms.$			
Revenue Earning Traffic	"	7,07,665	**7,19,762**
Total Traffic (incl. non-revenue)	"	7,08,034	**7,20,054**
EMPLOYMENT AND WAGES:			
Regular Employees	Thousands	1,254	**1,252**
Wage Bill of Regular Employees	₹ in crore	1,56,243.06	**1,56,730.39**
Average Annual Wage Per Regular Employee	₹ in units	12,45,328	**12,49,755**
FINANCIAL RESULTS:			
Revenue	₹ in crore	1,74,356.60	**1,40,570.52**
Expenses	"	1,71,319.21	**1,36,567.51**
Miscellaneous Transactions	"	-1,447.77	**-1,455.63**
Net Revenue (before dividend)	"	1,589.62	**2,547.48**
Rate of Return on Capital	Percent	0.42	**0.66**
Dividend on Capital **	₹ in crore	0	**0**
Shortfall(-)/Excess(+)	"	1,589.62	**2,547.48**

@ Includes investment (₹ 53,449.91 crore) from Capital Fund.
# Includes investment (₹ 53,449.91 crore) from Capital Fund.
$ Excludes Konkan Railway.
* Revised
** No dividend were payble during 2019-20 and 2020-21

Other Important Statistics

S.No.	Item	Unit	2019-20	2020-21
I	**Rail Network**			
1	Route Kilometres			
	(i) BG	Kms.	63,950	**64,403**
	(ii) MG	"	2,402	**2,112**
	(iii) NG	"	1,604	**1,588**
	Total (all gauges)	"	67,956	**68,103**
2	Running Track Kilometres (Total all gauges)	"	99,235	**1,00,866**
3	Total Track Kilometres (Total all gauges)	"	1,26,366	**1,26,611**
4	Electrified Route Kilometre (Total all gauges)	"	39,329	**44,802**
II	**Rolling stock**			
1	Number of Locomotives	(in units)		
	(i) Steam	"	39	**39**
	(ii) Diesel	"	5,898	**5,108**
	(iii) Electric	"	6,792	**7,587**
	Total	"	12,729	**12,734**
2	Number of Wagons	"	*2,93,011	**3,02,624**
3	Number of Coaches-	(in units)		
	(i) Passenger Carriages (including DEMU/ DHMU)	"	58,853	**60,725**
	(ii) Other Coaching Vehicles	"	*6,611	**8,102**
	(iii) EMU and MEMU Coaches	"	*11,439	**10,991**
	(iv) Rail Cars	"	23	**17**
	Total	"	76,989	**79,835**
III	**Loco Utilisation**			
1	Tractive effort per loco			
	(i) BG	Kgs.	39,037	**39,911**
	(ii) MG	"	16,454	**16,439**
2	GTKMs (excl. wt. of engine & dept.) per kg. of tractive effort.			
	(i) BG	Kms.	3,699	**2,713**
	(ii) MG	"	316	**25**
3	Engine kilometres per day per engine in use (Pass.) (B.G)			
	(i) Diesel	Kms.	559	**936**
	(ii) Electric	"	593	**658**

S.No.	Item	Unit	2019-20	2020-21
4	Engine kilometres per day per engine in use (Goods)(B.G)			
	(i) Diesel	Kms.	380	**420**
	(ii) Electric	"	336	**524**
5	NTKMs per engine hour (BG) All traction		*14,287	**13,881**
6	Ineffective percentage of locomotives (B.G)	Percent		
	(i) Diesel	"	8.19	**9.77**
	(ii) Electric	"	6.99	**7.35**
IV	**Wagon Utilisation**			
1	Wagon KMs in terms of 8 wheelers	Million	18,846	**17,302**
2	Total Carrying Capacity (All Gauges)	Million Tonnes	*17.43	**17.82**
3	Average carrying capacity - wagon	Tonnes		
	BG	"	62.83	**62.27**
	MG	"	*31.20	**33.29**
4	Wagon Turn Round (in days) (BG)	Days	5.30	**5.43**
5	Wagon Kms. per wagon per day (BG)	Kms	188.7	**181.5**
6	NTKMs per wagon per day (BG)	Kms	7,057	**6,861**
7	Ineffective percentage of wagons (B.G)	%age	3.07	**4.52**
V	**Coach Utilisation**			
1	Vehicle Kms(Excluding Deptt../Rail Car etc.)	Millions		
	(i) Suburban (EMU)	"	2,102	**880**
	(ii) Non Suburban	"	24,295	**7,234**
	Total	"	26,397	**8,114**
2	Vehicle Kms per vehicle day (B.G)	Kms.	534	**185**
3	Ineffective percentage of coaches(B.G) (Passenger Carriage)	Percent	6.13	**6.17**
VI	**Train Utilisation**			
a.	**Passenger Train Performance**			
1	Number of Passenger trains runs daily	Nos.	13,169	**2,140**
2	Passenger Train Kms	Millions	769	**245**
b.	**Goods Train Performance**			
1	Number of Goods trains runs daily	Nos.	8,479	**8,021**
2	Goods Train Kms.	Millions	397	**418**
3	Average Speed of All Goods Train (B.G.)			
	(i) Diesel	Kms./ Hour	23.4	**40.6**
	(ii) Electric	"	25.4	**45.8**
	(iii) All Traction	"	23.6	**43.2**
4	Average Net load of Goods train (B.G) (All traction)	Tonnes	1,763	**1,738**

S.No.	Item	Unit	2019-20	2020-21
5	Average Gross load of Goods train (B.G)(All traction)	Tonnes	3,025	**2,925**
VII	**Volume of traffic**			
a.	**Passenger Traffic (Suburban + Non-Suburban)**			
1	Passenger Originating	Millions	8,086	**1,250**
2	Passenger Kilometres	Millions	10,50,738	**2,31,126**
3	Average Lead	Kms.	129.9	**184.8**
4	Passenger Earnings	₹ in crores	*50,669.09	**15,248.49**
5	Average rate per PKMs	Paise	48.22	**65.97**
	Number of Passenger carried per day	Millions	22.15	**3.42**
b.	**Freight Traffic (Revenue)**			
1	Tonnes originating	Millions	1,208.41	**1,230.94**
2	Lead (originating)	Kms.	586	**585**
3	Freight Earnings excl. Demurrarge/Wharfage	₹ in crores	1,11,472.30	**1,15,738.38**
4	Frieght NTKMs	Millions	7,07,665	**7,19,762**
5	Average rate per NTKMs	Paise	157.52	**160.80**
6	Earnings per million tonne	₹ in crores	92.25	**94.02**
7	Freight carried per day (including non-revenue)	Millions Tonnes	3.32	**3.38**
VIII	**Train Accidents (Excl. KRCL)**	Nos.	54	**21**
1	Collisions	"	5	**0**
2	Derailment	"	40	**16**
3	Level Crossing	"	1	**1**
4	Fire in trains	"	7	**3**
5	Miscellaneous	"	1	**0**
6	Accident per million train kms		0.05	**0.03**
IX	**Density**			
1	Net Tonne Kms per route Km. (BG)	Km.	11.07	**11.18**
2	Passenger Kms per route Km. (BG)	"	16.42	**3.59**
3	Gross Tonne Kms per route Km. (BG)	"	32.05	**23.17**
X	**Comsumption of Fuel/Energy by Locomotive**			
	(i) Diesel	Million litres	2,379.87	**954.16**
	(ii) Electric	Million KWH	18,409.90	**14,092.42**
	* revised			

Some Selected Financial Ratio

S. No.	Item	Unit	2019-20	2020-21
(A)	**Financial Ratios**			
1.	Operating ratio	%age	98.36	**97.45**
2.	Rate of return on Capital	%age	0.42	**0.66**
3.	Working ratio of IR	%age	91.9	**88.5**
4.	Operating ratio with subsidy (Cost recovery)	%age	74.22	**66.5**
5.	Operating ratio for Coaching (passenger) and Goods (Freight)			
	i. Goods	%age	73.11	**83.20**
	ii. Coaching	%age	207.84	**454.68**
6.	Debt Servicing as percentage of OWE and as a percentage of Gross receipts.			
	i. Debt servicing as percentage of OWE	%age	13.9	**17.6**
	ii. Debt servicing as percentage of Gross Receipts	%age	11.9	**17.0**
7.	Capex to Revenue ratio – Capex (from internal generation) /Revenue	%age	1.0	**1.5**
(B)	**Earning/ Yield Ratios (Based on Apportion Earning)**			
8.	Passenger yield/ PKMs	In Paise	48.22	**65.97**
9.	Freight yield/NTKMs	In Paise	157.52	**160.80**
	Productivity index			
	i. Employee Productivity		6,24,315	**5,90,282**
	ii. Infrastructure Productivity		61,93,414	**58,38,651**
(C)	**Asset Utilization**			
10.	Utilization of Assets			
	i. NTKMs per wagon per day -(BG)	KMs	7,057	**6,861**
	ii. Wagon KMs per Wagon day -(BG)	KMs	188.7	**181.5**
	iii. Wagon turn around - BG	In days	5.30	**5.43**
	iv. Average Load per Wagon - BG	Tonnes	61.30	**68.8**
(D)	**Operating Indices**			
11.	Average speed of Goods Train – (BG) – All traction	KM/hour	23.6	**43.2**

S. No.	Item	Unit	2019-20	2020-21
12.	Infective percentage of Rolling Stock – (BG)			
	i. Diesel Locos	%age	8.19	**9.77**
	ii. Electric Locos	%age	6.99	**7.35**
	iii. EMU Coaches	%age	12.2	**10.0**
	iv. Passenger Carriages	%age	6.14	**6.17**
	v. Other Coaching Vehicles	%age	5.08	**5.22**
	vi. Wagons	%age	3.07	**4.52**
13.	Specific Fuel Consumption (Consumption per 1000 GTKMs) – (BG)			
	i. Passenger service - Diesel	Litres	3.59	**3.31**
	ii. Goods services - Diesel	Litres	1.92	**1.92**
14.	Specific Energy Consumption (Consumption per 1000 GTKMs) – (BG)			
	i. Passenger service- Electricity	K.Wt. Hrs.	18.4	**15.6**
	ii. Goods services -Electricity	K.Wt. Hrs.	6.13	**7.09**
15.	Punctuality Index – Punctuality (M/Exp. Trains) –(BG)	%age	75.69	**94.17**
16.	Accident per Million train Kilometers		0.05	**0.03**

*revised

Front view of Yognagri Rishikesh Station, NR

Economic Review

Macroeconomic outcome

In the backdrop of an unprecedented economic crisis unleashed by the Covid pandemic, the year 2020-21 has been a challenging one indeed for the Indian economy. In its first wave, the pandemic's fury was at its height in Q1:2020-21. The Indian economy contracted by 24.4 percent in Q1, y-o-y, the deepest downturn amongst G20 countries. In Q2, however, the contraction started to ease at (-)7.4 percent, reflecting vigorous efforts to revive the economy, gradual relaxation of mobility restrictions, monetary and liquidity easing and fiscal support. By Q3, India had pulled out of a technical recession at 0.5 percent growth and then 1.6 percent growth in Q4, signifying a V-shape recovery continuing towards next year. Moreover, growth in capital expenditure of the Centre created conducive conditions for a modest upturn in gross capital formation after a hiatus of two quarters, pivoting overall economic activity from contraction to growth in Q3. Of course, the growth was led by private consumption expenditure. Net exports also contributed positively to aggregate demand in 2020-21, but mainly on account of the higher contraction in imports relative to exports.

As the pandemic played havoc around the globe, the World Economic Outlook (WEO) of IMF, April 2021 expressed its concern. It estimated the contraction of growth in the global economy to the extent of (-)3.3 percent in 2020, followed by projection of 6 percent growth in 2021 and then moderating to 4.4 percent in 2022. According to it, the contraction could have been three times as large if not for extraordinary policy support and much remains to be done to beat back the pandemic and avoid divergence in income per capita across economies and persistent increases in inequality within countries. Beyond 2022 global growth is projected to moderate to 3.3 percent into the medium term. Persistent damage to supply potential across both advanced and emerging market economies and slower labor force growth because of population aging (largely in advanced economies, but also in a few emerging market economies) and necessary rebalancing to a sustainable growth path in China, are all expected to weigh on the growth outlook for the global economy in the medium term. GDP levels are projected to remain well below the pre-pandemic trend path through 2024 for most countries. India's growth forecast by the IMF for 2020 were (-)8

percent for 2020, 12.5 percent in 2021and 6.9 percent in 2022. According to the WEO October 2021 forecasts, the global economy is projected to grow 5.9 percent in 2021 and 4.9 percent in 2022. The downward revision for 2021 reflected a downgrade for advanced economies, in part due to supply disruptions and for low-income developing countries, largely due to worsening pandemic dynamics. This is partially offset by stronger near-term prospects among some commodity-exporting emerging market and developing economies.The growth projections for India were also revised to (-) 7.3 percent in 2020, 9.5 percent in 2021 and 8.5 percent in 2022.

Gross Domestic Product (GDP) Growth

The National Statistical Office (NSO) of India estimated GDP at constant (2011-12) prices or real GDP in the year 2020-21 at ₹135.13 lakh crore, as against the GDP of ₹145.69 lakh crore for the year 2019-20. The growth in real GDP during 2020-21 is estimated at (-) 7.3 percent as compared to the growth rate of 4.0 percent in 2019-20 (Table 1). Earlier during the year, the Second Advance Estimates of National Income released by NSO on 26th February 2021 had estimated a growth of (-) 8.0 percent in real GDP for the year 2020-21, the first contraction since 1980-81 and the severest since national accounts have been compiled in India.

Table 1: GDP and GVA at constant price 2011-12 (In ₹ Crore)

	2016-17	2017-18 3rd RE	2018-19 2nd RE	2019-20 1st RE	2020-21 PE
GDP at constant price	12308193 (8.3)	13144582 (6.8)	14003316 (6.5)	14569268 (4.0)	**13512740 (-7.3)**
GVA at basic price	11328285 (8.0)	12034171 (6.2)	12744203 (5.9)	13271471 (4.1)	**12453430 (-6.2)**

Source: National Statistical Office (NSO), Press release dated 31st May, 2021
PE: Provisional Estimate
RE: Revised Estimate
Growth rate over previous year indicated in brackets

Real Gross Value Added (GVA) i.e GVA at basic constant (2011-12) prices for the year 2020-21, which reflects the production or supply side method of calculating GDP is estimated at ₹124.53 lakh crore (Provisional Estimates) in comparison with ₹132.71 lakh crore (First Revised Estimate) for the year 2019-20, thus registering a year-on-year growth rate of (-) 6.2 percent in 2020-21 as against 4.1 percent in the year 2019-20. The decrease in GVA in 2020-21 was mainly caused by contraction of growth in all the sectors except for agriculture, forestry & fishing and electricity, gas, water supply & other utility services.The sector which registered a growth rate in GVA of around 4.0 percent in 2020-21(PE) at constant (2011-12) prices is

only agriculture, forestry and fishing (Table 2).

Table 2: Sector-wise Growth in GVA at Basic Prices (%) at 2011-12 prices

	2018-19 (2nd RE)	2019-20 (1st RE)	2020-2021 (PE)
I. Agriculture, Forestry & Fishing	2.6	4.3	**3.6**
II. Industry			
Mining & Quarrying	0.3	-2.5	**-8.5**
Manufacturing	5.3	-2.4	**-7.2**
Electricity, Gas, Water Supply & other utility services	8.0	2.1	**1.9**
Construction	6.3	1.0	**-8.6**
III. Services			
Trade, Hotels, Transport, Communication and services related to broadcasting	7.1	6.4	**-18.2**
Financing, Real Estate & Professional Services	7.2	7.3	**-1.5**
Public Administration, defence and other services	7.4	8.3	**-4.6**
GVA at Basic Price	5.9	4.1	**-6.2**

Source: National Statistical Office (NSO), Press release dated 31st May, 2021.
PE: Provisional Estimates.

Agriculture

The growth rate in agriculture and allied sectors at 2.6 percent in 2018-19 has shown an improvement (Table-2). In 2019-20, growth rate in Agriculture and allied sector increased to 4.3 percent and thereafter it decelerated to 3.6 percent in 2020-21. As per the Fourth Advanced Estimates, the foodgrains production in 2020-21 is 308.65 million tonnes. This is higher by 11.15 million tonnes as compared to 297.50 million tonnes during last year (Table 3). All the categories of foodgrains registered an increase in production in 2020-21 over the previous year.

Table 3: Production of selected agricultural commodities (million tonnes)

Items	2016-17	2017-18	2018-19	2019-20	2020-21
Food grains	275.11	285.01	285.21	297.50	**308.65**
Wheat	98.51	99.87	103.60	107.86	**109.52**
Rice	109.70	112.76	116.48	118.87	**122.27**
Coarse Cereals	43.77	46.97	43.06	47.75	**51.15**
Pulses	23.13	25.42	22.08	23.03	**25.72**

Source: Department of Agriculture and Farmers Welfare, Fourth Advance Estimates of Production of Foodgrains for 2020-21 as on 11.08.2021.

Industry

As per the national accounts data of the NSO, Index of Industrial

Production (IIP), which broadly comprises of mining, manufacturing and electricity, was (-) 8.4 percent in 2020-21as compared to (-) 0.8 percent in 2019-20 (Table 4). Mining sector witnessed a decline in growth rate of (-) 7.8 percent in 2020-21compared to 1.6 percent in 2019-20. Manufacturing sector witnessed a decline in growth rate from (-)1.4 percent in 2019-20 to (-)9.6 percent in 2020-21and in Electricity sector, the growth rate also declined from 1.0 percent in 2019-20 to (-) 0.5 percent in 2020-21.

Table 4: Sectoral Growth Rates of Industrial Sector based on Index of Industrial Production (%)

(Base: 2011-12 = 100)

	Weight	2016- 17	2017- 18	2018-19	2019-20	2020-21
Industry Group						
General Index	100.00	4.6	4.4	3.8	-0.8	**-8.4**
Mining	14.3725	5.3	2.3	2.9	1.6	**-7.8**
Manufacturing	77.6332	4.4	4.6	3.9	-1.4	**-9.6**
Electricity	7.99432	5.8	5.4	5.2	1.0	**-0.5**

Source: National Statistical Office (NSO), Ministry of Statistics and Programme Implementation, Press release dated 11th June, 2021.
Note: Growth is over the corresponding period of previous year.

In terms of use-based classification, the growth rate of IIP for Primary goods declined from 0.7 percent in 2019-20 to (-) 7.0 percent in 2020-21. Capital goods, declined (-) 18.8 percent in the year 2020-21 against (-) 13.9 percent in 2019-20. Intermediate goods declined to (-) 9.4 percent in 2020-21 against 9.1 percent in 2019-20. Infrastructure/construction goods declined from (-) 3.6 percent in 2019-20 to (-) 8.7 percent in 2020-21. Consumer durable goods declined from (-) 8.7 percent in 2019-20 to (-) 15.2 percent in 2020-21. Consumer non-durables also declined from (-) 0.1 percent in 2019-20 to (-) 2.1 percent in 2020-21.

Infrastructure Industries

The index of 8 core infrastructure supportive industries (comprising coal, crude oil, natural gas, petroleum refinery products, fertilizers, finished carbon steel, cement and electricity) comprising weight of 40.27 percent in the weight of items included in IIP, declined from 0.4 percent in 2019-20 to (-) 6.5 percent in 2020-21. Cement, Refinery products, Steel and Natural Gas with a growth rate of (-) 11.9 percent, (-) 11.2 percent, (-) 9.0 percent and (-) 8.2 percent, respectively were the worst performing infrastructure industries in 2020-21. Crude Oil, Coal and Electricity also witnessed decrease in growth rate of (-) 5.2 percent,(-)1.9 percent and (-) 0.5 percent respectively. Fertilizers moved ahead with a growth of 1.5 percent in the year 2020-21. (Table 5).

Table 5: Growth (%) in Index of Eight Core Industries (Base: 2011-12=100)

Sectors	Weight	2016-17	2017-18	2018-19	2019-20	2020-21 (Provisional)
Coal	10.3335	3.2	2.6	7.4	-0.4	**-1.9**
Crude oil	8.9833	-2.5	-0.9	-4.1	-5.9	**-5.2**
Natural Gas	6.8768	-1.0	2.9	0.8	-5.6	**-8.2**
Refinery Products	28.0376	4.9	4.6	3.1	0.2	**-11.2**
Fertilizers	2.6276	0.2	0.03	0.3	2.7	**1.5**
Steel	17.9166	10.7	5.6	5.1	3.4	**-9.0**
Cement	5.3720	-1.2	6.3	13.3	-0.9	**-11.9**
Electricity	19.8530	5.8	5.3	5.2	0.9	**-0.5**
Overall	100.0000	4.8	4.3	4.4	0.4	**-6.5**

Source: Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, April 2021. Press release dated 31st May, 2021.

Fiscal Outcome

The major fiscal indicators of the Central Government are presented in Table 6. During the year 2019-20, the structural reforms initiated by the Central Government to boost the economic performance had fiscal implications for the economy. As a result the fiscal deficit for 2019-20 (Provisional Actual(PA), stood at 4.6 percent of GDP, which was 0.8 percentage points higher than the fiscal deficit envisaged in 2019-20 (Revised Estimates) and 1.2 percentage points higher than fiscal deficit in 2018-19. The effective Revenue Deficit which captures the shortfall in current receipts over current expenditure also increased by 1 percent of GDP to reach 3.3 percent of GDP in 2019-20 PA relative to 2018-19. The Medium Term Fiscal Policy Statement presented with Budget 2020-21 pegged the fiscal deficit target for FY 2020-21 at 3.5% of GDP, after providing adequate space for fiscal impact of the reforms adopted by the Government in FY 2019-20.

Table 6: Components of Revenue and Expenditure of the Central Government (as percent to GDP)

	2016-17	2017-18	2018-19	2019-20 (PA)	2020-21 (BE)
Revenue Receipts	9.0	8.4	8.2	8.3	9.0
Gross Tax Revenue	11.2	11.2	11.0	9.9	10.8
Total Expenditure	12.9	12.5	12.2	13.2	13.5
Revenue Expenditure	11.0	11.0	10.6	11.6	11.7
Capital Expenditure	1.9	1.5	1.6	1.7	1.8
Interest payment	3.2	3.1	3.1	3.0	3.1
Major subsidies	1.3	1.1	1.0	1.1	1.0
Revenue Deficit	2.1	2.6	2.4	3.3	2.7
Fiscal Deficit	3.5	3.5	3.4	4.6	3.5
Primary Deficit	0.4	0.4	0.4	1.6	0.4

Source: Economic Survey 2020-21.
PA: Provisional Actuals.
BE: Budget Estimates.

Inflation

Headline Wholesale Price Index (WPI) for all commodities averaged 1.67 percent in 2019-20 and softened to 1.31 percent in 2020-21. This was mainly on account of the fuel inflation, which was (-) 1.83 percent in 2019-20 declined sharply to (-) 8.02 percent in 2020-21 combined with a decrease in the inflation for primary articles from 6.78 percent in 2019-20 to 1.67 percent in 2020-21 reflecting weakening of demand pressures in the economy. However, WPI inflation in manufactured products increased from 0.34 percent in 2019-20 to 2.70 percent in 2020-21 (Table 7).

Table 7: Annual Inflation rate (%) based on WPI (Base 2011-12=100)

Items/Groups	Weight (%)	April-March (Average)	
		2019-20	2020-21
All Commodities	100	1.67	1.31
Primary articles	22.61756	6.78	1.67
Fuel and Power Group	13.15190	-1.83	-8.02
Manufactured Products	64.23054	0.34	2.70

Source: Estimated from base data released by the Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade.

Headline Inflation (Average of months April-March) measured in terms of Consumer Price Index (CPI) (Base 2012= 100), rural and urban combined, which was 3.4 percent in 2018-19 and 4.8 percent 2019-20, rose to 6.2 percent in 2020-21. The drivers of CPI headline inflation exhibited distinct shifts during 2020-21 with food group remaining the major contributor along with an increase in the contribution of transport and communication group. Food price inflation moderated during May-June 2020 with the gradual relaxation of lockdown conditions and easing supply constraints, but it picked up again during August-October 2020 as excess rains led to crop damage. Food inflation again eased sharply during November 2020-January 2021 on seasonal ebbs in key prices and as a result, food inflation, which had hovered over headline inflation during April-November 2020, trended below it from December 2020. Inflation excluding food and fuel generally remained elevated. Inflation in fuel prices remained subdued and below headline inflation throughout the year. The substantial wedge between wholesale and retail price inflation during the year pointed to persistence of supply-side bottlenecks and higher retail margins, underscoring the importance of supply management.

External Sector

Foreign Trade

The growth rate of exports in the year 2020-21 registered a decline of (-) 35.97 percent, as compared to (-) 4.98 percent growth in 2019-20. The growth rate of imports also declined in the year 2020-21 to (-) 44.47 percent as compared to (-) 7.65 percent growth in 2019-20. The trade deficit, accordingly, which was at US$ (-) 157.51 billion in 2019-20 improved to US$ (-) 60.20 billion in 2020-21 (Table 8 and 9).

According to the RBI (Bulletin June 2018 - June 2021, the oil exports registered a decline of (-) 40.23 percent as against (-) 7.79 percent growth in previous year 2019-20. The non-oil exports also witnessed a decline of (-) 2.32 percent during the year 2020-21 as against (-) 4.10 percent growth in previous year. The growth rate of oil imports also declined by (-) 36.12 percent as against growth of(-) 8.13 percent in the previous year. The non-oil imports improved by (-) 7.95 percent as against the decrease in growth rate of (-) 9.25 percent in the previous year.

Table 8: Export, Import and Trade Deficit (in US $ billion)

Item	2019-20	Growth* (%)	2020-21	Growth* (%)
Exports	320.43	-4.98	**205.17**	**(-) 35.97**
Imports	477.94	-7.65	**265.38**	**(-) 44.47**
Trade Balance#	(-) 157.51		**(-) 60.21**	

Source: RBI Annual Report dated 24th May, 2021.
Exports minus Imports
* Over the previous year

Current Account Deficit (CAD)

Table 9: Current Account Balance (in US $ billion)

Year	2016-17	2017-18	2018-19	2019-20	2020-21 (P)
Trade Balance	(-) 112.44	(-) 160.04	(-) 180.28	(-) 157.51	**(-) 60.21**
Net Invisibles	98.03	111.32	123.03	132.85	**92.55**
Current Account Balance	(-) 14.42	(-) 48.72	(-) 57.26	(-) 24.66	**32.35**
Current Account Balance as a Ratio to GDP (%)	(-) 0.6	(-) 1.8	(-) 2.1	(-) 0.9	**1.7**

Source: Annual data from 2016-17 to 2020-21 is from RBI Annual Report dated 24th May, 2021.
(P) : Provisional

Foreign Capital Inflows

Net Foreign Direct Investment (FDI) decreased by (-)5.09 percent from US$ 43.01 billion in 2019-20 to US$ 40.82 billion in 2020-21. Net Portfolio Investment increased to US$ 28.86 billion in 2020-21, as compared to US$ 1.40 billion in the year 2019-20 (Table 10).

Table 10: Net Foreign Direct Investment (FDI) and Net Portfolio Investment

(In US$ billion)

Year	Net FDI	Net Portfolio Investment
2016-17	35.61	7.61
2017-18	30.29	22.12
2018-19	30.71	-0.62
2019-20	43.01	1.40
2020-21(P)	**40.82**	**28.86**

Source: RBI Annual Report dated 24th May, 2021.
(P): Provisional

Foreign Exchange Reserves & Exchange rate

India's foreign exchange reserves were at US $ 576.98 billion at the end of March 2021 as compared to US $ 477.80 billion at the end of March 2020. The accretion to the reserves, which reached a historic high of US$ 590.3 billion at end-January, 2021 and were at US$577.0 billion at end-March, 2021, was driven by robust foreign portfolio and direct investments, and the current account surplus in H1:2020-21. In 2020-21, India's reserve accumulation was to the tune of US$ 99.2 billion (RBI Annual Report 2020-21).

Major commodities carried by Indian railways

The following table shows the percentage of total production plus imports of some of the major commodities carried by the Indian Railways during the last 5 years:

Table 11: Percentage of total production plus imports of select major commodities carried by the Indian Railways

Year	Coal	Iron Ore	Cement	Foodgrains	Fertilizers	Pol Products
2016-17	62.77	69.05	36.62	15.59	87.01	15.16
2017-18	62.83	66.53	37.43	14.97	85.46	14.87
2018-19	62.84	62.63	34.55	13.65	86.05	14.54
2019-20(R)	59.92	62.01	32.71	12.47	84.25	14.57
2020-21(P)	**58.23**	**78.57**	**40.85**	**20.19**	**84.95**	**15.54**

(P) Provisional (R) Revised
Source: Calculated on the basis of production and import data received from various Ministries and Railway loading data received from Directorate of Statistics and Economics of Ministry of Railways.

Selected Economic Indicators

The trends for the last five years (2016-17 to 2020-21) in some of the economic indices like Net National Income, Per capita Income, Capital formation in Railways, Value of Foreign Trade, Indices of Agricultural Production, Wholesale Price Index (WPI) of commodities, WPI of important commodities used by Railways and Consumer Price Index for Industrial Workers is given below in Table 12:

Table 12: SELECTED ECONOMIC INDICATORS

	ITEM		Unit / Base	2016-17	2017-18 3rd RE	2018-19 2nd RE	2019-20 1st RE	2020-21 PE
I.	**(a)**	**Net National Income**						
	(i)	At 2011-12 prices	₹ Crore	10782092	11508774	12240380	12681246	**11745872**
	(ii)	At current prices	₹ Crore	13492657	15140418	16704645	17994301	**17461759**
	(b)	**Per capita income**						
	(i)	At 2011-12 prices	(In ₹)	83003	87586	92241	94566	**86659**
	(ii)	At current prices	(In ₹)	103870	115224	125883	134186	**128829**
II.	**Gross Capital Formation**							
		Railways		2016-17	2017-18	2018-19	@2019-20	2020-21
	(i)	At 2011-12 prices	₹Crore	64226	69665	72972	81553	**NA**
	(ii)	At current prices	₹Crore	74049	83720	90294	102287	**NA**

Source: National Accounts Data, Ministry of Statistics and Program Implementation.

PE: Provisonal Estimates @ : First Revised Estimate

III.	**Foreign Trade:**							
				2016-17	2017-18	2018-19	2019-20	2020-21
	(a)	Value of exports	₹Crore	1849434	1956515	2307726	2219854	**2154339**
		Value of imports	₹Crore	2577675	3001033	3594674	3360954	**2909936**
	(b)	Value of exports	US $ Million	275852	303526	330078	313361	**291808**
		Value of imports	US $ Million	384357	465581	514078	474709	**394436**

Source: Ministry of Commerce and Industry.

IV.	**Index of Agricultural Production (Triennium ending 2007-08 =100)**							
			Weight	2016-17	2017-18	2018-19	2019-20	2020-21
	(a)	All Crops	(100.00)	132.8	139.4	138.1	145.5	**136.8**
	(b)	Foodgrains	(50.7)	131.1	136.8	134.4	139.8	**141.0**
	(c)	Non-foodgrains	(49.3)	134.7	142.1	142.0	151.3	**134.8**

Source: Handbook of Statistics (2020-21), Reserve Bank of India

V.	**Index of Industrial Production (2011-12=100)(Cumulative Index -April - March)**							
			Weight	2016-17	2017-18	2018-19	2019-20	2020-21
	(a)	General Index	(100.0)	120.0	125.3	130.1	129.0	**118.1**
	(b)	Mining	(14.3725)	102.5	104.9	107.9	109.6	**101.0**
	(c)	Manufacturing	(77.6332)	121.0	126.6	131.5	129.6	**117.2**
	(d)	Electricity	(7.9943)	141.6	149.2	156.9	158.4	**157.6**

Source: NSO, Ministry of Statistics and Programme Implementation, Press release dated 11th June, 2021 for 2019-20 and 2020-21.

VI.	**Wholesale Price Index (Financial Year Average with weights) (Base 2011-12=100)**	Weight	2016-17	2017-18	2018-19	2019-20	**2020-21**
(a)	All Commodities	(100.00)	111.6	114.9	119.8	121.8	**123.4**
(b)	Primary Articles	(22.62)	128.9	130.6	134.2	143.3	**145.7**
(c)	Fuel & Power	(13.15)	86.3	93.3	104.1	102.2	**94.0**
(d)	Manufactured Products	(64.23)	110.7	113.8	117.9	118.3	**121.5**
VII.	**Wholesale Price Indices of Important Commodities used by Railways with weights (base 2011-12=100)**	Weight					
(a)	Non-coking coal	(1.40)	110.5	112.5	119.0	119.0	**119.3**
(b)	Minerals Oils	(7.95)	73.3	82.5	96.7	92.3	**79.2**
(c)	Electricity	(3.06)	104.2	103.7	109.6	111.8	**109.6**
(d)	Manufacture of Basic Metals	(9.65)	91.1	101.4	112.2	106.2	**111.4**
(i)	Inputs into Steel Making	(1.41)	82.9	98.2	113.0	100.6	**109.2**
(ii)	Ferrochrome	(0.11)	114.4	121.6	121.1	112.4	**122.6**
(iii)	Ferromanganese	(0.03)	104.4	121.5	124.1	117.7	**116.3**
(iv)	Ferrosilicon	(0.02)	88.4	94.6	100.5	94.9	**98.8**
(v)	Other Ferro alloys	(0.03)	100.0	118.2	122.3	117.5	**117.7**
(vi)	Manufacture of Non-Ferrous Metals	(1.69)	100.1	107.9	112.2	107.0	**112.3**
(e)	Manufacture of Electrical Equipment	(2.93)	108.2	109.6	111.7	111.3	**113.6**
(f)	Manufacture of Chemicals & Chemical Products	(6.47)	111.0	112.5	119.1	117.5	**118.2**
(g)	Manufacture of Non-Metallic Mineral products	(3.20)	109.8	112.7	115.9	116.7	**117.6**
(h)	Cotton dyed/printed Textile	(0.05)	118.0	124.0	128.7	128.3	**128.8**
(i)	Timber/wooden plank, sawn/ re-sawn	(0.05)	122.6	116.2	119.9	118.8	**117.0**
(j)	Manufacture of Cement, Lime and plaster	(1.64)	110.6	113.8	114.3	119.5	**120.9**
(k)	Lube Oils	(0.29)	116.8	114.0	124.8	131.7	**137.2**
(l)	High Speed Diesel	(3.10)	74.4	84.4	97.1	93.7	**80.2**
VIII.	**Consumer Price Index(Industrial Workers) (Base 2012=100) from 2016-17 to 2019-20) (Base 2016=100)* as on Sept. 16,2021 for 2020-21**		276	284	300	323	**118**

Source: WPI data from Office of Economic Adviser, Department for Promotion of Industry and Internal Trade and CPI data from Handbook of Statistics (2020-21), RBI

Planning

In the year 2020-21 the following assets were acquired:

S. No.	Heads	In Numbers
1.	Wagons (BLC+ Private Wagons)	10,062
2.	Locomotives including Trade	754
3.	Coaches including Trade	6,277
	(i) EMUs	312
	(ii) MEMUs	638
	(iii) DMUs	54

In addition, the following works were accomplished:

S. No.	Heads	In Kms.
1.	New lines	286.31
2.	Gauge Conversion to BG from MG/NG	469.93
3.	Double/Multiple lines	1,614.18
4.	Route Electrification	6,015
5.	Track renewals (both primary & secondary renewal)	4,363

The Plan allocation (Revised Estimates) and Actual Net Expenditure for 2020-21 compared with 2019-20, were as follows:

S. No.	Plan Head	2019-20		2020-21 (₹in crore)	
		Allocation (R.E.)	Actual Net Expenditure	**Allocation (R.E.)**	**Actual Net Expenditure**
CIVIL ENGINEERING					
1	New Lines (Construction)	@@22,974.27	µ12,683.17	**@26,772.22**	**14,901.34**
2	Gauge Conversion	##3,129.27	4,140.15	**#3,430.12**	**3,980.30**
3	Doubling	$$23,777.58	22,385.67	**$22,213.57**	**24,226.15**
4	Traffic Facilities- Yard Remodeling and Others	%%1,941.71	1,626.22	**%2,531.70**	**1,241.13**
5	Road Safety Works - Level Crossings	546.44	570.54	**⊗799.83**	**543.53**
6	Road Safety Works - Road Over/Under Bridges	&&4,718.88	3,520.92	**&6,329.56**	**4,137.44**
7	Track Renewals	7,068.87	7,802.63	**α9,201.16**	**11,657.52**
8	Bridge Works, Tunnel works & approaches	751.83	777.50	**©877.88**	**769.67**
9	Staff Welfare	ØØ 516.84	480.92	**≥504.83**	**470.10**
10	New Lines (const.)– Dividend free Projects	ββ 3,300.00	-	**-**	**-**
	TOTAL	68,725.69	53,987.72	**72,660.87**	**61,927.18**

MECHANICAL					
1	Rolling Stock	^ ^42,670.58	37,101.78	**^43,362.08**	**32,213.16**
2	Leased Assets– Payment of Capital Component	10,557.53	10,462.21	**11,966.72**	**11,948.24**
3	Machinery and Plant	430.92	448.11	**++757.16**	**672.76**
4	Workshops including Production Units	££2,121.02	2,119.12	**£2,176.30**	**2,330.42**
	TOTAL	55,780.05	50,131.22	**58,262.26**	**47,164.58**
ELECTRICAL ENGINEERING					
1	Electrification Projects	??7,593.55	7,124.63	**?6,590.75**	**6,141.02**
2	Other Electrical Works including Traction Distribution Works.	**603.61	¥481.30	***739.69**	**652.23**
	TOTAL	8,197.16	7,605.93	**7,330.44**	**6,793.25**
SIGNAL AND TELECOMMUNICATION					
1	S and T Works	1,374.70	1,620.69	**<1,858.35**	**1,900.84**
	TOTAL	1,374.70	1,620.69	**1,858.35**	**1,900.84**
OTHERS					
1	Computerization	423.45	282.81	**Δ563.00**	**390.01**
2	Railway Research	43.58	26.80	**■50.10**	**57.26**
3	User's Amenities	Ω Ω 2,583.39	1,902.90	**Ω 2675.90**	**2,583.45**
4	Investment in Non-Govt. undertaking including JVs/SPVs	16,634.98	16,924.88	**15,620.00**	**15,629.65**
5	Other Specified Works	708.94	455.73	**●830.62**	**482.85**
6	Training/HRD	102.55	85.73	**☒150.00**	**86.93**
7	Inventories	200.00	915.50	**0.00**	**686.09**
8	M.T.Ps.	1,577.50	1,515.18	**☑1,690.46**	**1,543.90**
	TOTAL	22,274.39	22,109.54	**21,580.08**	**21,480.14**
	GRAND TOTAL	1,56,351.99	!!1,35,455.10	**1,61,692.00**	**∑1,39,245.99**

Revised Estimates

@ Includes ₹542 crore under EBR(IF), ₹11,769 crore under EBR(Partnership) and ₹13,539 crore under EBR(Special). It also include ₹7,535 crore for National Project & Projects of National importance.

@@ Includes ₹2,900.50 crore for National Project and ₹544 crore for project of National Importance. It also include ₹599.26 crore under EBR(IF) and ₹14,506 crore under EBR(IF).

Includes ₹644 crore under EBR (IF), ₹2,846 crore under EBR(S) and ₹122 crore for national Project.

Includes ₹6 crore for National Projects. It also includes ₹849.10 crore under EBR (IF)

$ Includes ₹1,429.69 crore under EBR (IRFC), ₹1,000.00 crore under EBR(S) and ₹19,705 crore under EBR (IF))

$$ Includes ₹1,407 crore under EBR(IRFC) and ₹21,746.14 crore under EBR(IF).

% Includes ₹500 crore under EBR (IF) and ₹792 crore EBR (Partnership).

%% Includes ₹618.57 crore under EBR (IF) and ₹254.82 crore under EBR(PPP).

⊗ Includes ₹800 crore under EBR (Special).

& Includes ₹880 crore under EBR (Partnership), and ₹5,448.00 crore under EBR(S).

&& Includes ₹1,022.51 crore under EBR (PPP).

α Includes ₹10,500 crore under EBR (Special).

© Includes ₹862 crore under EBR (Special).

≥ Includes ₹200 crore under EBR (Special).

β β Provision for Udhampur Srinagar- Baramulla National Project.

^ Includes ₹33,137.31 crore under EBR (IRFC), ₹1,559 crore under EBR (Partnership) and ₹6,739.98 crore under EBR(S).

^ ^ Includes ₹141 crore under EBR (Special)and ₹1,074 crore under EBR

++ Includes ₹408.85 crore under EBR (Special)

£ Includes ₹10 crore under EBR (IF) and ₹1,942.45 crore EBR (Special).

ff Includes ₹24.50 crore under EBR(IF) and ₹1942 crore under EBR(Special).

? Includes ₹6,599 crore under EBR(IF).

? ? Includes ₹7,602.55 crore under EBR (IF).

* Includes ₹647.94 crore under EBR (Special).

** Includes ₹120 crore under EBR (PPP).

< Includes ₹1,857.08 crore under EBR (Special).

Δ Includes ₹250 crore under EBR (Special).

■ Includes ₹0.10 crore under EBR (Special).

Ω Includes ₹900.60 crore under EBR (Special).

Ω Ω Includes ₹702 crore under EBR(PPP).

● Includes ₹410 crore under EBR(Special).

☒ Includes ₹141 crore under EBR(Special).

☑ Includes ₹1,415 crore under EBR(Special).

Actual Net Expenditure

Σ Excluding actual expenditure of ₹15,935.02 crores under EBR(PPP) during 2020-21.

!! Excluding actual expenditure of ₹12,609.38 crores under EBR(PPP) during 2019-20.

ØØ Staff Quarters and Amenities for Staff merged & reclassified as staff welfare.

¥ Reclassified as other Electrical works including TRD

μ Includes ₹ 3,098.42 crore reported by Railways under new lines (const.) dividend free projects now merged with new lines (const.)

Productivity:

The following table shows the indices of growth of traffic output vis-a-vis input.

Indices of Growth of Traffic Output and Inputs (1950-51=100)

Year	Traffic Output Indices		Investment Input Indices				
	Freight traffic (NTKms) (Rev+ Non Rev.)	Passenger traffic (Non-suburban passenger kms.)	Wagon capacity	Passenger coaches	Route Kms.	Running track Kms	Tractive effort of locos
1950-51	100	100	100	100	100	100	100
1960-61	199	110	152	154	105	107	144
1970-71	289	159	226	188	112	121	178
1980-81	359	279	269	210	114	128	201
1990-91	550	394	278	219	116	133	192
2000-01	715	614	246	254	118	138	233
2010-11	1,420	4,403	294	344	120	147	343
2018-19	1,675	1,685	409	422	126	162	517
2019-20	1,605	1,524	421	436	127	167	550
2020-21	**1675**	**335**	**430**	**448**	**127**	**170**	**562**

Passenger Business

Indian Railways is commonly used mode of public transportation in the country. During 2020-21, it carried 1,250 million passengers as against 8,086 million in 2019-20. Passenger kilometres, which is calculated by multiplying the number of journeys by mean kilometric distance in case of each class was 231 billion as against 1,051 billion in the previous year. Passenger earnings decreased by ₹35,421 crore (-69.92%) in comparison with 2019-20.

The trend of passenger traffic since 1950-51 is shown below:

Table I. Number of Passengers Originating

(in millions)

Year	Suburban (All classes)	Non suburban					Grand Total
		Upper class	Second Class			Total Non-suburban	
			Mail/ Exp.#	Ordinary	Total		
1950-51	412	25	52	795	847	872	1,284
1960-61	680	15	96	803	899	914	1,594
1970-71	1,219	16	155	1,041	1,196	1,212	2,431
1980-81	2,000	11	260	1,342	1,602	1,613	3,613
1990-91	2,259	19	357	1,223	1,580	1,599	3,858
2000-01	2,861	40	472	1,460	1,932	1,972	4,833
2010-11	4,061	100	1,046	2,444	3,490	3,590	7,651
2018-19	4,784	179	1,499	1,977	3,476	3,655	8,439
2019-20	4,597	186	1,452	1,851	3,303	3,489	8,086
2020-21	**917**	**49**	**224**	**60**	**284**	**333**	**1,250**

Also includes Sleeper Class

Table II. Passenger Kilometres

(in millions)

Year	Suburban (All classes)	Non suburban					Grand Total
		Upper class	Second Class			Total Non-suburban	
			Mail/ Exp.#	Ordinary	Total		
1950-51	6,551	3,790	12,537	43,639	56,176	59,966	66,517
1960-61	11,770	3,454	22,251	40,190	62,441	65,895	77,665
1970-71	22,984	4,394	37,856	52,886	90,742	95,136	118,120
1980-81	41,086	5,140	86,712	75,620	162,332	167,472	208,558
1990-91	59,578	8,712	138,054	89,300	227,354	236,066	295,644
2000-01	88,872	26,315	222,568	119,267	341,835	368,150	457,022
2010-11	137,127	62,203	500,631	278,547	779,178	841,381	978,508

2018-19	1,46,678	1,26,641	6,64,503	2,19,352	8,83,855	10,10,496	11,57,174
2019-20	1,37,130	1,31,696	6,53,336	1,28,576	7,81,912	9,13,608	10,50,738
2020-21	**30,075**	**42,685**	**1,53,910**	**4,456**	**1,58,366**	**2,01,051**	**2,31,126**

Also includes Sleeper Class.

Table III. Average Lead

(in millions)

Year	Suburban (All classes)	Non suburban					Grand Total
		Upper class	Second Class			Total Non-suburban	
			Mail/Exp.#	Ordinary	Total		
1950-51	15.9	151.6	241.1	54.9	66.3	68.8	51.8
1960-61	17.3	203.3	232.4	50.0	69.5	72.1	48.7
1970-71	18.9	274.6	244.2	50.8	75.9	78.5	48.6
1980-81	20.5	484.0	333.3	56.4	101.3	103.9	57.7
1990-91	26.4	462.8	386.5	73.0	143.9	147.6	76.6
2000-01	31.1	659.3	471.3	81.7	176.9	186.7	94.6
2010-11	33.8	623.1	478.5	114.0	223.2	234.4	127.9
2018-19	30.7	707.3	443.3	111.0	254.3	276.5	137.1
2019-20	29.8	708.7	450.1	69.5	236.7	261.9	129.9
2020-21	**32.8**	**876.3**	**687.0**	**73.8**	**556.8**	**603.5**	**184.8**

#Also includes Sleeper Class.

Table IV. Proportion to total traffic-No. of Passengers (Percentage)

	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11	2019-20	2020-21
Non-Suburban:								
Second Class Ordinary	50.38	42.82	37.14	31.70	30.20	31.95	22.89	**4.82**
Second Class Mail/Express#	6.02	6.38	7.20	9.26	9.77	13.67	17.96	**17.92**
Upper Class	0.94	0.66	0.30	0.49	0.83	1.30	2.30	**3.90**
Total	57.34	49.86	44.64	41.45	40.80	46.92	43.15	**26.64**
Suburban(all classes)	42.66	50.14	55.36	58.55	59.20	53.08	56.85	**73.36**
Grand Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

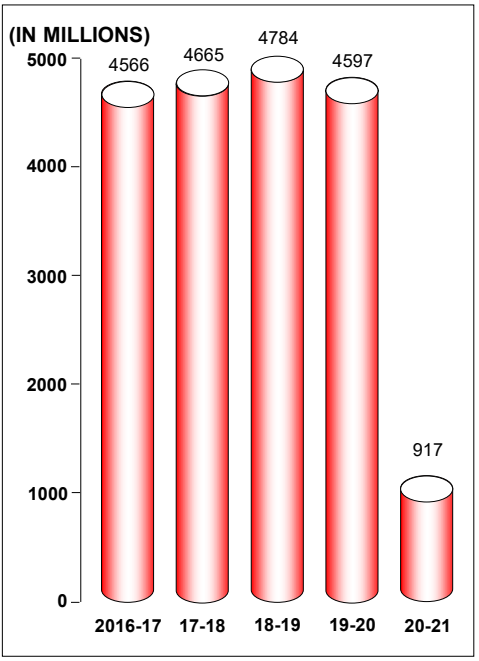
#Also includes Sleeper Class.

Table V. Proportion to total traffic – Passenger Kms. (Percentage)

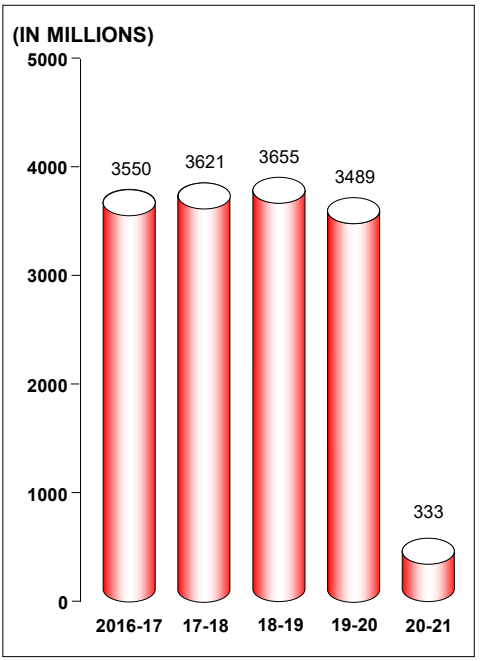
	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11	2019-20	2020-21
Non-Suburban:								
Second Class Ordinary	51.75	44.77	36.26	30.20	26.10	28.47	12.24	**1.93**
Second Class Mail/Express#	28.65	32.05	41.58	46.70	48.70	51.16	62.18	**66.59**
Upper Class	4.45	3.72	2.46	2.95	5.75	6.36	12.53	**18.47**
Total	84.85	80.54	80.30	79.85	80.55	85.99	86.95	**86.99**
Suburban(all classes)	15.15	19.46	19.70	20.15	19.45	14.01	13.05	**13.01**
Grand Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Also includes Sleeper Class.

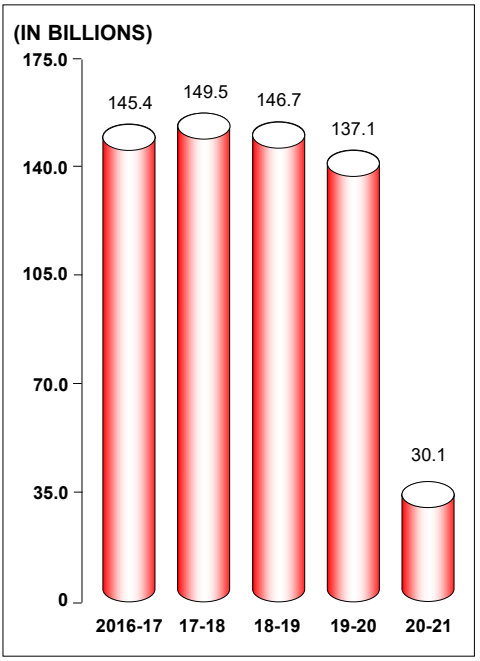
PASSENGERS ORIGINATING
SUBURBAN



PASSENGERS ORIGINATING
NON-SUBURBAN



PASSENGER KILOMETRES
SUBURBAN



PASSENGER KILOMETRES
NON-SUBURBAN

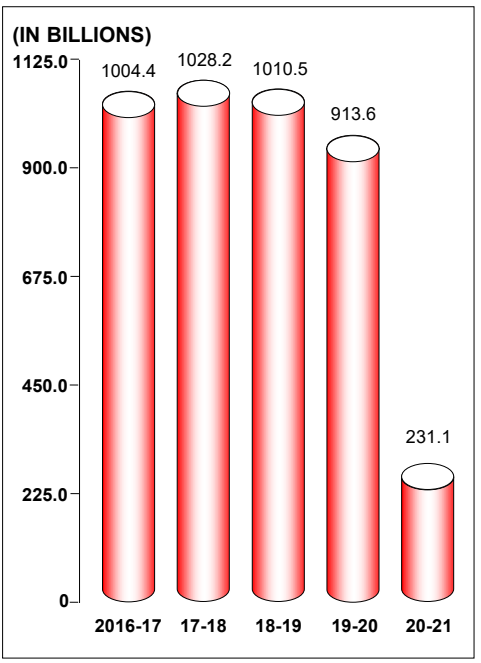


Table VI. Number of passenger trains run daily

Type of trains	Broad Gauge		Metre Gauge		Total (incl.NG)	
	2019-20	**2020-21**	2019-20	**2020-21**	2019-20	**2020-21**
EMU	5,396	**695**	0	**0**	5,396	**695**
Mail/Express	4,048	**1,066**	8	**0**	4,058	**1,067**
Ordinary Passenger Trains and Mixed Trains	3,624	**376**	37	**1**	3,715	**378**
Total	**13,068**	**2,137**	**45**	**1**	**13,169**	**2,140**

Table VII. Overall average speed including halts (Kms. /hr.)

Type of trains	Broad Gauge	
	2019-20	**2020-21**
EMU	37.9	**38.9**
Mail/Express	50.6	**53.8**
Ordinary Passenger Trains (incl. mixed)	33.5	**35.7**

Note: All figures shown in the above tables (I-VII) are inclusive of Metro Railway, Kolkata.

Passenger Revenue :

Passenger earnings in 2020-21 were ₹15,248.49 crore. This was ₹35,420.60 crore (-69.90%) lower than the earnings in 2019-20. Suburban traffic contributed 3.86% to the total earnings. The remaining 96.14% came from non-suburban passengers. Earnings from Second and Sleeper Class Mail/Express passengers comprised 49.62% of the total passenger earnings.

Passenger revenue in terms of earnings per passenger kilometre for different classes during 2019-20 and 2020-21 was as under:

		(in paise)
Segment	2019-20	**2020-21**
Non-suburban:		
Upper class	140.97	**161.09**
Second Class-Mail/Express (incl. sleeper class)	40.11	**49.16**
Second Class-Ordinary	23.78	**48.70**
Non-suburban (all classes)	52.35	**72.91**
Suburban(all classes)	20.73	**19.59**
Overall average	48.22	**65.97**

Passenger revenue in different classes with corresponding number of passengers and Passenger Kms. in 2020-21 is given below:

Segment	No. of passengers		Passenger kms.		Revenue	
	Million	Percentage	Million	Percentage	₹ in cr.	Percentage
Non-suburban:						
Upper Class	49	3.90	42,685	18.47	6,876.31	45.10
Second Class Mail/ Express#	224	17.92	1,53,910	66.59	7,565.88	49.63
Second Class Ordinary	60	4.82	4,456	1.93	216.99	1.42
Total	333	26.64	2,01,051	86.99	14,659.18	96.14
Suburban (all classes)	917	73.36	30,075	13.01	589.31	3.86
Grand Total	**1,250**	**100.00**	**2,31,126**	**100.00**	**15,248.49**	**100.00**

#Also includes Sleeper Class.

Passenger Services:

Train kilometres and vehicle kilometres along with density of traffic for some selected years were:

Year	Suburban (EMU)		Non-suburban		Train kms. per running track km. per day	
	Train kms. (Million)	Vehicle kms. (Million)	Train kms.+ (Million)	Vehicle kms.@ (Million)	Suburban (EMU)	Non-suburban+
1950-51	9.28	119.8	154	2,678	27.9	7.1
1960-61	14.05	196.8	190	3,594	28.7	8.2
1970-71	23.05	369.4	225	4,636	30.1	8.6
1980-81	35.55	601.5	258	5,582	36.6	9.7
1990-91	48.37	840.7	316	7,739	40.0	11.5
2000-01	56.04	1,029.5	397	11,035	47.1	13.8
2010-11	73.25	1,438.5	582	18,207	46.7	19.2
2018-19	90.10	2,098	688	24,364	48.0	20.7
2019-20	88.70	2102	*682	*24,295	47.1	*19.8
2020-21	**33.86**	**880**	**207**	**7,234**	**20.1**	**5.92**

*revised

@Includes Mainline EMUs, DEMUs, DHMUs and suburban services other than EMU but excluding Rail Cars/Bus and Departmental.

+ Excludes Departmental but includes Rail Cars/Bus, MEMU, DEMU and DHMU services.

Passenger Service Improvements:

During the year 2020-21, Indian Railways introduced new trains, extended the runs and increased the frequency of existing trains, as given below:

	Trains introduced	Runs extended	Frequency increased	Total
Non-suburban	50	34	06	90
Suburban	04	-	-	04
Total	**54**	**34**	**06**	**94**

Ticketless Travel:

During 2020-21, 0.95 lakh checks were conducted against ticketless/ irregular travel (including carriage of unbooked luggage). About 32.56 lakh cases of ticketless/irregular travel/unbooked luggage were detected and ₹152.25 crore were realized on this account.

Passenger Amenities:

The allocation under the Plan Head "Passenger Amenities" in 2020-21 was ₹2725.63 crore (Budget Estimate) and ₹2615.30 crore (Revised Estimate).

1253 stations have so far been identified for development under the Adarsh Station Scheme, out of which 1,208 stations have already been developed.

During the Year 2020-21, 95 stations were provided with water coolers, 54 stations were electrified and 156 passenger lifts and 120 escalators were provided at stations.

Passenger Reservation System (PRS):

New Generation e-Ticketing System (NGeT):

The Next Generation E-Ticketing (NGeT) system of IRCTC was commissioned in 2014 by CRIS, for facilitating seamless booking of reserved tickets online. The system has been continuously strengthened, which now has an upgraded capacity to book more than 26,000 tickets in a minute.

E-tickets can also be booked on IRCTC Rail Connect Mobile Apps (Android & iOS Platforms). IRCTC had launched new Android App on its NGeT system in January 2017, which has been completely revamped in Jan, 2021. On an average, 4.80 lakh tickets were booked daily in FY 2020-21 through IRCTC's Website/Mobile Apps as against 8.25 lakh tickets booked in FY 2019-20. The decrease in number of tickets was due to the restrictions imposed on travel and public movement in the wake of

COVID-19 pandemic. The online ticket booking share is 79.63% of total reserved tickets.

IRCTC has a robust system of payment gateways with various payment options viz., Net Banking/Credit & Debit Card/Wallets/BHIM/UPI. Even foreign users can book tickets using International Credit Card (issued outside India).

Mobile Application for train enquiry:

Train running status enquiry is now available through Mobile Applications. Railway Enquiry Application are available on Android, iOS and Windows Platforms. Train running enquiry status is also available on enquiry.indianrail.gov.in (Average Hits 81,63,647, Peak Hits 87,70,490 @ 24-03-2021) Information about train schedule, trains between stations, cancelled trains, rescheduled trains and diverted trains is also available on the website.

Unreserved Ticketing through Mobile Phones:

Paperless Unreserved Ticketing on mobile phones was launched at Mumbai and later extended pan India i.e. passenger can book unreserved ticket between any pair of stations over entire Indian Railways on the pattern of normal ticketing. This has eliminated the need for passengers to stand in queue for getting ticket for journey in unreserved compartments of trains. The ticket is delivered on the Mobile Phone and is embedded with QR Code. This service has added to passenger convenience. Using this app passenger can book Journey, Season or platform tickets. Paperless Platform tickets have also been launched at several major stations like Mumbai Central, Dadar, Lokmanya Tilak Terminus, Sealdah, Chennai Central, New Delhi, Nizamuddin, etc. whereas, the Unreserved Ticketing System (UTS) at the stations, is now functioning at about 4,518 locations (working) on Indian Railways. This covers most of the important stations of IR.

Currency Coin-cum Card Operated / Automatic Ticket Vending Machines:

These machines issue unreserved tickets and accept Smart Cards for payment. In addition, Cash-Coin & Smart Card operated Ticket Vending Machine (CoTVMs) are implemented across 9 Zonal Railways. These machines issue unreserved tickets and accept Cash as well as Smart Cards for payment. ATVMs & CoTVMs provide features for issuance of platform ticket, printing of Mobile paper ticket, renewal of season ticket, top-up balance for online recharge of smart card and check train availability within 2 hours between selected pair of stations. ATVMs & CoTVMs also have the

feature for fast booking of ticket for top 30 selling destinations in 2 clicks. Thus queuing at the UTS counters at the Stations, is reduced during the rush hours.

Railway Users' Amenities

Railway Users' Consultative Committees, at different levels, provide opportunities for formal consultations between the management and the rail users with a view to improve services for rail users. Zonal Railway Users' Consultative Committees (ZRUCCs), Divisional Railway Users' Consultative Committees (DRUCCs), Konkan Railway Users' Consultative Committee (KRUCC), Metro Railway Users' Consultative Committee (MRUCC), Suburban Railways Users' Consultative Committees and Station Consultative Committees at important stations provide useful inputs to Railway Administration.

ZRUCC has been reconstituted for a two year term from 01.02.2021 to 31.01.2023. DRUCCs have been reconstituted for a two year term from 01.10.2020 to 31.12.2021.

I. Induction of Smart Coaches:

In view of the latest development in rolling stock technology and increased level of passenger's comfort. Indian Railways has introduced 88 smart coaches with ultra modern features like Smart Public address and passenger information system, Smart HVAC (Heating, Ventilation and Air Conditioning System), Smart security and surveillance system etc. in train service. In 2020-21, 64 Smart coaches were introduced.

II. Induction of semi-high speed Train-sets:

Semi High Speed Self Propelled Train-set was manufactured by Integral Coach Factory/Chennai with indigenous efforts, termed Train-18/ Vande Bharat Express. Vande Bharat Express State-of-the-art Train-set Vande Bharat services have been introduced between New Delhi -Varanasi and New Delhi- Shri Mata Vaishno Devi Katra in 2019-20. These trains have ultra modem features like quick acceleration, Substantial reduction in travel time, having maximum speed of 160 kmph, on board infotainment and GPS based passenger information system, automatic sliding doors, retractable footsteps and Zero discharge vacuum bio toilets etc. The Train-18 has contemporary features as per global standards.

1st train started from 17th February 2019 between Delhi-Varanasi. 2nd train started on 5th Oct'2019 between New Delhi-Shri Mata Vaishno Devi Katra.

III. Complete switchover to LHB:

Ministry of Railways has decided for large scale proliferation of LHB coaches which are technologically superior with features like Anti climbing arrangement, Air suspension (Secondary) with failure indication system and less corrosive shell. These coaches have better riding and aesthetics as compared to the conventional ICF coaches. The Production units of Indian Railways are now producing only LHB coaches from April 2018 onwards. The production of LHB coaches are continually increased during the years: 1,469 LHB coaches in 2016-17, 2,480 LHB coaches in 2017-18, 4,429 LHB coaches in 2018-19, 6,277 LHB coaches in 2019-20 and 4,323 LHB coaches in 2020-21.

IV. Focus on amenities for unreserved passengers

(a) Antyodaya Train Service:

These are long distance fully unreserved train comprising of LHB general second class coaches with vestibules. These have additional facilities like cushioned luggage racks, additional hand hold in doorway area for the comfort of standing passengers, provision of J hooks near longitudinal luggage racks for hanging carry bags, enhanced number of mobile charging points, Fire extinguishers with anti-theft arrangement, more pleasing colour scheme for interior and exteriors, provision of MU cable in each coach for running train service with loco at both ends. At present 16 Antyodaya trains are running in service.

(b) Deen Dayalu coaches:

General second class coaches for unreserved passengers with additional facilities like Cushioned luggage racks, Additional hand hold in doorway area, provision of J hooks for hanging carry bags, Bio-toilets, Enhanced mobile charging facility, Water level indicator, Pleasing Interiors, Improved exterior colour scheme and polymerized floor coating in toilets. So far, around 2800 Deen Dayalu coaches turned out by Production Units during 2016-17, 2017-18, 2018-19, 2019-20 and are in service. Of these 585 Deen Dayalu coaches turned out 2020-21.

V. Focus on improving amenities for reserved passengers

(a) Humsafar Trains:

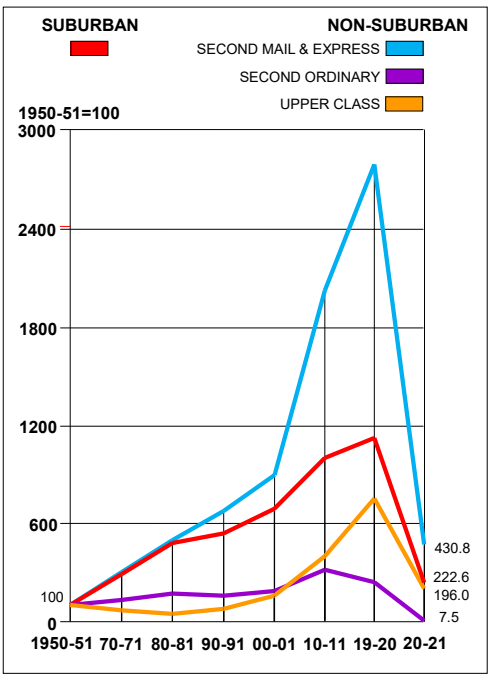
Humsafar trains having additional amenities in the coaches have been introduced for providing comfortable Air-Conditioned III Tier travel. Following major features have been introduced:- GPS based Passenger

information system, Passenger announcement system, Dustbins in each bay, 4 lane coffee vending machine, improved aesthetics and pleasing colour scheme, passenger announcement System, Closed-Circuit Television (CCTV) based surveillance system, Integrated Braille displays etc. 38 Humsafar trains have been introduced in service till date.

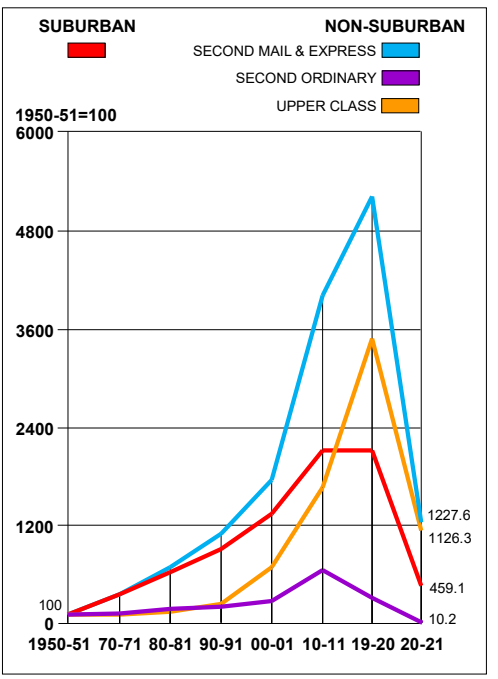
(b) Tejas trains :

Indian Railways has introduced Ultra modem Tejas trains with speed potential of 200 KMPH have been introduced which runs on LHB platform with non-executive and executive chairs Car. At present, 4 Tejas trains have been introduced in service over Indian Railways out of which 02 were introduced in 2019 -20.

INDEX OF GROWTH OF ORIGINATING PASSENGERS



INDEX OF GROWTH OF PASSENGER KILOMETRES



These ultra modern trains have following major distinguished features: Automatic entrance doors, Infotainment system (LCD Screens), Passengers Information display system (Electronic Reservation chart System), GPS based Passenger information system, Fire and Smoke detection system, Superior toilet fittings, Sealed vestibules, LED lights, CCTV, Aesthetically pleasing colour scheme etc.

(c) Tejas Rajdhani Trains:

Indian Railways has introduced Ultra modern Tejas trains with speed potential of 200 KMPH have been introduced which runs on LHB platform with sleeper coaches. Rajdhani trains coaches are planned to be replaced with Tejas Sleeper coaches. At present, One Tejas sleeper rake of Agartala - Anand Vihar Rajdhani Express has been introduced in 2020-21 (since February 21).

These ultra modern trains have following major distinguished features: Automatic entrance doors, Electro-pneumatic assisted brakes, Improved Inter-car Gangway, Automatic Coupler, Improved lavatory -vacuum assisted flushing with bio-toilets, Infotainment system & PIS and digital destination board, Smart windows with automatic venetian blinds, Sensorised taps, touch free Soap dispenser, flushing system, hand driers, tissue paper dispenser - touch free - COVID, Provision of Wi-Fi facility, Infotainment system (LCD Screens), Passengers Information display system (Electronic Reservation chart System), GPS based Passenger information system, Fire and Smoke detection system, Superior toilet fittings, Sealed vestibules, LED lights, CCTV, Aesthetically pleasing colour scheme etc.

(d) Uday trains:

Utkrisht Double Decker Air-conditioned Yatri (Uday) trains have been conceptualized as double-decker rakes with improved amenities such as, a dedicated vending machine with dining facilities in each of the four coaches in the rake, Decorative vinyl wrapping on both exterior and interior of the coach, Water borne solar reflective coating on the roof and PU painting on the end walls, High quality and high aesthetic passenger friendly fittings in the toilets, Defused LED lighting, Powder coated seat frames and snack tables, Aesthetically designed seat covers, All luggage racks are spray painted for aesthetic look, All foot steps are buffed and powder coated, Vynatile floor provided with clear coat, All stainless steel items like passage door, vestibule door, moldings etc., are buffed, PIS and infotainment system with Wi-Fi, 7 dedicated LCD screens provided in coach and Dining table and chairs in middle deck etc.

Two Uday rakes are running in service between Bangalore City – Coimbatore (Train No.22665/66) and between VSKP-BZA.

(e) Vistadome coaches:

Vistadome coaches provide panoramic view, through wider body side windows as well as through transparent sections in the roof, thus enabling

the passengers to enjoy the scenic beauty of the places through which they travel. Presently, 36 Vistadome coaches are available over various sections of Indian Railways.

7 LHB type BG Vistadome coaches were have been manufactured in 2020-21 by ICF/Chennai. One of these coaches was introduced in January 2021 in Train No. 09247/48/49/50 Ahmedabad-Kewadiya Jan Shatabdi.

VI. Focus on improving safety in new manufacture coaches

Instructions have been issued for provision of following items in coaches during manufacturing at Production Units to improve the safety features of these coaches:

- Fire detection and suppression system in all newly manufactured Power Cars and Pantry Cars.
- Fire and Smoke detection system in all newly manufactured AC coaches.
- Double Acting AC compartment doors in all newly manufactured AC coaches.
- Fire extinguishers in all newly manufactured coaches.
- Automatic plug type doors in all newly manufactured Humsafar and Uday train coaches.

VII. Improving interiors of Coaches-Up-gradation/ modernization of rakes:

(a) Project Swarn:

Project Swarn was started to upgrade the condition of Rajdhani and Shatabdi Express Trains, with the objective of significantly improving the passenger experience across the nine dimensions which include coach interiors, toilets, onboard cleanliness, staff behavior, catering, linen, punctuality, security, on-board entertainment. Real time feedback is also a part of Project Swarn. Under this scheme total 29 trains were targeted and have been covered. Later, under Project Swarn, all Rajdhani and all Shatabdi have been covered. Presently, all rakes of Rajdhani and Shatabdi Express Trains in services have been upgraded.

(b) Project Utkrisht:

IR has also launched Project Utkrisht in order to improve the condition of ICF type coaches running in Mail / Express trains. Up gradation of 640 rakes of Mail / Express trains has been taken up under Project Utkrisht for improvement in patronized train services. Work in 463 rakes has already been completed under Project Utkrisht. Work has been completed in 81 rakes in 2020-2021.

VIII. Other facilities to improve train facilities

(a) Quick Watering Facilities:

Quick watering facilities are being provided for quick watering in trains within stipulated halt of the train. These facilities are essential to ensure availability of adequate water in coaches throughout the journey. At present, 66 stations have been provided with Quick Watering Facilities. Out of these, 30 stations have been provided with Quick Watering Facilities in 2020-2021.

(b) Automatic Coach Washing Plants:

Automatic Coach Washing Plants have been installed over Zonal Railways to clean exterior of coaches more effectively and efficiently. In addition to excellent cleaning the direct water consumption also gets reduced avoiding wastage and recycling the water through water recycling plant integrated with this plant. 127 locations have been identified for provision of ACWP. Instructions have already been issued to General Managers of Zonal Railways to provide automatic coach washing plants in all coaching depots. Now, Automatic Coach Washing Plants are available at 27 locations. Work has been completed in 11 locations in 2020-2021.

(c) Proliferation of Bio-Toilets:

As a part of "Swachh Bharat Mission", Indian Railway is proliferating bio-toilets on all its coaching stock so that no human waste is discharged from coaches on to the track. Indian Railways has completed fitment of bio-toilets in all its coaches running on line. 73,110 coaches (2,58,990 bio-toilet) have been fitted with bio-toilet. of these, 4,420 has been fitted in 2020-21. Details of provision of bio-toilets are as under:

Years	Bio-Toilets	Coaches
2004-2014	9,587	3,647
2014-2017	59,735	16,123
2017-2018	57,429	15,017
2018-2019	69,166	19,137
2019-2020	46,988	14,766
2020-2021	16,085	4,420
Total	**2,58,990**	**73,110**

Further, IR has planned to supplement the existing bio-toilet system with Vacuum flushing system toilet (Bio-Vacuum Toilets), which substantially reduces the requirement of water for flushing, while ensuring effective / proper flushing of fecal matter from the pans. Indian Railways have provided

Bio Vacuum Toilet in total 1250 LHB coaches and it has been decided to provide Bio Vacuum Toilets in newly manufactured AC LHB Coaches of premium rakes. Sanctions for 8500 coaches are also.

IX. AC-III Tier Economy Coach:

IR has planned to introduce AC –III Economy class to cater the needs of general masses and fulfilling their expectation of travel to AC class. These coaches are planned to replace normal general sleeper class coaches in trains. One prototype coach was turned out in 2020-21. Manufacturing of 806 such coaches is included in Production Plan 2021-22.

X. COVID-19 preparedness:

All Zonal Railways was advised for COVID-19 preparedness. It was advised in the video conference held on 25.03.20 that a few rakes may be converted into quarantine/isolation coaches in consultation with the Medical department, so as to augment the quarantine facilities being created. In this connection consultations were held with Armed Forces Medical Services, Medical Department of various zonal Railways, and Ayushman Bharat. Indian Railway may be required to convert up to 20,000 such coaches, with 5,000 coaches to be converted initially into quarantine/isolation coaches.

As per requirement, 5601 Non-AC ICF sleeper coaches, hybrid sleeper and General coaches had been converted into isolation coaches.

Cleanliness and Hygiene:

Cleanliness on trains :

1. **Intensive mechanized cleaning of coaches**

   Mechanised cleaning of coaches is being carried out in the coaching depots through professional agencies. Heavy duty machines such as high pressure jet cleaners, floor scrubbers, vacuum suction cleaners etc. are deployed for the purpose.

2. **Clean Train Stations (CTS) scheme**

   'Clean Train Station' Scheme is provided for limited mechanized cleaning attention to passing through trains during their halts at selected stations enroute.

3. **On Board House Keeping Service (OBHS)**

   On Board House Keeping Service has been prescribed in all Rajdhani, Shatabdi, Duronto and other important long distance Mail/Express trains for cleaning of coach toilets, doorways, aisles & passenger compartments during the run of the trains. This scheme

had been implemented in more than 1000 pairs of trains. The Scheme is further planned to be extended to cover all long distance Mail/Express vestibuled trains excluding purely overnight trains.

4. **'Clean My Coach' / 'Coach Mitra' service**

   "Clean My Coach' service has been upgraded to provide 'Coach Mitra' service in about 1000 pairs of train for providing single window assistance to train passengers regarding cleanliness, linen, disinfestation, watering and petty repair.

5. Mechanized cleaning of coaches at both ends is being carried out through professional agencies in around 155 coaching depots. Machines like high pressure jet cleaners, floor scrubbers, wet & dry vacuum cleaners, hand held buffing machines etc. are deployed for the purpose.

6. Instructions have been issued for proper sanitization of coaches with regular and frequent sanitation of common use areas like door handles, railings, taps, washrooms etc. and availability of water.

Cleanliness at Stations :

- Provision of Integrated Housekeeping Contracts at major stations, award of rag picking / garbage disposal contracts at stations. Mechanized cleaning being done at 950 stations. Rag picking contracts at 1310 stations.
- Concrete washable aprons on platform tracks are provided to facilitate clearing of night soil on platform lines by washing with water jets.
- Provision of clean and hygienic toilets including pay and use toilets at around 900 stations and deluxe Pay & use toilets at 77 stations.
- Enforcement of Indian Railways (Penalties for activities affecting cleanliness at railway premises) Rules, 2012 has been intensified.4.11 lakh persons penalized and a fine of ₹6.66 crore realized during 2019-20. Data for 2020-21 not available.
- Use of CCTVs is being extended for monitoring cleanliness work at 700 Stations.
- Social / Charitable Organisations / NGOs have also been associated in periodic cleanliness / awareness drives at 70 railway stations.
- Railways have taken up a pilot project for disposal of Municipal Solid Waste (MSW) being generated at major railway terminals in an environment friendly manner including segregation of waste and conversion of bio-degradable waste to energy (bio-methanation).

Environment :

- Indian Railways have installed bio-toilets in all BG passenger coaches to prevent open discharge of human waste on Railway Tracks from trains.
- 55 Industrial Units including 39 workshops, 7 PUs, 8 Loco Sheds and 1 Stores depots are "GreenCo" certified. These include 2 platinum and 15 Gold Ratings.
- 24 Railway stations and 27 Railway buildings including Schools, hospitals have been "GreenCo" certified.
- More than 600 Railway Stations have been certified for implementation of Environment Management System ISO 14001.
- Indian Railways has been taking a number of steps towards water conservation. These include revival of old water bodies, conservation of existing bodies, setting up of water recycling plants, rain water harvesting and carrying out water audits.
- Instructions for placement of separate waste bins for bio-degradable and non-biodegradable waste at appropriate distance at stations/ platforms/foot over bridges and for disposal of the waste in an eco-friendly manner.
- Small scale Waste to Compost Plants have been set up at various stations for conversion of waste into compost.
- 596 Plastic bottle crushing machines have been installed at 414 stations.
- IR is planting an average of 1.26 crore trees annually since 2015.

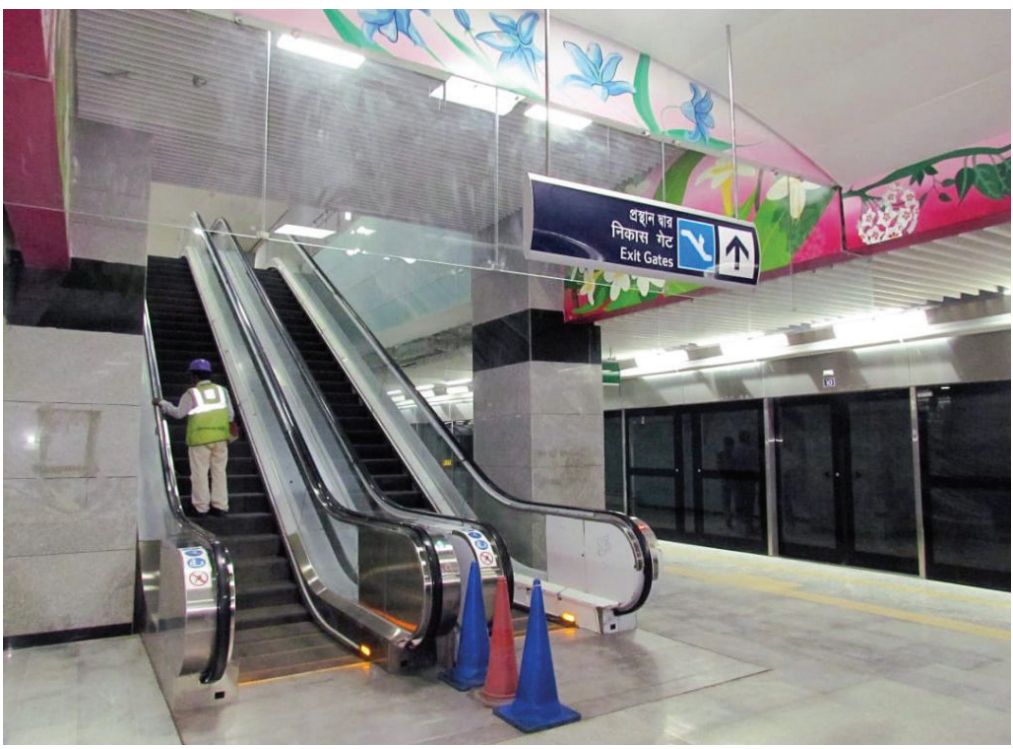
Catering Services:

Catering services are provided to the travelling passengers in trains and at stations. Catering Policy-2017 mandates the service of meals in trains from the Base Kitchens owned, operated and managed by IRCTC. However, after COVID-19 pandemic, it was decided by Ministry of Railways to introduce the service of branded pre-cooked "Ready to Eat" (RTE) meals, in place of cooked food, to ensure quality and hygiene of on-board catering services. RTE meals are procured from reputed empanelled firms shortlisted on the basis of technical qualifications. These meals are provided through Pantry Cars (in 281 pairs of trains) and Train Side Vending (in pairs of 164 trains). Passengers travelling in the trains also have the facility to order food of their choice through e-Catering services which are available at 224 stations and an average of 9,697 meals are being served per day. Passengers can also purchase food items from Static Catering Units which include 583 Major Static Units (Food Plaza, Fast Food Units, Jan Ahaar, Refreshment Rooms and Automatic Vending Machines) and 9,129 Minor Static Units (all stalls

and trolleys). In addition, there are 1,127 Water Vending Machines, 928 Multi Purpose Stalls, 702 Bookstalls, 44 Miscellaneous/ Curio Stalls, 03 exclusive Chemist Stalls and 01 Bookstall cum Chemist Corner to ensure availability of items of travelling needs of passengers.

In view of the pandemic, a number of measures/ initiatives have been taken to ensure the quality and hygiene of food being served to the passengers, which are as under:-

- In order to meet the basic needs of travelling passengers in Shramik Special trains, 1.96 crore meals and 2.19 crore Packaged Drinking Water bottles were provided.
- About 35 lakh free meals were distributed jointly by Commercial Deptt. and IRCTC to the needy people at various locations across country during the nationwide lockdown.
- Service of only "Ready to Eat" (RTE) Meals in trains.
- Sale of disposable bedroll kits/ items, protective gears and hygiene items such as masks, sanitizers, gloves, etc. has been permitted through Multi Purpose Stalls.



Escalator with enhanced safety features Kolkata Metro

Freight Operation

Revenue earning freight traffic handled during 2020-21 was 1230.94 million tonnes. NTKMs earned during the year were 720 billion. Total loading and freight output inclusive of non-revenue traffic were 1,233.85 million tonnes and 720 billion NTKMs respectively. Commodity wise loading of revenue earning traffic was as follows.

Commodity Group	Tonnes carried* (Millions)		Absolute Variation over last year	Percentage to total
	2019-20	2020-21		
Coal				
i) for steel plants	57.07	**52.95**	-4.12	4.30
ii) for washeries	0.13	**0.34**	0.21	0.03
iii) for thermal power houses	252.92	**218.11**	-34.81	17.72
iv) for other public users	276.75	**270.42**	-6.33	21.97
Total	586.87	**541.82**	-45.05	44.02
Raw material for steel plants except iron ore	25.57	**24.90**	-0.67	2.02
Pig iron and finished steel				
i) from steel plants	31.43	**32.92**	1.49	2.67
ii) from other points	21.70	**27.14**	5.44	2.20
Total	53.13	**60.06**	6.93	4.88
Iron ore				
i) for export	17.47	**25.18**	7.71	2.05
ii) for steel plants	85.55	**84.67**	-0.88	6.88
iii) for other domestic users	50.35	**49.28**	-1.07	4.00
Total	153.37	**159.13**	5.76	12.93
Cement	110.10	**120.40**	10.30	9.78
Foodgrains	37.53	**62.82**	25.29	5.10
Fertilizers	51.39	**53.79**	2.40	4.37
Mineral Oil (POL)	44.68	**42.48**	-2.20	3.45
Container service				
i) Domestic containers	11.31	**12.61**	1.30	1.02
ii) EXIM containers	49.77	**50.55**	0.78	4.11
Total	61.08	**63.16**	2.08	5.13
Balance other goods	84.69	**102.38**	17.69	8.32
Total	1,208.41	**1,230.94**	22.53	100.00

*Excludes loading on Konkan Railway.

The following tables show the growth of freight traffic over the years:

I. Revenue Earning Freight Traffic (Excl. KRCL)

Year	Tonnes (Millions)	Index (1950-51 =100)	Net Tonne Kms (Millions)	Index (1950-51=100)	Lead (Kms)	Index (1950-51=100)
1950-51	73.20	100.00	37,565	100.00	513	100.00
1960-61	119.80	163.70	72,333	192.60	603	117.60
1970-71	167.90	229.40	110,696	294.70	659	128.50
1980-81	195.90	267.60	147,652	393.10	754	147.00
1990-91	318.40	435.00	235,785	627.70	741	144.40
2000-01	473.50	646.90	312,371	831.50	660	128.70
2010-11	921.73	1,259.20	625,723	1,665.71	679	132.4
2018-19	1,221.48	1,668.69	7,38,523	1,965.99	605	117.93
2019-20	1,208.41	1,650.83	7,07,665	1,883.84	586	114.23
2020-21	**1,230.94**	**1,681.61**	**7,19,762**	**1,916.04**	**585**	**114.04**

II. Movement of bulk commodities in the last four years:

S. No.	Commodity group	2017-18		2018-19		2019-20		2020-21	
		Million Tonnes	Percent-age	Million Tonnes	Percent-age	Million Tonnes	Percent-age	Million Tonnes	Percent-age
1	Coal	555.20	47.88	605.84	49.60	586.87	48.56	541.82	44.02
2	Foodgrains	43.79	3.78	39.31	3.22	37.53	3.10	62.82	5.10
3	Iron & Steel	54.36	4.69	53.99	4.42	53.13	4.40	60.06	4.88
4	Iron ore	139.80	12.06	137.34	11.24	153.37	12.69	159.13	12.93
5	Cement	112.96	9.74	117.34	9.61	110.10	9.11	120.40	9.78
6	POL (Mineral oils)	43.11	3.72	43.01	3.52	44.68	3.70	42.48	3.45
7	Fertilizers (Chemical manures)	48.53	4.18	51.83	4.24	51.39	4.25	53.79	4.37
8	Limestone and Dolomite	27.70	2.39	30.35	2.48	30.63	2.54	30.84	2.51
9	Stones (including gypsum) other than marble	19.57	1.68	21.58	1.77	18.24	1.51	27.30	2.22
10	Salt	4.95	0.43	4.86	0.40	4.30	0.36	5.88	0.48
11	Sugar	2.47	0.21	3.02	0.25	2.89	0.24	3.81	0.31
	Total	**1,052.44**	**90.76**	**1,108.47**	**90.75**	**1,093.13**	**90.46**	**1,108.33**	**90.04**
12	Commodities other than above	107.11	9.24	113.01	9.25	115.28	9.54	122.61	9.96
	Grand Total	**1,159.55**	**100.00**	**1,221.48**	**100.00**	**1,208.41**	**100.00**	**1,230.94**	**100.00**

III. Freight Train Kilometers and Wagon Kilometres

Year	Freight train kms.		Wagon kilometres@ (in terms of 4- wheelers)	
	Total(Million)	Per running track km per day	Total (Million)	Percentage of loaded to total
1950-51	112	5.2	4,370	70.7
1960-61	161	6.9	7,507	70.5
1970-71	202	7.7	10,999	69.7
1980-81	199	7.2	12,165	69.5
1990-91	245	8.5	19,230	65.5
2000-01	261	8.7	27,654	60.9
2010-11	368	11.6	17,749	66.5
2018-19	415	11.8	19,364	64.9
2019-20	397	11.0	18,846	62.5
2020-21	**418**	**11.6**	**19,020**	**62.2**

IV. Tonnes Originating, Net Tonne Kms. and Earnings from bulk commodities in 2020-21

S. No.	Commodity group	Tonnes originating		Net tonne kilometres		Earnings	
		In million	%age to total	In million	%age to total	₹ In crore	%age to total
1	Total Coal	541.82	44.02	2,39,389	33.26	49,578.45	42.84
2	Food Grains	62.82	5.10	80,681	11.21	9,212.57	7.96
3	Iron & steel	60.06	4.88	49,123	6.82	7,416.78	6.41
4	Iron ore	159.13	12.93	62,524	8.69	12,661.43	10.94
5	Cement	120.40	9.78	73,605	10.23	9,713.67	8.39
6	Mineral oils	42.48	3.45	29,970	4.16	5,727.29	4.95
7	Chemical Manures	53.79	4.37	49,011	6.81	5,826.02	5.03
8	Limestone & Dolomite	30.84	2.51	16,205	2.25	2,376.41	2.05
9	Stones other than Marble & Gypsum	27.30	2.22	12,201	1.70	1,772.75	1.53
10	Salt	5.88	0.48	10,064	1.40	798.98	0.69
11	Sugar	3.81	0.31	5,241	0.73	533.67	0.46
	Total	**1,108.33**	**90.04**	**6,28,014**	**87.25**	**1,05,618.02**	**91.26**
12	Commodities other than above	122.61	9.96	91,748	12.75	10,120.36	8.74
	Grand Total	**1,230.94**	**100.00**	**7,19,762**	**100.00**	**1,15,738.38**	**100.00**

V. Some selected efficiency indices of freight operation during the last four years

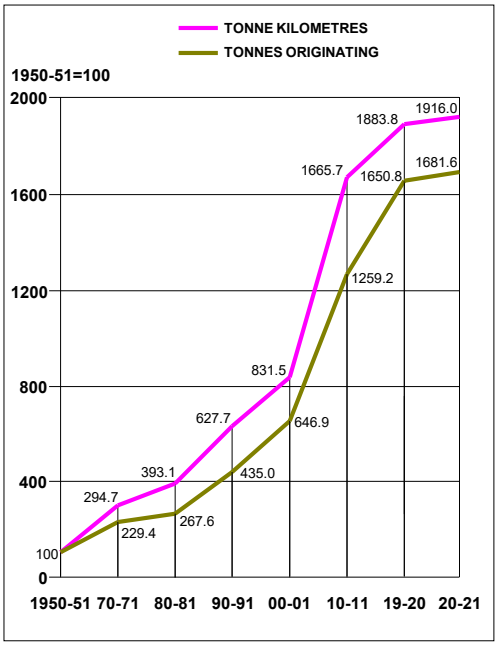
			2017-18	2018-19	2019-20	2020-21
Net tonne kilometres per wagon per day@		BG	7,405	7,747	**7,057**	**6,861**
Wagon kilometers per wagon per day@		BG	206.5	203.9	**188.7**	**181.5**
Net tonne kilometres per engine hour	Diesel	BG	14,426	13,001	***11,100**	**10,764**
	Electric	BG	19,227	18,802	***16,325**	**15,382**
Net tonne kilometres per engine day on line	Diesel	BG	2,45,908	2,89,419	**2,40,027**	**4,92,526**
	Electric	BG	3,58,454	3,89,070	**2,93,461**	**3,67,735**

*revised @ From 2010-11 onward figures in terms of 8-wheelers

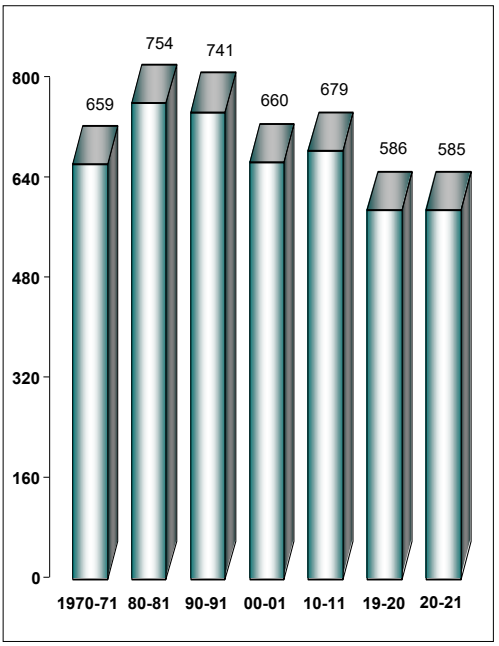
VI. Share of Tonnage, Earnings and Net tonne kms. of 30 selected commodities in 2020-21

S. No.	Commodity group	Tonnes Originating		Earnings		Net Tonne Kms.	
		In thousand	%age to Total	in ₹ crore	%age to Total	in millions	%age to Total
1	Total Coal	541820	44.02	49578.45	42.84	239390	33.26
2	Iron Ore	159129	12.93	12661.43	10.94	62524	8.69
3	Cement	120403	9.78	9713.67	8.39	73605	10.23
4	Iron & Steel	60061	4.88	7416.78	6.41	49123	6.82
5	Chemical Manures	53793	4.37	5826.02	5.03	49011	6.81
6	Total Exim Container	50552	4.11	3733.10	3.23	38798	5.39
7	Mineral Oils	42477	3.45	5727.29	4.95	29970	4.16
8	Food Grains	62821	5.10	9212.57	7.96	80681	11.21
9	Limestone & Dolomite	30835	2.50	2376.41	2.05	16205	2.25
10	RMC Carried In General Service Wagons	21454	1.74	1120.27	0.97	4790	0.67
11	Stone Other Than Marble and Gypsum	21985	1.79	1226.28	1.06	8005	1.11
12	Total Domestic Container	12605	1.02	1380.50	1.19	16532	2.30
13	Ores Other Than Manganese and Iron	8540	0.69	537.20	0.46	2776	0.39
14	Non-Ferrous Metal	7563	0.61	819.44	0.71	4517	0.63
15	Gypsum	5312	0.43	546.47	0.47	4195	0.58
16	Salt	5875	0.48	798.98	0.69	10064	1.40
17	Jute Manufactured	4493	0.37	316.12	0.27	3406	0.47

INDEX OF GROWTH OF FREIGHT
(REVENUE TRAFFIC)

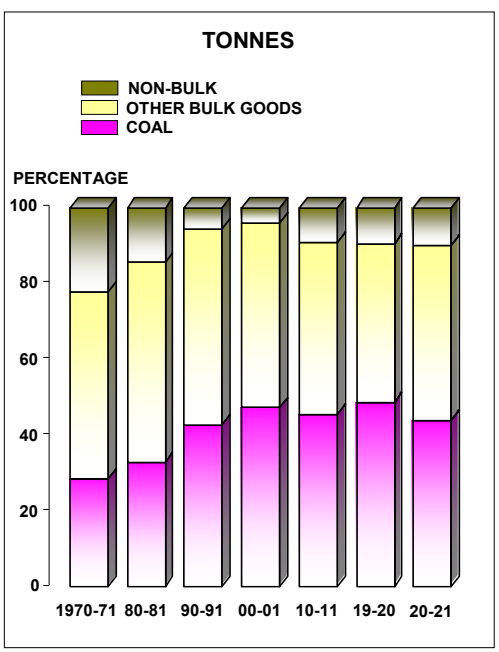


AVERAGE LEAD OF FREIGHT (KMS.)
(REVENUE TRAFFIC)

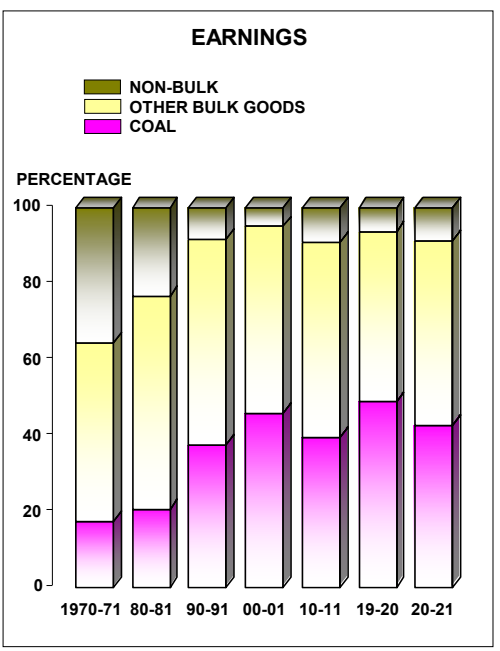


SHARE OF BULK COMMODITIES IN FREIGHT TRAFFIC

TONNES



EARNINGS



S. No.	Commodity group	Tonnes Originating		Earnings		Net Tonne Kms.	
		In thousand	%age to Total	in ₹ crore	%age to Total	in millions	%age to Total
18	Sugar	3811	0.31	533.67	0.46	5241	0.73
19	Lime	2348	0.19	374.04	0.32	2954	0.41
20	Provisions	2673	0.22	323.28	0.28	3031	0.42
21	Edible Oils	1450	0.12	159.43	0.14	1948	0.27
22	Manganese Ores	986	0.08	91.49	0.08	605	0.08
23	Caustic Soda	904	0.07	69.90	0.06	510	0.07
24	Opium & Other Narcotic Drugs	184	0.01	40.64	0.04	425	0.06
25	Cement Manufactured	872	0.07	70.58	0.06	549	0.08
26	Sand	1499	0.12	123.31	0.11	1084	0.15
27	Fruits & Vegetable Fresh	972	0.08	122.62	0.11	1650	0.23
28	Fodder Other than Oil Cakes	158	0.01	29.42	0.03	346	0.05
29	Soda Ash	128	0.01	33.06	0.03	274	0.04
30	Fodder Oil Cake	403	0.03	97.42	0.08	912	0.13

Freight Structure:

There was no increase in freight in 2020-21. However, various initiatives were taken during this period which includes Short lead concession under which discount in freight at the rate of 50%, 25% and 10% is granted to the traffic booked upto 0-50 Km, 51-75 Km and 76-90 Km respectively except Coal & Coke and Iron ore traffic. Long lead concession for Coal & Coke traffic for distance >1400 Km @ 20%, for Iron & Steel for distance >1600 Km and >700 Km-1600 Km @ 20% and @ 15%, respectively; and for Iron Ore traffic for distance >1500 Km @ 20%. Distance based graded concession @20% to 25% for transportation of Clinker for lead of >1000 km, Premium Indent Scheme, discount for transportation of fly ash, Round Trip Tariff policy, Reduction in permissible carrying capacity (PCC) for loading of Pet Coke, Relaxation in distance for operation of Mini Rake, 5% discount in haulage charges for loaded Containers and 25% discount in haulage charges of empty containers and empty flats, Roundtrip based charging for ultra short lead(<50 Km) Container traffic etc.

In addition certain initiative have also been taken to deal with situation arisen due to Covid-19 which includes exemption from levy of ancillary charges namely Demurrage, Wharfage, Stacking, Detention and Ground Usage Charges from 24.03.2020 to 17.05.2020, non-levy of haulage charge

for movement of empty containers and empty flat from 24.03.2020 to 08.05.2020 & from 17.12.2020 to 31.12.2020 and exemption from levy of stabling charges in case of container traffic from 24.03.2020 to 31.03.2021.

Freight Marketing:

Development of Private Freight Terminals (PFT) through private investment:

Private Freight Terminal (PFT) policy - Private Freight Terminal (PFT) facilitates rapid development of a network of freight terminals with private investment. The focus of the policy is to provide efficient and cost effective logistics services with warehousing solution to end users.

Procurement of rakes for freight traffic by inviting private investment

i. General Purpose Wagon Investment Scheme (GPWIS):

The scheme allows investment by end users, Public Sector Undertaking (PSUs), Port Owners, Logistics Providers and Mine Owners in General Purpose Wagons. The scheme permits eligible parties to invest in minimum of one rake of general purpose wagons for movement in any of the approved circuit(s) to carry any commodity.

ii. Liberalized Special Freight Train Operators Scheme (LSFTO):

Liberalized Special Freight Train (LSFTO) Scheme has been started with effect from 16-03-2020 by amalgamating erstwhile two schemes viz. Liberalized Wagons Investment Scheme (LWIS) and Special Freight Train Operator (SFTO) Scheme. The objective of the policy is to increase Railways share in transportation of non conventional traffic in high capacity and special purpose wagons to increase the commodity base of Rail Traffic. This policy provides an opportunity to logistics service providers or manufacturer to invest in wagons and use advantages of rail transport of selected commodity to create a win-win situation for railways and themselves. This also creates an avenue for end users to optimally utilize their rolling stock by transporting their commodities as well as commodities of third party.

iii. Automobile Freight Train Operator Scheme (AFTO):

The scheme permits procurement and operation of Special Purpose rakes by private parties in transportation of automobiles sector.

iv. Wagon Leasing Scheme (WLS):

This Scheme introduced the concept of leasing of railway wagons on IR. The scheme aims at induction of rakes of general purpose wagons,

special purpose wagons and wagons for containers movements through PPP route. Wagon Leasing Companies can lease wagons under AFTO, GPWIS, LSFTO schemes and also to Container Train Operators.

Claims:

IR paid ₹27.43 crores as claim compensation for goods/parcel/luggage during the Financial Year 2020-21 as compared to ₹19.13 crores paid in the corresponding period of the last year. The trend of claims settlement in the preceding five periods is given below:

Year	Number of Claims received	Number of Claims paid	Gross amount of compensation paid (₹ in crores)
2016-17	8,533	1,747	43.45
2017-18	7,251	1,062	29.35
2018-19	5,799	873	46.38
2019-20	5,640	1,196	19.13
2020-21	**3,845**	**195**	**27.43**

Roro service of Konkan railway

Asset Utilisation

Some of the major efficiency indicators of IR's operational performance over the years is given in the following tables:

A. Engine kilometres per day per engine in use

(i) Goods

Year	Broad Gauge			Metre Gauge		
	Steam	Diesel	Electric	Steam	Diesel	Electric
1950-51	150	-	191	140	-	98
1960-61	155	300	156	140	273	171
1970-71	121	347	316	133	280	245
1980-81	89	303	274	107	276	206
1990-91	52	445	398	88	399	224
2000-01	-	398	450	18	345	203
2010-11	-	384	478	-	102	-
2018-19	--	351	387	-	-	-
2019-20	-	380	336	-	-	-
2020-21	**-**	**420**	**524**	**-**	**-**	**-**

(ii) Passenger

Year	Broad Gauge			Metre Gauge		
	Steam	Diesel	Electric	Steam	Diesel	Electric
1950-51	249	-	397	211	-	130
1960-61	274	250	363	220	274	177
1970-71	250	669	437	228	383	376
1980-81	210	610	453	199	541	405
1990-91	189	673	482	185	569	382
2000-01	-	577	542	36	447	385
2010-11	-	594	671	34	390	-
2018-19	-	582	678	33	285	-
2019-20	-	559	593	30	144	-
2020-21	**-**	**936**	**658**	**30**	**7**	**-**

Note: In view of the change in method of compilation of diesel and electric loco usage since 1981-82, the figures of earlier years are not strictly comparable.

B. GTKms. (excluding weight of engine and departmental traffic) per kg. of tractive effort:

Year	Broad Gauge	Metre Gauge
1950-51	1,525	1,191
1960-61	1,864	1,444
1970-71	2,147	1,714
1980-81	2,372	1,708
1990-91	3,873	2,263
2000-01	4,498	1,628
2018-19	3,989	401
2019-20	3,699	316
2020-21	**2,713**	**25**

C. Density:

The density of traffic in terms of NTKms, PKms. and GTKms per route km. and per running track km. are given in the following two tables.

(Millions)

Year	Net Tonne Kms. Per Route Km.		Passenger Kms. Per Route Km.		Gross Tonne Kms. Per Route Km.	
	B.G.	M.G.	B.G.	M.G.	B.G.	M.G
1950-51	1.50	0.25	1.77	0.85	5.24	1.20
1960-61	2.76	0.54	2.03	0.89	8.32	2.18
1970-71	3.61	0.81	2.88	1.25	10.38	2.87
1980-81	4.34	0.80	5.15	1.72	12.55	2.76
1990-91	6.30	0.97	7.12	1.97	18.13	3.17
2000-01	6.96	0.24	9.49	2.08	21.95	1.79
2010-11	11.35	0.09	17.36	2.91	31.88	1.37
2018-19	11.74	-	18.34	1.12	33.58	0.20
2019-20	11.07	-	16.42	0.20	*32.03	0.21
2020-21	**11.18**	**-**	**3.59**	**0.07**	**23.17**	**0.16**

*revised

(Millions)

Year	NTKMs Per Running Track Km.		Passenger Kms. Per Running Track Km.		Gross Tonne Kms. Per Running Track Km.	
	B.G.	M.G.	B.G.	M.G.	B.G.	M.G.
1950-51	1.23	0.24	1.45	0.85	4.29	1.19
1960-61	2.19	0.54	1.61	0.87	6.59	2.15
1970-71	2.60	0.79	2.07	1.22	7.49	2.87
1980-81	3.06	0.76	3.63	1.64	8.84	2.63
1990-91	4.41	0.92	4.98	1.87	12.67	3.01
2000-01	4.93	0.24	6.73	2.03	15.55	1.75
2010-11	8.08	0.09	12.37	2.75	22.72	1.29
2018-19	8.08	-	12.62	1.09	23.04	0.20
2019-20	7.44	-	11.03	0.19	*21.52	0.20
2020-21	**7.40**	**-**	**2.37**	**0.07**	**15.34**	**0.02**

*revised

D. Coach Utilisation:

In 2020-21 the vehicle Kms. per vehicle day was 185 on BG and 3 on MG.

Year	Vehicle Kms. Per Vehicle Day	
	BG	MG
1950-51	264	204
1960-61	252	177
1970-71	282	191
1980-81	314	186
1990-91	408	254
2000-01	461	269
2010-11	529	203
2018-19	533	115
2019-20	534	114
2020-21	**185**	**3**

E. Average freight train load:

The average net load per train in 2020-21 was 1728 tonnes on BG The average gross load per train was 2,990 tonnes on BG.

Year	Average Train Load (tonnes)			
	Net Load		Gross Load (including weight of engine)	
	B.G.	M.G.	B.G.	M.G.
1950-51	489	185	1,068	435
1960-61	656	298	1,354	648
1970-71	737	378	1,507	753
1980-81	884	487	1,721	871
1990-91	1,079	562	2,122	962
2000-01	1,233	414	2,533	806
2010-11	1,702	488	3,063	902
2018-19	1,738	-	2,925	-
2019-20	*1,763	-	*3,025	-
2020-21	**1,738**	**-**	**2,925**	**-**

*revised

F. Average freight train speed (Kms./hour):

Traction-wise and gauge-wise average speed of goods trains over the years is indicated in the following table:

Year	Broad Gauge			Metre Gauge All traction
	Diesel	Electric	All traction	
1950-51	-	20.8	17.4	15.0
1960-61	22.2	19.5	16.1	13.7
1970-71	22.9	25.2	17.9	14.7
1980-81	21.3	22.8	19.7	15.1
1990-91	22.6	23.1	22.7	17.6
2000-01	22.4	25.4	24.1	19.6
2010-11	23.5	27.0	25.6	14.7
2018-19	22.7	23.6	23.3	-
2019-20	23.4	25.4	23.6	-
2020-21	**40.6**	**45.8**	**41.2**	**-**

G. Net tonne Kms. per engine hour and per goods train hour:

During 2020-21, NTKMs per engine hour stood at 13,881 for BG. NTKMs per goods train hour for BG was 77,747.

The table below shows the unit output measured by these indices in selected years:

Year	Net tonne Kms. per engine hour		Net tonne Kms. per goods train hour	
	B.G.	M.G.	B.G.	M.G.
1950-51	3,283	1,238	8,590	2,884
1960-61	4,170	1,766	10,808	4,232
1970-71	4,904	2,525	13,492	5,824
1980-81	6,295	3,345	17,677	7,562
1990-91	10,393	5,027	24,787	10,551
2000-01	12,850	3,773	29,752	8,539
2010-11	20,805	2,407	43,905	5,523
2018-19	16,345	-	40,652	-
2019-20	*14,287	-	42,154	-
2020-21	**13,881**	**-**	**77,747**	**-**

*revised

H. Wagon Utilisation:

On an average, a wagon moved 181.5 kms. per day on BG in 2020-21. NTKMs per wagon per day on BG was 6,861. NTKMs per annum per tonne of wagon capacity on BG was 40,216. These indices of wagon utilization are given below:

(in terms of 4-wheelers)

Year	Net tonne kms. per tonne of wagon capacity per annum		Wagon kms. per wagon per day		Net tonne kms. per wagon per day	
	B.G.	M.G.	B.G.	M.G.	B.G.	M.G.
1950-51	11,833	9,021	62.3	50.2	710	304
1960-61	16,558	10,125	76.9	51.6	998	405
1970-71	15,117	12,583	73.4	58.4	908	524
1980-81	16,285	11,013	73.4	47.3	986	522
1990-91	23,418	18,629	110.5	69.7	1,407	810
2000-01	33,289	7,981	179.0	43.8	2,042	394
2010-11 +	57,953	7,300	262.1	31.6	9,247	663
2018-19	45,718	-	203.9	-	7,747	-
2019-20	40,996	-	188.7	-	7,057	-
2020-21	**40,216**	**-**	**181.5**	**-**	**6,861**	**-**

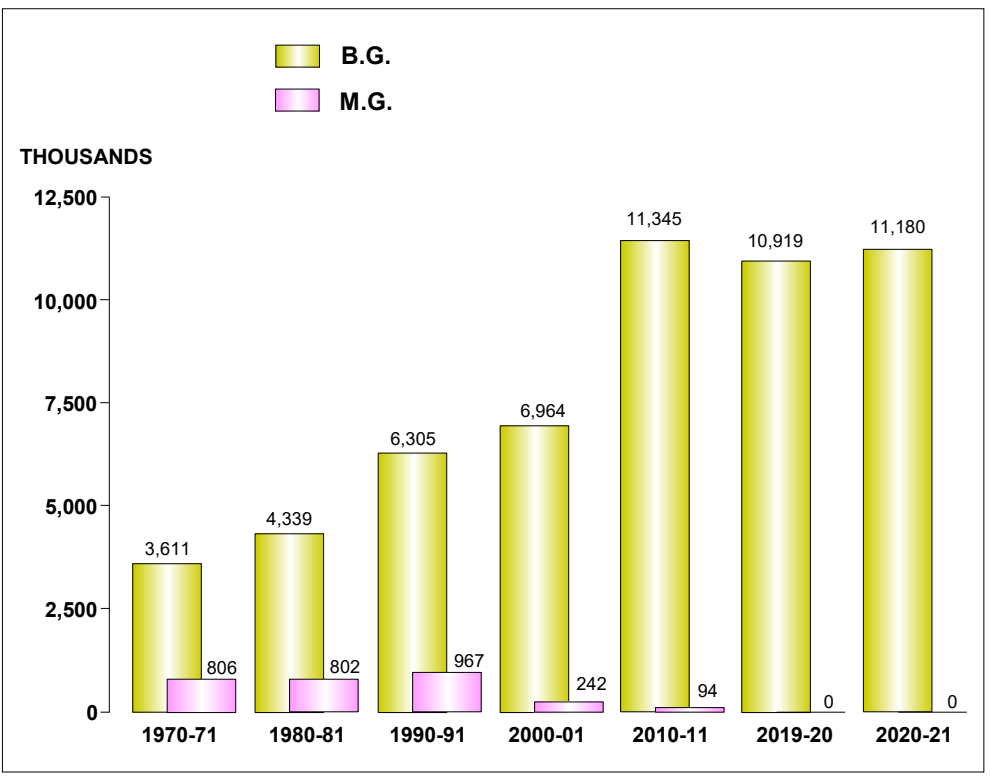
(+) in terms of 8 wheelers from 2010-11 onwards.

I. Wagon turn-round (in days):

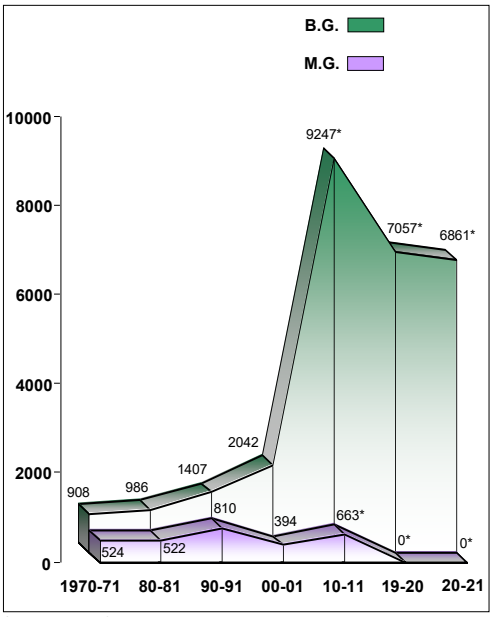
The turn-round time of wagons, representing operational cycle time is given in the following table:

Year	B.G.
1950-51	11.0
1960-61	11.2
1970-71	13.3
1980-81	15.2
1990-91	11.5
2000-01	7.5
2010-11	4.97
2018-19	5.00
2019-20	5.30
2020-21	**5.43**

NTKMS PER ANNUM PER ROUTE KM.

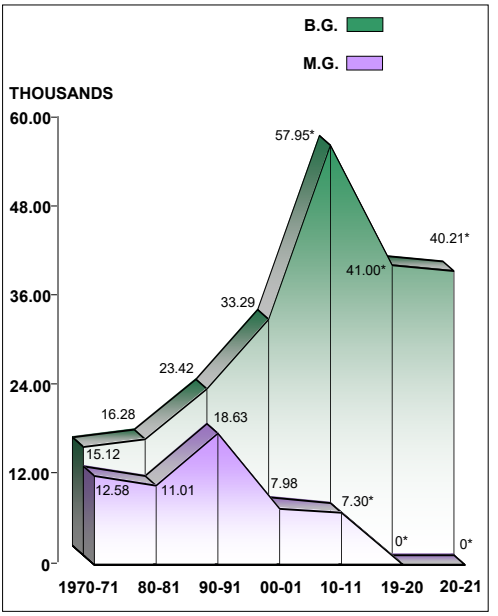


NET TONNE KILOMETRES PER WAGON PER DAY



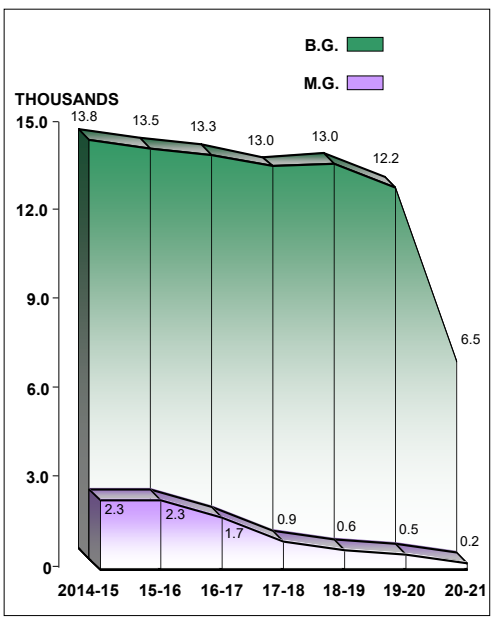
* In terms of eight wheelers

NET TONNE KILOMETRES PER ANNUM PER TONNE OF WAGON CAPACITY

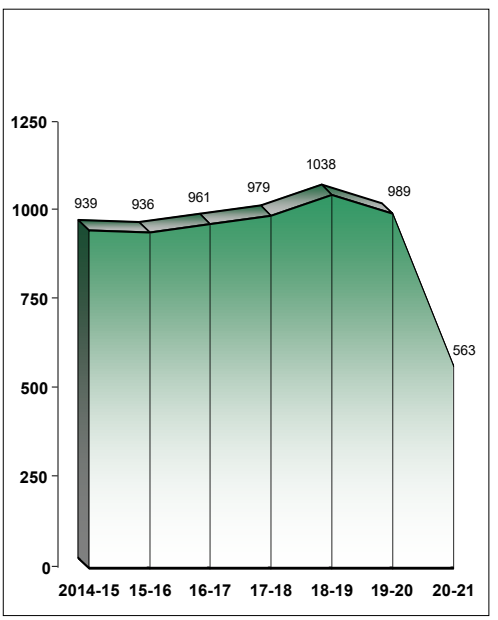


* In terms of eight wheelers

TRAIN KILOMETRES PER RUNNING TRACK KM



TRAIN KILOMETRES PER EMPLOYEE



Safety

There were 21 consequential train accidents in the year 2020-21 as compared to 54 accidents during 2019-20. Accident per million train Kms, an important index of safety on IR has come down to 0.03 in 2020-21 as compared to 0.05 in the previous year 2019-20.

Comparative position of consequential train accidents during the last five years are as under:

Year *	Collision	Derailments	Level Crossing Accidents	Fire in trains	Misc. Accidents	Total	Accident Per Million Train Kms.
2016-17	5	77	20	1	0	103	0.09
2017-18	3	53	13	3	0	72	0.06
2018-19	0	46	6	6	1	59	0.05
2019-20	5	40	1	7	1	54	0.05
2020-21*	**1**	**16**	**1**	**3**	**0**	**21**	**0.03**

*Excludes KRCL.

Casualties and Compensation:

The number of passengers injured or killed in train accidents and compensation paid in last five years are as under:

Year	No. of passengers #		Casualties per million passengers carried	Compensation paid in lakh*
	Killed	Injured		
2016-17	195	346	0.07	303.00
2017-18	28	182	0.03	188.51
2018-19	16	90	0.04	641.15
2019-20	0	73	0.05	376.10
2020-21	**0**	**0**	**.03**	**104.38**

#Excluding Konkan Railway

*The compensation paid during a year relates to cases settled and not necessarily to the number of accidents/casualties during that year.

Causes of Train Accidents:

Out of 21 consequential train accidents which occurred on IR during 2020-21, 16 accidents were due to the failure of railway staff and 4 were due to the persons other than Railway staff. None held responsible in 01 consequential train accident.

Damage to Railway Property:

The cost of damage to railway property and duration of interruption to through communication caused by consequential train accidents during 2019-20 and 2020-21 are as under:

Year#	Cost of Damage (in Lakh)		Interruption to through communication (Hours)
	Rolling Stock	Permanent Way	
2019-20	3,232.97	566.87	309.47
2020-21	**1,765.85**	**477.52**	**839.43**

#Excludes KRCL.

Rashtriya Rail Sanraksha Kosh (RRSK)

'Rashtriya Rail Sanraksha Kosh (RRSK)' has been introduced in 2017-18 for replacement/renewal/upgradation of critical safety assets, with a corpus of ₹ One lakh crore for five years, having annual outlay of ₹20,000 crore. Expenditure of ₹16,091 crore in 2017-18, ₹18,015 crore in 2018-19 and ₹15,024 crore in 2019-20 was made out of the Fund for safety works. In 2020-21 due to resource constraints the expenditure relating to works under Capital, railway Safety Fund and RRSK was incurred under EBR (Special), created as a one-time arrangement. Expenditure of ₹50,800.75 crore was incurred out of EBR(S). Expenditure of ₹369.98 crore has also been incurred under RRSK. In Budget Estimates 2021-22 provision of ₹20,000 crore has been made under RRSK.

Funds under RRSK are utilised for safety works relating to Traffic Facilities, Rolling Stock, Level Crossings, Road Over/Under Bridges, Track Renewal, Bridge Works, Signal and Telecommunication Works, other Electrical Works, TRD Works, Machinery and Plant, Workshops, Training/ HRD, Passenger Amenities and Other Specified Works.

Ministry of Finance has issued 'Guidelines for Operation of Rashtriya Rail Sanraksha Kosh (RRSK)', which inter alia, includes Monitoring Framework for RRSK. It stipulates setting up of Monitoring Committee headed by CEO/ NITI Aayog to examine performance. It is also laid down that the progress will be reviewed annually by Cabinet Committee on Economic Affairs.

Measures to Improve Safety

- **Safety Focus:** to reduce accidents caused by human errors, a multipronged approach with focus on introduction of newer technologies, mechanization of maintenance, early detection of flaws, etc. to reduce human dependence in the first place, alongwith upgrading the skills of the human resources were the prime drivers for accident prevention.
- **Periodical Safety Audits:** Periodical Safety Audits of different Divisions by multi-disciplinary teams of Zonal Railways as well as Inter-Railway Safety Inspections were conducted on regular basis. During the year 2020-21, 44 Internal Safety Audits and 08 Inter-Railway Safety Inspections were carried out.
- **Training facilities:** Refresher training imparted to 1,52,288 employees during the year 2020-21.

Measures to avoid collission

To enhance safety in train operations and make it efficient, Modern Signalling Systems comprising of Panel Interlocking/Route Relay interlocking /Electronic Interlocking (PI/RRI/EI) with Multi Aspect Colour Light Signals (MACLS) are being progressively provided. So far 6,200 stations (covering about 99% of interlocked Broad Gauge stations) on Indian Railways have been provided with such systems, replacing the obsolete Multi Cabin Mechanical Signaling System, thus optimizing operational cost involved in its operation as well as enhancing safety by reducing human intervention. During the financial year 2020-21, 12 Stations namely, Pune (Goods Cabin 3 & 4) and Muzaffarpur have been provided with Major Route relay interlocking (RRI), Kiul, Ajmer, Nallapadu, Rajahmundry, Rajkharsawan, Jolarpettai (A,B,&C, Cabin), Tambaram, Hosapete Junction, Baiyyppanahlli and Hubli with Electronic Interlocking (EI). Panel Interlocking (PI) and Electronic Interlocking (EI) have been provided at 34 stations and 311 stations respectively.

Complete Track Circuiting: To ensure track occupation verification, Track Circuiting has been completed at about 34,572 locations up to 31.03.2021 covering 'A', 'B', 'C', D Special' and 'E Special' route. Total 6203 stations (99%) have been provided with complete track circuiting over Indian railways.

Block Proving by Axle Counter (BPAC): To enhance safety and improved mobility automatic verification of complete arrival of train at a station, Block Proving by Axle Counter (BPAC) is being provided at stations having centralized operation of points and signals. As on 31.03.2021, Block Proving by Axle Counters (BPAC) has been provided on 5,805 block sections.

Intermediate Block Signaling: Provision of Intermediate Block Signalling (IBS) has proved very useful in enhancing line capacity without extra recurring revenue expenditure in form of operating manpower and amenities required while developing and operating a block station. As on 31.03.2021. Intermediate Block Signalling has been provided in 628 block sections on Indian Railways.

Automatic Block Signalling: For augmenting Line Capacity and reducing headway on existing High Density Routes on Indian Railways, Signalling provides a low cost solution by provision of Automatic Block Signalling. As on 31.03.2021 , Automatic Block Signalling has been provided on 3,447 Route Km.

Advance Train Protection System: Provision of Advance Train Protection (ATP) System is a desirable Signalling requirement to run a train above 140 Kmph of speed. Presently Gatiman Express is running at 160 Kmph on New Delhi – Agra section of 200 Route Km where European Train Control System Level-1 ATP System has been provided by the Railway.

RDSO with three Indian OEMs has developed India's own ATP System name KAVACH (Train Collision Avoidance System). The system has been provided on 571 Route Km of Indian Railway. Further work of KAVACH at 879 Route Km is in progress.

KAVACH has also been sanctioned as part of Mission Raftar to upgrade the speed on New Delhi – Mumbai and New Delhi – Howrah section up to 160 Kmph.

Further, KAVACH (TCAS) works have been included in works programme covering High Density Network (HDN), Highly Utilized Network (HUN) and other routes of Indian Railways.

Centralized Traffic Control (CTC) in Indian Railways: It is a computer based system which facilitates control and management of multiple Signalling installations covering a number of stations from a single location. It also provides a real time simulation of railway traffic centrally helping in real time traffic planning for punctual train operations. Controllers can manage train movements directly from CTC centre on real time basis.

Centralized Traffic Control (CTC) covering 250 Route km of Double line section with 29 stations on Aligarh - Kanpur Route has been operationalzed.

Further works of CTCs on about 14660 Route Km including all entire HDN Routes have been approved.

Train Management System(TMS): Provides real-time status of train positions, all train movements and a complete view of the section covered

on a giant screen provided in the divisional control centre. Punctuality reports, rake and crew links, train graphs, and unusual occurrence reports are generated in the control office.

The overall display panel, known as the 'Mimic Indication Panel', is designed to present detailed status of the system at a glance. It is expected that with commissioning of TMS/CTC projects, our controllers shall be able to efficiently manage train operations. Besides providing real time train running information in the control offices, passengers shall also be provided with accurate arrival/departure information at stations through automatic working of the Passenger information System at Stations. This system has been provided on Suburban sections of Mumbai on Western & Central Railways and Howrah of Eastern Railway. Similar System shall also be provided at Khurda Road in East Cost Railway and Sealdah in Eastern Railway.

Interlocking of Level Crossing Gates: Indian Railways have provided interlocking with Signals at 11,710 Level Crossing Gates as on 31.03.2021, to enhance the safety at Level Crossings

Sliding Boom at LC Gate: Provision of Interlocked Sliding Boom has become very effective in minimizing disruption to train services when Level Crossing Gates get damaged by road vehicles especially in suburban areas. With provision of Sliding Boom Interlocking, Signalling System continues to function normally with minimum effect on train operation. 5897 Nos. of busy interlocked gates have been provided with Sliding Booms as on 31.03.2021 in addition to lifting barriers and further busy gates are also being progressively covered.

Self-Sufficiency:

Signalling Workshop: Railway signaling installations use a number of specialized equipment for smooth & safe running of trains. With upgradation in technology and shift towards electrical/electronic system of signalling, the demand for these equipments has gone up. To attain self-sufficiency in meeting this increased demand, IR's Signal Workshops at Podanur on Southern Railway, Mettuguda on South Central Railway, Gorakhpur on North Eastern Railway, Howrah on Eastern Railway, Byculla on Central Railway, Sabarmati on Western Railway, Ajmer on North Western Railway, Kharagpur on South Eastern Railway and Ghaziabad on Northern Railway have been manufacturing items like Electric Point Machines, Token less Block Instrument, Double Line Block Instruments, Axle Counters, various types of Relays, etc.

Measures taken to strengthen the safety and reliability of Railway coaches to prevent fire in coaches:

1) Indian Railways is taking following steps to further strengthen the safety and reliability of Railway passenger:

i) **Introduction of Automatic Fire and Smoke Detection system in AC coaches:** With a view to improve fire safety in running trains, Automatic Fire and Smoke Detection System are being provided in AC coaches. The specifications have been upgraded integrating the air brake system in the coaches with the fire and smoke detection system. At present in nearly 4,115 AC coaches, this system has been fitted. The work is being carried out in a phased manner. Further, instructions have been issued to Production Units that all newly manufactured AC coaches shall be provided with Automatic Fire and Smoke Detection System.

ii) **Fire detection and suppression system in Pantry cars and Power cars:** Power Cars are more prone to fire due to presence of Diesel Alternator sets along with fuel tanks and other high voltage equipments. Pantry Cars are also more prone to fire due to cooking being carried out in these coaches. In this respect Automatic Fire Detection and Suppression system are being provided in Power cars and Pantry cars. At present 1231 Power cars and 490 Pantry cars are fitted with this system. The work of retrofitment is being carried out progressively. Further, instructions have also been issued that the system should be provided in all newly manufactured LHB Power cars and LHB Pantry cars by the Production Units (PUs).

iii) **Improving fire Retardancy in Coaches:** Coaches are being provided with fire retardant furnishing materials such as Fire retardant curtains, partition paneling, roof ceiling, flooring, seat and berths along with cushioning material and seat covers, Windows and UIC Vestibules etc. The specifications of these items are being upgraded from time to time as a part of continual improvement. In the specification of major furnishing items, now a new parameter related to fire retardancy (i.e. heat release rate) has been introduced as per international norms.

iv) **Provision of Fire Extinguishers:** Dry chemical powder type fire extinguishers are provided in all Air-conditioned coaches, Second class-cum-guard and luggage van and Pantry cars. Instructions have been issued to Production Units to provide fire extinguishers in all newly manufactured non-AC coaches as well. Provision in existing coaches is also being carried out by Zonal Railways.

2) Indian Railways had taken following steps to further strengthen the safety and reliability of railway coaches:

i) **Large scale proliferation of LHB coaches:** Ministry of Railways has decided for large scale proliferation of LHB coaches which are technologically superior with features like Anti climbing arrangement, Air Suspension (Secondary) with failure indication system and less corrosive shell. These coaches have better riding and aesthetics as compared to the conventional ICF coaches. The Production units of Indian Railways are now producing only LHB coaches from April 2018 onwards. The production of LHB coaches are continually increased during the years. 1,469 coaches in 2016-17, 2,480 coaches in 2017-18, 4,429 coaches in 2018-19, 6,277 coaches in 2019-20 and 4,323 LHB coaches in 2020-21.

ii) **Jerk Free Coach:** Balanced draft Gear is a double acting device for energy absorption during coupling and service. The device is designed to absorb the dynamic energy in both draw and buff modes with two sets of elastomeric pads. Based upon successful trial and feedback, it was decided to proliferate Balanced draft Gear to reduce jerks in all LHB and ICF design coaches.

iii) **Progressive use of Air Springs:** For enhancing safety and reliability of passenger coaches, the suspension systems are being redesigned with air springs at secondary stage capable to maintain constant height at variable loads. Air springs have been developed and are being fitted on all the newly built EMUs & DMUs coaches for suburban trains. Air springs have now been developed for mainline coaches as well and have been fitted in large scale in newly manufactured coaches. Production Units have been advised to use Air springs in all newly manufacture LHB coaches.

iv) **Provision of Automatic door closure mechanism in coaches:** Provision of Automatic door closure mechanism has been planned on coaches to prevent accidental falling of passengers from running trains. Select variants of the main line coaches will be provided with Automatic door closure mechanism. Automatic door closure mechanism has also been provided in the coaches of Tejas rake running between Mumbai -Goa, Chennai-Madurai, Lucknow - New Delhi and Ahmadabad - Mumbai. Automatic door closure mechanism has also been provided in the coaches of Tejas sleeper rake of Agartala – Anand Vihar Rajdhani Express, which has been introduced in 2020-21 Automatic coaches entry doors have also been provided in the rakes of Vande Bharat train running between New Delhi- Varanasi and New Delhi- Shri Mata Vaishno Devi Katra.

Three air-conditioned EMU (Electric Multiple Unit) rake with Automatic doors has been manufactured at Integral Coach Factory, Chennai for Mumbai, Western Railway. Integral Coach Factory/Chennai has also turned out coaches for Kolkata Metro with Automatic door closure mechanism.

v) **Provision of Double Acting doors in coaches:** Double Acting door in coaches are two way swing AC compartment doors for easy evacuation of passengers. Such doors need to be provided in the AC coaches so as to improve the fire worthiness and enable passengers to quickly evacuate from the coach in the event of fire.

Measures to curb accidents at unmanned level crossings:

Various measures taken by Indian Railways to prevent accidents at level crossings, are as under:

Level Crossing: 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 01.04.2021 is as under:

Total Number of level crossings	:	20,395
Number of manned level crossings	:	19,532 (95.8%)
Number of unmanned level crossings	:	863 (4.2%)

Indian Railway has decided to progressively eliminate the level crossings for the safety of Road users and train passengers. During the year 2020-21, 961 Nos. of manned level crossings have been eliminated. All unmanned Level Crossings on Broad Gauge have already been eliminated on 31.01.2019.

Road Over/Under Bridges: To improve safety of train operations 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.

During the year 2020-21, 174 ROBs and 959 RUBs/subway have been constructed under cost sharing, railway cost/accommodation works, Deposit/BOT term and by NHAI over Indian Railway.

Bridges: As on 01.04.2021, Indian Railway has a total number of 1,55,278 Bridges, out of which 729 bridges are important, 12,493 bridges are major and 1,42,056 bridges are minor Bridges.

During the year 2020-21, 1,114 Bridges are strengthened/Rehabilitated/ Rebuilt to enhance safety of train operation.

Bridges Inspection and management System: Modern Bridge Inspection techniques have been adopted, which includes inspection by drones, under water inspections, monitoring the water level with the help of

water level system, 3D scanning of river bed etc.

Other Administrative Measures:

- **Constant Review of Safety Performance at Board's apex level –** Safety performance is invariably reviewed as a first item on Agenda of Board Meeting at the apex level. All accidents are analyzed in detail so that remedial measures can be initiated.
- **Safety Review meeting with Zonal Railways –** Chairman and Board members have conducted Safety Review Meetings with General Managers and PHODs of zonal railways during their visits as well as through video conference.
- **Intensive Footplate Night Inspections –** Intensive Footplate Inspections including night inspections have been conducted at the level of SAG, branch officers and supervisors in the field.
- **Regular Safety Drives & awareness campaigns –** Safety drives and awareness campaigns have been launched from time to time, covering the lessons learnt from recent train accidents so as to prevent similar accidents in future.
- **Disaster Management Plan and Standard Operating Procedures (SOPs) –** As per the provision of Disaster Management Act, 2005, Ministry of Railways has prepared Disaster Management Plan for Ministry of Railways. All Zonal Railways and divisions have also prepared their Disaster Management Plan. These plans have detailed scheme for averting and handling various types of disasters affecting train operations. Apart from the above, Detailed Standard Operating procedure have been made for preventing and handling fire in railway coaches to minimize loss of life and property. Also detailed protocol for handling train accidents has been prepared.
- **Mock Drills/Exercises –** For coordination and management during Disaster/major train accidents, Indian Railways have been conducting Mock Drills with National Disaster Response Force (NDRF). Such drills are crucial to ensure full preparedness and to maintain operational readiness of the disaster response operation teams, institutional mechanisms and the equipments. These drills are organized to test readiness to deploy within the shortest possible time. Apart from this, Zonal Railways conduct Mock drills quarterly in each division utilizing the resources of Railways i.e. Accident Relief Trains (ARTs), Accident Relief Medical Vans (ARMVs) etc. Shortcomings noticed and lessons learnt during the Mock drill are documented for corrective action and to improve SOPs.

The Network

Indian Railways (IR) is one of the world's largest rail networks with 68,103 Route Kilometres of route lengths as on 31.03.2021. Out of 68,103 RKMs, BG constitutes 64,403 RKMs (94.57%), MG 2,112 RKMs (3.10%) and NG 1,588 RKMs (2.33%). The growth of its Route length, Running and Track Kms since independence is as follows :-

Year	Route Kms.	Running Track Kms.	Total Track Kms.
1950-51	53,596	59,315	77,609
1960-61	56,247	63,602	83,706
1970-71	59,790	71,669	98,546
1980-81	61,240	75,860	1,04,480
1990-91	62,367	78,607	1,08,858
2000-01	63,028	81,865	1,08,706
2010-11	64,173	87,114	1,14,037
2018-19	67,415	95,981	1,23,542
2019-20	67,956	99,235	1,26,366
2020-21	**68,103**	**1,00,866**	**1,26,611**

Zones /Headquarters	Route Kms.	Running Track Kms.	Total track Kms.
Central, Mumbai	4,152	6,662	8,926
Eastern, Kolkata	2,820	5,224	7,271
East Central, Hajipur	4,215	6,054	8,513
East Coast, Bhubaneshwar	2,801	4,819	6,147
Northern, New Delhi	7,323	10,104	13,395
North Central, Allahabad	3,522	6,098	6,500
North Eastern, Gorakhpur	3,471	4,548	4,927
Northeast Frontier, Maligaon, (Guwahati)	4,239	4,844	6,544
North Western, Jaipur	5,651	7,677	8,097

Southern, Chennai	5,087	7,550	9,286
South Central, Secunderabad	6,425	9,166	11,078
South Eastern, Kolkata	2,753	5,440	6,680
South East Central, Bilaspur	2,440	3,951	5,276
South Western, Hubli	3,606	4,850	6,226
Western, Mumbai	6,542	8,621	10,933
West Central, Jabalpur	3,025	5,195	6,707
Metro Railway, Kolkata	31	63	105
Total	**68,103**	**1,00,866**	**1,26,611**

State-wise Route Kms./ Running Track Kms. /Total Track Kms.:

Following table shows Route Kms., Running Track Kms. & Total Track Kms. of railway lines across various States/Union Territories at the end of 2020-21.

State/Union Territory	Route Kms.	Running Track Kms.	Total Track Kms.
Andhra Pradesh	3,965	6,221	7,826
Arunachal Pradesh	12	12	26
Assam	2,519	2,763	3,734
Bihar	3,803	5,356	6,736
Chhatisgarh	1,170	2,270	3,005
Delhi	184	346	706
Goa	69	69	105
Gujarat	5,327	6,535	8,167
Haryana	1,703	2,630	3,224
Himachal Pradesh	312	317	376
Jammu & Kashmir	298	366	493
Jharkhand	2,573	4,400	6,176
Karnataka	3,572	5,043	6,446
Kerala	1,047	1,749	2,138
Madhya Pradesh	5,140	8,330	9,844
Maharashtra	5,823	8,813	11,809
Manipur	13	13	18
Meghalaya	9	9	13
Mizoram	2	2	6

Nagaland	11	11	23
Odisha	2,703	4,637	5,721
Punjab	2,265	2,775	3,631
Rajasthan	6,019	8,267	9,279
Tamil Nadu	4,033	5,657	6,963
Telangana	1,871	2,713	3,255
Tripura	265	265	337
Uttarakhand	346	461	555
Uttar Pradesh	8,799	13,071	15,485
West Bengal	4,212	7,726	10,408
Union Territory			
Chandigarh	16	18	79
Pondicherry	22	22	27
Total	**68,103**	**1,00,866**	**1,26,611**

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

With its more than 168 year old history, IR is a state-owned public utility of the Government of India under the Ministry of Railways.

As a national common carrier transporting passenger and goods over its vast network, Indian Railways has always played a key role in India's social and economic development. It is a cheap and affordable means of transportation for millions of passengers. As a carrier of bulk freight viz. ores and minerals, iron and steel, cement, mineral oils, food grains and fertilizers, containerized cargo etc., the importance of Indian Railways for agriculture, industry and the common man is well recognized. Indian Railways carried 3.43 million passengers and 3.38 million tonnes of freight each day during 2020-21.

IR, functioning as Ministry of Railways, is headed by the Minister for Railways. The apex body entrusted with the management of this mega enterprise is led by the Chairman & CEO, Railway Board (CRB). Members of the Railway Board include Member (Finance), Member (Infrastructure), Member (Traction & Rolling Stock) and Member (Operations & Business Development) who represent their respective functional domains. For administrative purposes, IR is divided into 17 Zones, each headed by a General Manager. Zonal Railways are further divided into smaller operating units called Divisions. There are 68 Operating Divisions in IR at present, each under a Divisional Railway Manager. In addition, there are a number of Production Units, Training Establishments, Public Sector Enterprises and other Offices working under the control of Railway Board.

Track and Bridges

As on 31.3.2021, the Indian Railways had		(in Kms.)
(i) Route length	-	68,103
(ii) Running Track length	-	1,00,866
(iii) Total Trackage	-	1,26,611
The following works were carried out during 2020-21		
(i) Track renewal	-	4,363
(ii) Construction of New Line	-	286.31
(iii) Gauge conversion from MG/NG to BG	-	469.93
(iv) Track conversion from single to double line	-	1,614.18

New Lines:

During 2020-21, 286.31 Kms. of new lines have been completed on the following sections:-

Railway	Section	Km.
Eastern	Prayahat-Godda	16.50
East Central/Norhtern	Saraygarh-Asanpurkupha	13.00
East Coast	Kendrapara (KDRP)-Paradeep	39.54
Northern	Rohtak Elevated track	4.85
North Western	Gangapur City-Piplai	24.72
South Central	Manoharabad-Gajwel	31.00
	Jaklair-Makthal	11.50
South East Central	Keoti-Antagarh	16.95
	Korichapper-Dharamjaigarh	30.00
	Katangi-Tirodi	14.93
South Western	Gangavathi-Karatagi	28.00
Western	Alirajpur-Khandala	9.72
	Chandod-Kevadiya	31.90
West Central	Jhalarapatan-Junakheda	13.70
	Total	**286.31**

Gauge Conversion:

During 2020-21, 469.93 Kms of track was converted from MG/NG to

BG as detailed below:

Railway	Section	Kms.
East Central	Jhanjharpur - Tamuria	9.00
East Central/Northern	Saraygarh - Raghopur	11.00
North Eastern	Pilibhit-Shahbaz Nagar	42.00
South Central	Akola-Akot	44.40
South East Central	Bhandarkund - Bhimagondi	23.00
	Chiraidongri – Mandla fort	24.00
	Lamta - Samnapur GC	25.00
	Nainpur-Bhoma	55.62
	Chhindwara-Chourai	32.75
Southern	Usilampatti-Andipatti	21.00
	Singaperumal Koil-Chengalpattu	8.50
	Guduvancheri-Singaperumal Koil	11.00
Western	Vadnagar-Varetha	21.04
	Dungarpur-Raighadh Road	70.73
	Dabhoi-Chandod	18.66
	Fatehabad-Ujjain	21.54
	Kalol-Dangarwa	18.19
	Nimar Kheri-Sanawad	12.50
	Total	**469.93**

Doubling:

During 2020-21, 1614.18 Kms of double/multiple lines track were completed as detailed below:

Railway	Section	Kms.
Central	Yeola-Ankai	15.14
	Daundaj-Valha	8.52
	Kulali - Savalgi	26.99
	Godhani-Kalumna	8.20
	Alandi-Shindawane	8.60
	Buti Bori-Sindi 4th line	19.00
	Teegaon-Chichonda 3rd line	17.00
Eastern	Dankuni-Baruipara	12.50
	Khanyan-Magra	8.94
East Central	Darbhanga-Thalwara	9.00
	Karmahat - Ranchi Road	6.00
	Jogeswar Bihar - Danea	9.00
	Garhwa-Meral Gram	11.20
	Wyndham Ganj-Nagaruntari	11.80
	Jarangdih-Bokaro	6.00

East Central/Southern	Ramna-Nagaruntari	11.00
East Coast	Paliba - Machkund Road	12.52
	Charumala Kusumi - Khadapa - Dhanapur - Jeypore	20.67
	Jarapada-Kerejanga	9.99
	Loisingha (LSX)-Balangir (BLGR)	18.61
	Lakhna-Harishankar-Turekela Road	25.10
	Kumhar Sodra-Kaklur	12.25
	Angul-Kerejanga	13.50
	Turekela Road-Kantabanji	14.32
Northern	Prayag-Phaphamau	8.50
	Gauri Ganj-Bani-Jais	17.34
	Kundanganj (KVG)-Harchandpur (HCP)-Gangaganj (GANG)	14.50
	Deoband-Tapri	28.00
	Ikkar-Haridwar	8.00
	Utraitia-Transport Nagar	10.00
	Bartara-Jangbahadur Ganj	17.00
	Amritsar- Chhehtra	6.00
North Central	Hodal-Chata	21.00
	Bhua-Sarsoki	17.22
North Eastern	Kachhwa Road-Katka-Madho Singh	16.02
	Aunrihar-Taraon	13.00
	Taraon-Nand Ganj	9.40
	Madho Singh-Gyanpur Road	13.05
	Ballia-Phephna	12.00
	Nand Ganj-Ghazipur	18.00
Northeast Frontier	Tetelia - Jagiroad	17.95
	Digaru - Tetelia	5.57
	Kampur-Hojai	27.36
	Majgaon - Abhayapuri	8.96
North Western	Jethi-Karjoda	10.00
	Madar-Adarsh Nagar bypass line	7.66
	Ajmer-Daurai	8.43
	Haripur-Sendra	19.00
Southern	Kadambur (KDU)-Vanchi Maniyachchi (MEJ)-Tattapparai (TIP)	30.00
	Vanchi Maniyachchi Jn. to Gangaikondan	14.39
	Mecheri Road-Mettur Dam	16.00
	Attippattu-Attippattu Pudunagar 4th line	1.70
	Nethravathi-Mangaluru	1.70
	Kadambur-Kovilpatti	23.00
	Gangaikondan-Tirunelveli	14.51
	Omalur-Mecheri Road	12.63
	Tirumangalam-Tulukapatti	41.18
South Central	Pendekallu-Edduladoddi	8.60
	Chigicherla-Zangalapalli	10.70

	Shadnagar-Balanagar-Gollapalli	30.23
	Gudivada-Kavutaram-Pedana-Machilipatnam (35)	36.10
	Moturu-Gudivada-Indupalli-Uppaluru (32)	32.57
	Garladinne-Taticherla	9.00
	Nallapadu-Perecherla	7.80
	Rahovpuram-Potkapalli	23.00
	Falaknuma-Umdanagar	13.98
	Kavali-Ulvapadu 3rd line	29.85
	Donakonda-Gajjelakonda	12.49
South Eastern	Karra-Govindpur	12.30
	Chakradharpur-Sonua (21.3 Km)	21.30
	Dhutra-Bamra (27.9 Km)	27.90
	Rajkharswan- Rajkharswan(W/O)	2.00
	Jharsuguda-Dhutra	8.8
	Jhargram-Kalaikunda	31.00
South East Central	Pendra-Nigaura	27.60
	Brajrajnagar-Jharsuguda	13.15
	Dongargarh-Rajnandgaon	31.20
South Western	Lachyan-Hotgi	33.00
	Unkal-Hubballi bye pass West Cabin-Navalur-Dharwad	16.63
	Chickodi-Raybag	15.00
	Harihar-Devargudda	31.00
	Gubbi-Nittur	9.00
	Hubballi-Unkal	3.42
	Yelahanka-Makalidurga	36.00
	Raybag-Kudachi	17.00
	Tolahunse-Davangere	10.00
	Hubballi-Hubballi South	4.00
	4th Coaching terminal at Baiyyappanahalli	23.50
West Central	Satna-Kaima	6.00
	Habibganj-Misrod-Mandideep	16.41
	Makronia-Lidhorakhurd	10.00
	Habibganj-Bhopal	5.93
	Guna-Pilighat	19.49
	Bakhera-Mandideep	25.01
Western	Sadla-Bajana-Jat Pipli	18.22
	Kidiyanagar-Chitrod-Shivlakha-Lakadiya	25.02
	Vatva-Maninagar (Phase-I)	5.03
	Ujjain C - Karchha	15.32
	Radhanpur-Varahi	19.52
	Sukhpur-Halvad-Dhanala	17.59
	Dhanala-Wadharva	25.38
	Maliya Miyana B cabin - Surbari	10.39
	Gambhir Bridge	1.83
	Total	**1,614.18**

Gauge-wise Details:

Broad gauge, though forming 94.57% of the route, generated 100% of the freight output (NTKms) and 99.94% of the passenger output (Pkms).

Route length as on 31.03.2021 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)	19,901.56	18,053.76	37,955.32	24,900.63	1,547.24	26,447.93	64,403.25
Metre (1000 mm)	-	2,111.71	2,111.91	-	-	-	2,111.71
Narrow (762 mm/ 610 mm)	-	1,587.83	1,587.83	-	-	-	15,87.83
Total	**19,901.56**	**21,753.30**	**41,654.86**	**24,900.63**	**1,547.24**	**26,447.93**	**68,102.79**
%age to total RKMs	**-**	**-**	**61.16**	**-**	**-**	**38.84**	

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 2020-21, traffic density (million GTKms. per running track km.) increased from 4.29 to 15.34 on BG.

Track Renewal and Maintenance:

During 2020-21, 4,363 kms in Complete Track Renewal (CTR) units of track renewal was carried out. The year wise details of Track Renewal done and expenditures incurred thereon are as under:

Year	Gross expenditure (₹ in cr.)	Track Renewal done (kms)
2017-18	8,884.18	4,023
2018-19	9,651.32	4,181
2019-20	9,390.55	4,500
2020-21	***13,625.17**	**4,363**

One Complete Track Renewal (CTR) units comprises of one km of Through Rail Renewal (0.5 CTR units) and one km of Through Sleeper Renewal (0.5 CTR units).

Track Upgradation:

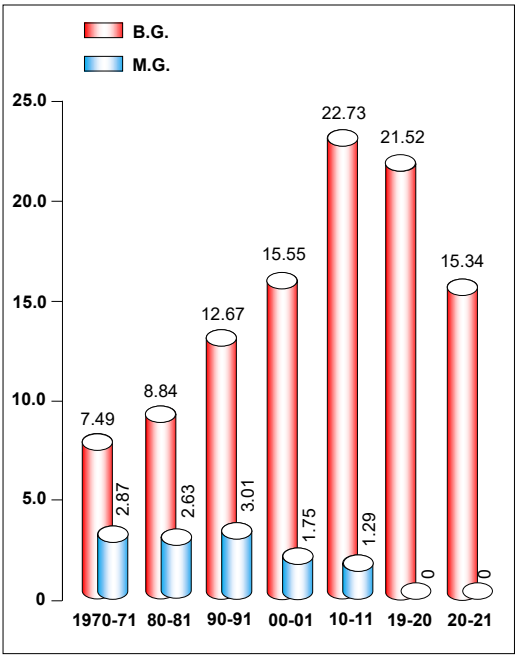
The track constitutes the basis infrastructure of a railway system and bears the burden of coping with ever increasing traffic. Higher speed and heavy axle load operation of IR has necessitated up-gradation of the track structure. Several policy initiatives have been taken in order to modernize the track.

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 60kg 90UTS rails are used in place of 90R/52kg 72/90UTS 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 31.03.2021, BG main lines of IR, about 89.61% of the length is covered by long welded rails, 99.36% with PSC sleepers and 98.28 % with 52kg/60kg 90 or higher UTS rails.

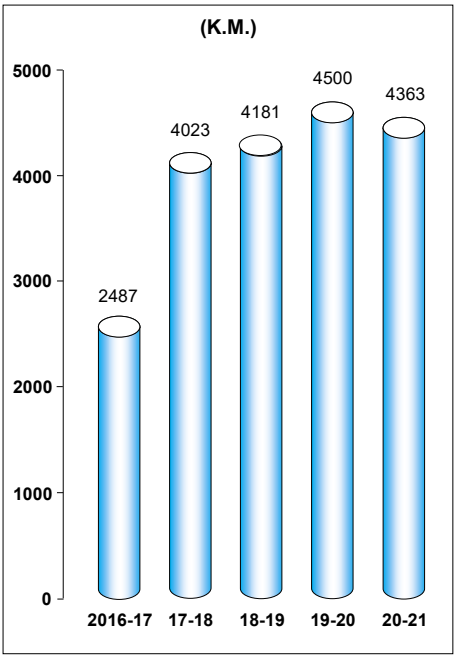
Welded Rails:

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 31.03.2021, 84,019.7 Km length of track on main lines of Indian Railways was with long welded rails and 9,229 Km length of track on main lines was with short-welded rails.

TRAFFIC DENSITY
MILLION GTKMS
PER RUNNING TRACK KM



TRACK RENEWALS
PER ANNUM



Bridges:

As on 01-04-2021, IR has 1,55,278 Bridges out of which 729 are important, 12,493 are major and 1,42,056 are minor Bridges. During the year 2020-21, 1,114 Bridges are Strengthened/Rehabilitated/Rebuilt to enhance safety of train operation.

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 01.04.2021 is as under:

Total number of level crossings	:	20,395
Number of manned level crossings	:	19,532 (95.8%)
Number of unmanned level crossings	:	863 (4.2%)

Indian Railway has decided to progressively eliminate the level crossings for the safety of road users and train passengers. During the year 2020-21, 961 Nos. of manned level crossings eliminated. All unmanned level crossings on Board Gauge have been eliminated.

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.

During the year 2020-21, 174 ROBs and 959 RUBs/subways have been constructed under cost sharing, railway cost/accommodation works, Deposit/ BOT term and by NHAI over Indian Railway.

Bridge Inspection and Management System:

Modern Bridge Inspection techniques have been adopted, which includes inspection by drones, under water inspections, monitoring the water level with the help of water level system, 3D scanning of river bed etc.

Land Management:

As on 31.03.2021 Indian Railways (IR) owns about 4.84 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.	3.60
Afforestation	0.43
'Grow More Food' scheme	0.02
Commercial Licensing	0.04
Other uses like pisiculture	0.12
Encroachment	0.01
Vacant land	0.62
Total	**4.84**

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 2020-21, Railway did mass plantation of 93 lakh 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. Plantation will further improve in coming years. 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. As such, Railway is making all efforts to plant more and more trees.

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, 87 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 Railways land, RLDA has also been assigned the task of development of Multi Functional Complexes (MFCs).

Electrification

Executive Summary of Railway Electrification

With a view to reduce the Nation's dependence on imported petroleum based energy and to enhance energy security to the Country, as well as to make the Railway System more eco-friendly and to modernize the system, Indian Railways have been progressively electrifying its rail routes.

In pre-independence period, electrification remained confined to 388 Route kilometers (RKMs) and it is only in the post-independence period that further electrification was taken up. Since then, there has been no looking back and the Indian Railways have slowly but steadily electrified its routes.

By March'2021, electrification on Indian Railways has been extended to 44,802 RKMs out of the total Broad Gauge (BG) rail network of 68,103 RKMs including Konkan Railway. This constitutes 65.79% of the total BG Railway Network. On this electrified route, 67.3% of freight traffic & 59.6% of Passenger traffic is hauled with fuel cost on electric traction being merely 38% of the total traction fuel cost on Indian Railways. Further, Indian Railways has planned to electrify balance BG rail routes expeditiously on mission mode.

With the progressive electrification, metro cities of Delhi, Mumbai, Kolkata and Chennai have already been interconnected with electric traction. Mumbai-Chennai route is also electrified except Mohol - Dudhani, on which electrification work is in progress and targeted for completion during 2021-22.

II Progress of Railway Electrification

(a) The progress of Electrification since independence is tabulated below:

Year	Cumulative Electrified (RKM)
1951	388
1961	748
1971	3,706
1981	5,345
1991	9,968
2001	14,856
2011	19,607

2018	29,228
2019	34,319
2020	39,329
2021	**44,802**

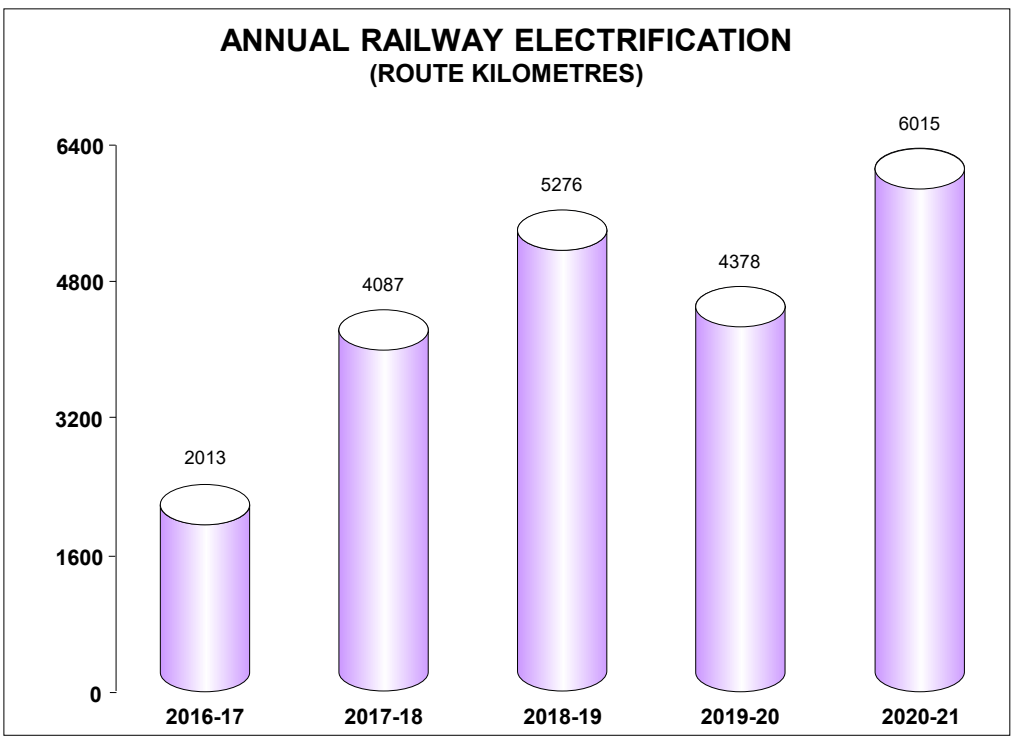
(b) During year 2020-21, 6,015 RKM has been electrified.

III Sections Opened for Electric Traction after Statutory Inspection of Commissioner of Railway Safety in 2020-21.

S.No.	Section	Railway	State	RKM
1.	Tajsultanpur-Gulbarga-Dudhani	CR	Karnataka	64
2.	Dhalgaon-Kurudwadi- Mohol & Kuruduwadi-Bhigwan	CR	Maharashtra	254
3.	Shindwane-Jejuri	CR	Maharashtra	27
4.	Miraj-Shenoli	CR	Maharashtra	63
5.	Banka-Bhagalpur-Shivnarayanpur	ER	Bihar	93
6.	Madhupur-Girdih	ER	Jharkhand	42
7.	Rampurhat-Harisingh-Dumka	ER	Jharkhand	64
8.	Manigram - New Farakka	ER	West Bengal	56
9.	Muzzafarpur-Sitamarhi-Darbhanga	ECR	Bihar	130
10.	Karaila Road- Shaktinagar	ECR	Uttar Pradesh	33
11.	Dildaarnagar-Tarighat	ECR	Bihar	20
12.	Natesar-Islampur	ECR	Bihar	21
13.	Kendrapada-Paradeep	ECOR	Odisha	36
14.	Khurda-Nayagarh	ECOR	Odisha	66
15.	Jakhal-Duhri-Lehramohabat	NR	Punjab	132
16.	Prayag-Prayag Ghat	NR	Uttar Pradesh	2
17.	Aonla-Bareilly	NR	Uttar Pradesh	28
18.	Phaphamau-Pratapgarh	NR	Uttar Pradesh	46
19.	Sultanpur-Chilbila	NR	Uttar Pradesh	36
20.	Janghai - Zafrabad	NR	Uttar Pradesh	48
21.	Delhi cantt-Patel Nagar	NR	Delhi	4
22.	Virbhadra-Yog Nagari Rishikesh	NR	Uttarakhand	6
23.	Roihtak Elivated Track	NR	Haryana	5
24.	Unnao-Balamau-Sitapur	NR	Uttar Pradesh	160
25.	Noli-Shamli	NR	Uttar Pradesh	79
26.	Garhi Harsaru-Farukhnagar	NR	Haryana	11
27.	Raibareilly-Unchhahar & Daryapur-Dalmau	NR	Uttar Pradesh	59
28.	Batala-Qadain & Amritsar-Chhehtra	NR	Punjab	27
29.	Amb-Andaura-Daulatpur	NR	Himachal Pradesh	16
30.	Gohana- Pandu Pindara	NR	Haryana	37
31.	Etawah-Bhandai	NCR	Uttar Pradesh	126
32.	Bhatni-Aunrihar	NER	Uttar Pradesh	126
33.	Kasganj-Bareily-Pilibhit- Majhola Pakariya	NER	Uttar Pradesh	185
34.	Majhola Pakariya-Tanakpur	NER	Uttarakhand	37

35.	Sitapur-Lakhimpur	NER	Uttar Pradesh	45
36.	Duraundha-Masrakh	NER	Bihar	42
37.	Salempur-Barhaj Bazar	NER	Uttar Pradesh	20
38.	Indara-Phephna	NER	Uttar Pradesh	50
39.	Mandhana-Brahmavart	NER	Uttar Pradesh	9
40.	Gorakhpur-Anandnagar	NER	Uttar Pradesh	41
41.	Gonda-Suhagpur	NER	Uttar Pradesh	6
42.	New Jalpaiguri- New cooch behar-Jorai	NFR	West Bengal	171
43.	Jorai-S Rampur Assam	NFR	Assam	11
44.	Bongaigaon-Rangiya-Kamakhaya	NFR	Assam	151
45.	Bassi-JP-Kanakpura	NWR	Rajasthan	42
46.	Swaroopganj -Mawal	NWR	Rajasthan	38
47.	Bhiwani By pass line New line	NWR	Haryana	1
48.	Ringas-Jaipur- Shivdaspura	NWR	Rajasthan	82
49.	Churu-Sadulpur-Gogameri-Nohor	NWR	Rajasthan	164
50.	Madar-Bangurgram-Beawar	NWR	Rajasthan	58
51.	Thiruvarur-Nagore	SR	Tamil Nadu	31
52.	Nagore-Karaikal	SR	Puducherry	11
53.	Mayiladuturai-Thanjavur	SR	Tamil Nadu	68
54.	Cuddlore Port-Vridhachalam	SR	Tamil Nadu	57
55.	Nidamangalam-Mannargudi	SR	Tamil Nadu	13
56.	Jokatte-Penambur	SR	Tamil Nadu	9
57.	Medchal-Manoharabad	SCR	Telangana	13
58.	Vijaywada-Bhimavaram	SCR	Andhra Pradesh	107
59.	Gudiwada-Machhlipatanam	SCR	Andhra Pradesh	36
60.	Lingampet Jagtiyal-Morthad	SCR	Telangana	51
61.	Dharmvaram-Kadiri	SCR	Andhra Pradesh	67
62.	Vikarabad-Kohir	SCR	Telangana	45
63.	Akola-Lohagad	SCR	Maharashtra	35
64.	Falaknuma-Umdanagar	SCR	Telangana	14
65.	Tenali-Repale	SCR	Andhra Pradesh	33
66.	Bankura-Mashagram	SER	West Bengal	117
67.	Ramkanali-Chaurashi	SER	West Bengal	6
68.	Rupsa-Bhanjpur	SER	Odisha	56
69.	Tatanagar-Bahalda Road	SER	Jharkhand	42
70.	Bahalda Road-Gurumasani	SER	Odisha	23
71.	Bhimalgondi-Bhandarkund	SECR	Madhya Pradesh	18
72.	Nainpur- Lamta-Samnapur	SECR	Madhya Pradesh	58
73.	Chiraidongri-Mandala Fort	SECR	Madhya Pradesh	23
74.	Tumsar Road-Dongri Buzurg	SECR	Maharashtra	26
75.	Dongri Buzurg-Tirodi	SECR	Madhya Pradesh	20
76.	Marauda -Balod	SECR	Chhattisgarh	52
77.	Padnur -Kulgargi	SWR	Karnataka	95
78.	Rayadurga-Molakalmuru	SWR	Andhra Pradesh	16
79.	Molakalmuru-Chitradurga	SWR	Karnataka	83
80.	Kariganuru-Harlapur-Hulkoti	SWR	Karnataka	103
81.	Hubli-Alnavar	SWR	Karnataka	65

82.	Anekal-Palakkodu	SWR	Tamil Nadu	85
83.	Hotgi-Padnur	SWR	Maharashtra	30
84.	Mathela-Nimarkhedi- Sanswad & Nimarkhedi-NTPC siding	WR	Madhya Pradesh	99
85.	Vadnagar-Baretha	WR	Gujarat	20
86.	Dhola-Savarkundla-Pipava	WR	Gujarat	146
87.	Q-Track(Nimach-Chittorgarh)	WR	Rajasthan	4
88.	Vishwamitri-Dabhoi-Chandod-Kevadia & Dabohi-Bodeli	WR	Gujarat	118
89.	Ujjain-Fatehabad	WR	Madhya Pradesh	22
90.	Hapa-Bhatiya & Jamnagar-Windmill	WR	Gujarat	109
91.	Rau-Tihi	WR	Madhya Pradesh	8
92.	Anand-Khambat	WR	Gujarat	52
93.	Pachore-Maksi	WCR	Madhya Pradesh	88
94.	Katni-Satna excl. Kaimoor & Jukehi-Kymore	WCR	Madhya Pradesh	116
95.	Majhauli-Mahediya	WCR	Madhya Pradesh	21
96.	Shivpuri-Gwalior	WCR	Madhya Pradesh	122
97.	Jhalawar City-Juna Khera	WCR	Rajasthan	21
98.	Chanderia-Gurla	WCR	Rajasthan	157
99.	Bijoor-Karwar	KRCL	Karnataka	132
100.	Roha-Ratnagiri	KRCL	Maharashtra	202
	Total			**6,015**



IV Important Railway Electrification Projects Completed during 2020-21:

S. No.	Section	Railway	State	RKM
1	Amla-Chhindwara-Kalumna	CR & SECR	Madhya Pradesh & Maharashtra	257
2	Bonidanga Link Cabin / Bonidanga - Barharwa - Sahibganj - Kiul incl. Tinpahar - Rajmahal	ER	Bihar & Jharkhand	247
3	Katwa-Azimganj-Nalhati & Azimganj-Tildanga/New Farakka incl. Nalhati & Azimganj bypass line	ER	West Bengal	200
4	Garhwa Road - Chopan - Singrauli	ECR	Jharkhand, Madhya Pradesh & Uttar Pradesh	257
5	Giridih-Nawadih-Koderma Jn.	ECR	Jharkhand	114
6	Muzaffarpur - Sitamarhi	ECR	Bihar	64
7	Jakhal - Dhuri - Ludhiana	NR	Punjab	123
8	Janghai-Zafrabad	NR	Uttar Pradesh	47
9	Phaphamau-Partapgarh	NR	Uttar Pradesh	46
10	Raebareli-Unchahar incl. Dalmau-Daryapur	NR	Uttar Pradesh	63
11	Rajpura - Dhuri - Lehra Muhabhat	NR	Punjab	151
12	Unnao-Balamau-Sitapur	NR	Uttar Pradesh	162
13	Bhandai-Udi	NCR	Uttar Pradesh	113
14	Sawai Madhopur-Jaipur-Ringas	NWR	Rajasthan	188
15	Shoranur-Mangaluru-Panambur	SR	Karnataka & Kerala	328
16	Villupuram-Cuddalore Port-Mayiladuturai- Thanjavur & Mayiladuturai-Thiruvarur	SR	Tamil Nadu	228
17	Bankura-Mashagram	SER	West Bengal	118
18	Tumsar Road - Tirodi	SECR	Madhya Pradesh & Maharashtra	47
19	Gondia-Nainpur-Jabalpur	SECR	Madhya Pradesh & Maharashtra	229
20	Guna-Gwalior	WCR	Madhya Pradesh	227
21	Singrauli-Katni	WCR	Madhya Pradesh	260
22	Vijaipur-Maksi	WCR	Madhya Pradesh	188
23	Itarsi - Katni - Manikpur incl Satna - Rewa and Manikpur - Chheoki	WCR & NCR	Madhya Pradesh & Uttar Pradesh	653

Signal and Telecom

Signalling

To enhance safety in train operations and make it efficient, Modern Signalling Systems comprising of Panel Interlocking/Route Relay interlocking/Electronic Interlocking (PI/RRI/EI) with Multi Aspect Colour Light Signals (MACLS) are being progressively provided. So for 6200 stations (covering about 99 % of interlocked Broad Gauge stations) on Indian Railways have been provided with such systems, replacing the obsolete Multi Cabin Mechanical Signalling System, thus optimizing operational cost involved in its operation as well as enhancing safety by reducing human intervention. During the financial year 2020-21, 12 Stations namely, Pune (Goods Cabin 3 & 4) and Muzaffarpur have been provided with Major Route relay interlocking (RRI), Kiul, Ajmer, Nallapadu, Rajahmundry, Rajkharsawan, Jolarpettai (A,B,&C, Cabin), Tambaram, Hosapete Junction, Baiyyppanahlli and Hubli with Electronic Interlocking (EI). Panel Interlocking (PI) and Electronic Interlocking (EI) have been provided at 34 stations and 311 stations respectively.

Complete Track Circuiting: To ensure track occupation verification, Track Circuiting has been completed at about 34,572 locations up to 31.03.2021 covering 'A', 'B', 'C', D Special' and 'E Special' route. Total 6,203 stations (99%) have been provided with complete track circuiting over Indian railways.

Block Proving by Axle Counter (BPAC): To enhance safety and improved mobility automatic verification of complete arrival of train at a station, Block Proving by Axle Counter (BPAC) is being provided at stations having centralized operation of points and signals. As on 31.03.2021, Block Proving by Axle Counters (BPAC) has been provided on 5,805 block sections.

Intermediate Block Signalling: Provision of Intermediate Block Signalling (IBS) has proved very useful in enhancing line capacity without extra recurring revenue expenditure in form of operating manpower and amenities required while developing and operating a block station. As on 31.03.2021. Intermediate Block Signalling has been provided in 628 block sections on Indian Railways.

Automatic Block Signalling: For augmenting Line Capacity and

reducing headway on existing High Density Routes on Indian Railways, Signalling provides a low cost solution by provision of Automatic Block Signalling. As on 31.03.2021, Automatic Block Signalling has been provided on 3,447 Route Km.

Advance Train Protection System: Provision of Advance Train Protection (ATP) System is a desirable Signalling requirement to run a train above 140 Kmph of speed. Presently Gatiman Express is running at 160 Kmph on New Delhi - Agra section of 200 Route Km where European Train Control System Level-1 ATP System has been provided by the Railway.

RDSO with three Indian OEMs has developed India's own ATP System name KAVACH (Train Collision Avoidance System). The system has been provided on 571 Route Km of Indian Railway. Further work of KAVACH at 879 Route Km is in progress.

KAVACH has also been sanctioned as part of Mission Raftar to upgrade the speed on New Delhi – Mumbai and New Delhi – Howrah section up to 160 Kmph.

Further, KAVACH (TCAS) works have been included in works programme covering High Density Network (HDN), Highly Utilized Network (HUN) and other routes of Indian Railways.

Centralized Traffic Control (CTC):

It is a computer based system which facilitates control and management of multiple Signalling installations covering a number of stations from a single location. It also provides a real time simulation of railway traffic centrally helping in real time traffic planning for punctual train operations. Controllers can manage train movements directly from CTC centre on real time basis.

Centralized Traffic Control (CTC) covering 250 Route Km of Double line section with 29 stations on Aligarh - Kanpur Route has been operationalzed.

Further works of CTCs on about 14,660 Route Km including all entire HDN Routes have been approved.

Train Management System(TMS): TMS provides real-time status of train positions, all train movements and a complete view of the section covered on a giant screen provided in the divisional control centre. Punctuality reports, rake and crew links, train graphs, and unusual occurrence reports are generated in the control office.

The overall display panel, known as the 'Mimic Indication Panel', is designed to present detailed status of the system at a glance. It is expected

that with commissioning of TMS/CTC projects, our controllers shall be able to efficiently manage train operations. Besides providing real time train running information in the control offices, passengers shall also be provided with accurate arrival/departure information at stations through automatic working of the Passenger information System at Stations. This system has been provided on Suburban sections of Mumbai on Western & Central Railways and Howrah of Eastern Railway. Similar System shall also be provided at Khurda Road in East Cost Railway and Sealdah in Eastern Railway.

Interlocking of Level Crossing Gates:

Indian Railways have provided interlocking with Signals at 11,710 Level Crossing Gates as on 31.03.2021, to enhance the safety at Level Crossings.

Sliding Boom at LC Gate:

Provision of Interlocked Sliding Boom has become very effective in minimizing disruption to train services when Level Crossing Gates get damaged by road vehicles especially in suburban areas. With provision of Sliding Boom Interlocking, Signalling System continues to function normally with minimum effect on train operation. 5,897 Nos. of busy interlocked gates have been provided with Sliding Booms as on 31.03.2021 in addition to lifting barriers and further busy gates are also being progressively covered.

Growth of deployment of Signalling on Indian Railways:

As on 31.03.2021

Item	March,17	March,18	March,19	March,20	March,21
Panel Interlocking (Stations)	4,155	4,130	4,052	3,863	**3,747**
Route Relay Interlocking (Stations)	281	282	228	228	**247**
Electronic Interlocking (Stations)	1,148	1,358	1,606	1,927	**2,206**
PI/RRI/EI (Stations)	5,584	5,770	5,886	6,018	**6,200**
Block Proving by Axle Counter (Block sections)	4,976	5,058	5,363	5,663	**5,805**
Automatic Signalling (Route Kms)	2,866	2,901	3,039	3,309	**3,447**
Intermediate Block Signalling (Block sections)	501	532	574	602	**628**
Interlocked level Crossing Gates (Nos.)	10,826	11,006	11,375	11,639	**11,710**

Self-Sufficiency

Signalling Workshop: Railway Signalling installations use a number of specialized equipment for smooth & safe running of trains. With upgradation

in technology and shift towards electrical/electronic system of Signalling, the demand for these equipments has gone up. To attain self-sufficiency in meeting this increased demand, IR's Signal Workshops at Podanur on Southern Railway, Mettuguda on South Central Railway, Gorakhpur on North Eastern Railway, Howrah on Eastern Railway, Byculla on Central Railway, Sabarmati on Western Railway, Ajmer on North Western Railway, Kharagpur on South Eastern Railway and Ghaziabad on Northern Railway have been manufacturing items like Electric Point Machines, Tokenless Block Instrument, Double Line Block Instruments, Axle Counters, various types of Relays, etc. Year vise out-turn achieved by these S&T workshops are as under:

Year Wise out Turn Signal and Telecommunication Workshop:

Year	Out Turn in Lakhs
2016-17	22,513.21
2017-18	25,749.21
2018-19	29,669.70
2019-20	32,385.90
2020-21	**25,041.89**
	(Effected by Covid)

Telecommunication

Telecommunication plays an important role in train control, operation and safety on IR. Indian Railways has set up a state of the art, nationwide telecom network for meeting its communication needs. RailTel, a Railways Central Public Sector Enterprise formed in September, 2000 is successfully exploiting surplus capacity of IR Telecom network commercially.

As on March 2021, Indian Railways has about 61,526 Route Kilometers of Optical Fibre Cable (OFC) that is carrying Gigabits of traffic. Railways Control Communication which is quintessential for train operation and control is also being run on OFC system. This OFC network is also contributing significantly in building National Knowledge Network through RailTel. It is also planning to provide Broadband connectivity to Panchayats through this OFC network.

Railways have planned Wi-Fi facility to be provided at all stations excluding Halt Stations for internet facility to passengers which will aid in "Digital India" initiatives of Govt. of India. Wi-Fi internet facility at 6,060

stations has been provided till 30.09.2021. Work is in progress at remaining feasible stations by M/s Tata Trust without incurring any expenditure by Ministry of Railways. Wi-Fi system has also been provided at Railway Offices & 80 Divisional & Zonal Hospitals over IR.

To enhance the security of passengers & premises and to work as a strong deterrent to crime in station premises particularly those against women and children. Railway has planned to provide Video Surveillance System at all stations except halt stations on Indian Railways. Video Surveillance (CCTV) System has been provided at 829 stations till 31.08.2021. In addition, CCTV also provided at Railway Offices & 80 Divisional & Zonal Hospitals over Indian Railways.

Indian Railways have also rolled out Global System of Mobile Communication – Railways (GSM-R) based Mobile Train Radio Communication (MTRC). MTRC has already been provided on 3,445 Route Kms. Now Railways have decided to go for Long Term Evolution (LTE) System based MTRC to fulfill the data, voice and video needs. 5 MHz spectrum in 700 MHz band has recently been allotted by Cabinet for rolling out LTE.

Indian Railways has its own satellite hub that is being utilized for connecting remote locations for Freight Operation Information System (FOIS), Unreserved Ticketing System (UTS)and Disaster Management System as well as for other critical communication needs. Besides IR network uses 17,254 data circuits that power its various data and voice networks across the country.

Railways have also established their Multi-Protocol Level Switching (MPLS) based Network for voice traffic. This Network has been used to interconnect exchanges of Railways, carrying the administrative voice traffic. Common User Group (CUG) mobile phones have also been hired to enable communication while on move to enhance safety, reliability and productivity. IR is also utlizing more than 1.6 lakh VHF walkie-talkies sets to ensure safety and enhance reliability.

Internet has changed the way organizations work today. It is impacting almost all the activities of daily life today. Broadband penetration is also taken as an indication of growth. Indian Railways has also embraced this technology and is using it effectively. It has recently provided broadband in all its major colonies in zonal and divisional headquarters.

Telecom also plays a major role in ensuring passenger comfort. For the convenience of passengers, Train Information Boards have been provided at 1,147 Stations, Public Address (PA) Systems at 4,752 stations and Coach Guidance System at 652.

Indian Railway has installed a SIP server & commissioned SIP Phones on PAN India basis across Indian Railways. Indian Railways are extensively utilizing Video Conferencing services (both Codec based and web based) for conducting various Meetings, Training, Conferences and Seminars thereby duly following social distancing measures.

Implementation of e-Office application over Indian Railways as a part of digital initiative & to go paperless in the office working which would ultimately improve transparency and efficiency in the system, is also under implementation over Indian Railways. Till 30.09.2021, 216 locations including all zonal & divisional headquarters have been connected through e-Office & approx. 1.35 Lakhs user accounts have also been created over Indian Railways. Indian Railways have also enabled access of E-Office through Internet with the help of SSL-VPNs. A Secure Sockets Layer Virtual Private Network (SSL VPN) is a virtual private network (VPN) created using the Secure Sockets Layer (SSL) protocol to create a secure and encrypted connection over the Internet.

Important Telecom assets are tabulated below:

S.No.	Installation	Units	As on 31.03.2020	As on 31.03.2021
1.	Optical Fibre Cable	Rkms	59,105	**61,526**
2.	Quad Cable	Rkms	62,732	**62,818**
3.	Railway Telephone Subscribers Lines	Nos.	3,56,910	**3,45,374**
4.	No. of Control Sections provided with Dual Tone Multiple Frequency (DTMF) control equipment	Nos.	323	**325**
5.	Mobile Train Radio communication System (Route kms.):			
	a. GSM (R) based	Rkms	3,445	**3,445**
	b. TETRA based	Rkms	53	**53**
6.	Public Address System	Nos. of STNs	4,508	**4,752**
7.	Train Display Boards	Nos. of STNs	1,137	**1,147**
8.	Coach Guidance System	Nos. of STNs	649	**652**
9.	VHF Sets			
	a. 5 Watt sets (Hand held)	Nos.	1,53,999	**1,61,048**
	b. 25 Watt sets (At Stations)	Nos.	9,767	**10,331**
10.	V SAT	Nos.	635	**516**
11.	UTS/PRS Circuits	Nos.	11,044	**11,174**
12.	FOIS Circuits	Nos.	3,030	**2625**
13.	NGN & Exchange Circuits	Nos.	2,536	**2,045**
14.	Wi-Fi at Stations	Nos. of STNs	5,661	**5,969**
15.	CCTV at Stations	Nos. of STNs	598	**780**

Rolling Stock

Locomotives:

The size of IR's fleet of locomotive stock as on 31st March, 2021 consisted of 39 steam, 5,108 diesel and 7,587 electric locomotives. The number of locomotives, traction-wise, along with their average tractive effort is as follows:

Year	Number of locomotives				Tractive effort per loco (in kgs.)	
	Steam	Diesel	Electric	Total	B.G.	M.G.
1950-51	8,120	17	72	8,209	12,801	7,497
1960-61	10,312	181	131	10,624	14,733	8,201
1970-71	9,387	1,169	602	11,158	17,303	9,607
1980-81	7,469	2,403	1,036	10,908	19,848	10,429
1990-91	2,915	3,759	1,743	8,417	24,088	12,438
2000-01	54	4,702	2,810	7,566	29,203	18,537
2010-11	43	5,137	4,033	9,213	34,380	18,304
2018-19	39	6,049	6,059	12,147	38,537	16,226
2019-20	39	5,898	6,792	12,729	39,037	16,454
2020-21	**39**	**5,108**	**7,587**	**12,734**	**39,911**	**16,439**

Traction wise, average tractive effort per loco (Kgs.) for last four years is given below:

Year	Broad Gauge		Metre Gauge	
	Diesel	Electric	Diesel	Electric
2017-18	38,244	38,086	18,960	-
2018-19	38,621	38,455	18,967	-
2019-20	38,777	39,257	18,963	-
2020-21	**40,246**	**39,691**	**19,080**	**-**

Passenger Carrying Vehicles (PCVs) with aggregate seating capacity in different years and availability of Other Coaching Vehicles (OCVs) are shown below:

Year	Passenger Coaches						Other Coaching Vehicles (Number+)
	EMU Coaches		Conventional Coaches		DMU/DHMU		
	Number	Capacity $	Number @	Seating capacity	Number	Seating capacity	
1950-51	460	87,986	13,109	854,678	-	-	6,059
1960-61	846	150,854	20,178	1,280,797	-	-	7,415
1970-71	1,750	340,541	24,676	1,505,047	-	-	8,719
1980-81	2,625	500,607	27,478	1,695,127	-	-	8,230
1990-91	3,142	609,042	28,701	1,864,136	-	-	6,668
2000-01	4,526	859,701	33,258	2,372,729	142	13,884	4,731
2010-11	7,292	13,64,948	45,082	32,54,555	761	74,097	6,500
2018-19	10,439	18,85,610	55,282	40,41,235	1,883	1,65,52	6,406
2019-20	*11,439	20,72,843	*57,121	*42,11,550	*1,795	1,57,012	*6,611
2020-21	**10,991**	**19,57,577**	**58,760**	**43,01,369**	**1,965**	**1,59,922**	**8,102**

$ Includes standing accommodation.

+ Includes luggage vans, mail vans, parcel vans etc.

@ Includes Rail Cars.

* revised

Wagons:

As on 31st March, 2021, the size of IR's wagon fleet consisted of 3,02,624 units 67,597 covered, 1,69,656 open high-sided, 24,901 open low-sided, 24,466 other types and 16,004 brake vans/departmental wagons:

Year	Total wagons on line (In units)	Percentage of total number of wagons					
		Covered	Open high sided	Open low sided	Other types	Depart-mental	Total
1950-51	205,596	58.9	25.5	3.4	7.2	5.0	100
1960-61	307,907	57.3	25.5	2.5	10.6	4.1	100
1970-71	383,990	53.4	25.6	1.8	13.0	4.2	100
1980-81	400,946	53.3	28.3	3.2	11.8	3.4	100
1990-91	346,102	49.1	29.6	3.6	14.4	3.3	100
2000-01	222,193	34.1	41.0	3.6	17.5	3.8	100
2010-11	229,987	26.6	52.8	3.1	12.0	5.6	100
2018-19	2,89,175	23.4	57.1	5.9	8.5	5.1	100
2019-20	*2,93,011	*22.9	58.0	6.0	8.1	5.1	100
2020-21	**3,02,624**	**22.3**	**56.1**	**6.0**	**8.1**	**5.3**	**100**

* revised

Carrying capacity per wagon on broad gauge and metre gauge are indicated below :

Year	All Gauges		Broad Gauge		Metre Gauge	
	Total number of wagons$ (000)	Total capacity (Million tonnes)	Number$ (000)	Average capacity (Tonnes)	Number$ (000)	Average capacity (Tonnes)
1950-51	195	4.14	149	22.6	43	17.1
1960-61	295	6.30	207	23.1	83	18.0
1970-71	368	9.35	271	27.8	91	19.1
1980-81	387	11.14	299	30.6	83	23.0
1990-91	335	11.50	276	36.9	55	22.9
2000-01	214	10.19	199	48.7	14	34.4
2010-11	217	12.18	213	56.6	4	33.0
2018-19	275	16.95	274	61.9	1.0	31.6
2019-20	278	*17.43	277	62.8	*0.9	31.2
2020-21	**287**	**17.82**	**286**	**62.3**	**0.8**	**33.3**

$ Excludes departmental service wagons and brake vans

* revised

Some of the major types of wagons plying on IR as on 31.03.2021 are shown below:

Types of Wagons fleet (BG)

Types of Wagon	Units available	Tare weight (t)	Brief description
BOXNHS/M1	19,335	23.2	Bogie open wagon, air brake, high speed.
BOXNS	4,374	19.85	Bogie open wagon, air brake, high speed.
BOXNLW	2,299	20.41	Bogie open wagon, air brake, light weight.
BOXNCR	355	23.1	Bogie open wagon, air brake, made of corrosion resistant IRS M : 44 steel.
BOXNHA	758	23.17	Bogie open, air brake wagon of 22 t axle load with high side walls (higher than BOXN), designed for transportation of coal.
BOXNHL	72,817	20.6	Bogie open air brake, stainless steel wagon
BOX 'N'/M1	37,000	23.2	High - sided bogie open wagon with cast steel bogie, high tensile couplers, Cartridge Tapered Roller Bearings (CTRB), air brake, etc. for movement of bulk commodities like coal, iron ore etc.
BOY	1,104	20.71	Standard Gondola wagon, air brake, to carry minerals /iron ore with an axle load of 22.9 t.
BCN/M1 BCNA/M1	41,179	27.20/ 24.55	Bogie covered wagon, air brake fully riveted / welded construction for transportation of bagged cement, food grains, fertilizers, etc.
BCNAHS/M1	11,592	24.6	Bogie covered air brake, all welded & riveted construction with High Speed bogie CASNUB – 22 HS BOGIE.

BCNHL	18,832	20.8	Bogie covered, air brake, micro – alloy (stainless steel wagon)
BRN	1,497	24.393	Bogie Rail wagon Heavy, air brake.
BRNA /HS	5,601	23.54	Bogie Rail wagon Heavy, air brake, High Speed bogie, riveted cum welded construction.
BRHNEHS	1,987	26.15	Bogie Rail wagon, air brake, high speed CASNUB BOGIE for engineering department.
BFNS	1,249	26.71	Bogie Flat, air brake wagon, high speed for transportation of H.R. coils, plates, sheets & billets loading.
BOST / HS	9,981	25.50	Longer BOXNHS, air brake, wagon for finished steel products.
BOBR /N/HS/ M1	18,673	26.40/ 25.60/ 25.61	Bogie open discharge rapid wagon for coal.
BOBYN	5,790	27.78	Bogie Hopper, air brake bottom discharge wegon.
BOBSN/M1	2,145	30.00	Bogie open air brake, side discharge wagon for iron ore
BTPN	11,950	27.00	Bogie Tank wagon, air brake, for liquid consignments like petrol , naptha, ATF and other petroleum products.
BTPFLN	894	23.58	Bogie Tank wagon, air brake, with frameless body.
BTPGLN	281	41.60	Bogie Tank wagon, air brake, for carrying Liquified Petroleum Gas.
BLCA/BLCB/ BLCAM	18,665	19.10/ 18.00/ 18.00	Low Platform Container Flat wagon, 840 mm wheel diameter, AAR 'E' type centre buffer coupler and slack less draw bar system (privately owned)
BLLA/BLLB	1,619	19.10/ 19.00	Container Flat wagon, same as BLCA / BLCB, but with a Longer Platform of 45ft.(privately owned).

Repairs and Maintenance:

43 Loco sheds and 233 Carriage and Wagons sick lines and central repair depots provide repair and maintenance facilities for the entire fleet of rolling stock. 46 workshops undertake maintenance of Rolling Stocks.

The number of units of rolling stock given periodic overhaul (POH) in railway workshops during the year are given in the following table:

Type of Rolling Stock (BG+MG)	Periodic overhaul (Nos.) undertaken during the year	
	2019-20	**2020-21**
Diesel Locos	423	**156**
Electric Locos	490	**424**
Coaches	30,533	**24,295**
Wagons	55,433	**50,177**

COFMOW

Central Organisation for Modernisation of Workshops (COFMOW) was established under Ministry of Railways by Government of India for modernizing Indian Railways Workshops. Since its establishment in 1979.

COFMOW has been assisting in modernizing Indian Railways Production Units and maintenance Workshops. So far, COFMOW has been involved in purchasing over 24,707 machines valued at ₹7,650 crore. COFMOW continues its endeavor to provide crucial technical support to the various manufacturing and maintenance units of Indian Railways. COFMOW is now taking up composite turnkey projects of setting up workshops/expansion of capacity in PUs/workshops as well as specialised technical projects allotted by Ministry of Railways.

COFMOW is in a position to offer its services to those needing modernization or up gradation of their manufacturing/maintenance activities. COFMOW provides professional advice and a single window service in planning and procurement of machine tools and allied equipment. COFMOW has recently embarked upon the project related to modernisation of yards to maintain the condition of wheels, axle box bearings etc. of rolling stock.

Further, COFMOW provides professional advice and assists Zonal Railways & PUs in preparing and upgrading technical specifications for procurement of M&P, machine tools and allied equipment.

Salient features:

- Bringing in state of the art technologies available worldwide in the field of M&P.
- Preparing, Upgrading and Compiling specifications of machines used in workshops, maintenance sheds and production units.
- Its continued efforts for indigenisation have led to a vibrant machine tool industry in India.
- Undertake turnkey works/ projects associated with M&P, New Manufacturing lines and composite modernization projects.
- Professional expertise in training staff, in the required area, by interaction with firms and studying the field requirements.
- Supports not only Mechanical units, but all the departments of Indian Railways for their M&P requirements.
- E-tendering all M&P items.
- Executing Specialized technical projects involving upgradation of Railways rolling stock & yards.
- Reverse Auction for economic benefits.
- Successfully implemented payment of vendor through Central Integrated Payment System (CIPS).

Key Milestones:

Year	Fund Utilization (₹in crores)	Contracts Awarded (₹in crores)
2018-19	448.61	1,096.38
2019-20	587.58	802.29
2020-21	**703.43**	**823.45**

Composite Turnkey projects:

Completed

- Composite Works contract for Augmentation of production capacity for manufacturing of advanced LHB coaches at ICF/Chennai(₹127 crore).
- Coil Spring manufacturing facility at ICF/Chennai (₹83.88 crore).
- New Wheel and Axle assembly line at RWF/Bengaluru (₹49.42 crore).
- Setting up of Wheel Shop at Sanpada (₹33.64 crore).
- Augmentation of Wheel Shop capacity at Matunga/CR (₹62.3 crore).
- Augmentation of BG coaches POH capacity from 50 to 100 coaches, Bhavnagar (₹48.71 crore).

Under progress

- Creation of BG Coach POH facilities at Motibagh/NGP (₹81.89 crore).
- Modernisation & Augmentation of POH capacity upto 150 wagons per month, Dahod (₹92.92 crore).
- Augmentation of Wagon POH capacity from 400 to 500 wagons per month, Raipur (₹113.20 crore).
- Setting up of Axle Forging Line, RWF/Bengaluru(₹303.52 crore).
- Supply installation and commissioning of M&Ps at WRS Badnera (₹40.51 crore).
- Setting up of wheel set maintenance facility at NKJ in WCR (₹76.77 crore) .
- Setting Up of Facility for maintenance of Bio Digester at Matunga (₹6.29 crore).
- Creation of facility of Maintenance of LHB Coaches at Matunga/CR (₹85.66 crore).
- 3rd Axle Machining Line for RWF/Bengaluru (₹214.38 crore).

Other Projects in Pipeline

- Procurement if 15 Nos. Simulators (₹201.9 crore).
- Work of Raising speed of rolling stock upto 160 kmph (₹491 crore)

Special Projects in new technology areas in hand:

- Procurement of Trolley Mounted Sewage Evacuation Machines (₹30 crore).
- Smart Yard facilities at DDU/Mugalsarai (₹36 crore).
- Procurement of Hot Axle Box Hot Wheel Detector.
- Online Monitoring of Rolling Stock (₹542.95 crore).
- Wheel Data Acquisition System (₹7.87 crore).

Traction

Electric and Diesel traction constitute the principal modes of traction on IR. The share of traffic in terms of Train Kms. and GTKMs for passenger and freight services hauled under different traction types over the years is given in the following tables:

Percentage of Train Kms. by types of traction

Year	Passenger				Freight		
	Steam	Diesel@	Electric		Steam	Diesel	Electric
			Loco$	EMU			
1950-51	93	-	2	5	99	-	1
1960-61	91	-	2	7	94	5	1
1970-71	77	7	7	9	46	39	15
1980-81	49	25	14	12	18	62	20
1990-91	21.8	42.4	22.6	13.2	3	60.6	34.4
2000-01	-	56.2	31.2	12.7	-	43.5	56.5
2010-11	-	49.4	36.6	13.9	-	37.5	62.7
2018-19	-	46.3	42.1	11.6	-	37.2	62.8
2019-20	-	43.0	45.4	*11.5	-	*35.2	64.7
2020-21	-	**18.9**	**63.7**	**17.36**	**-**	**27.0**	**73.0**

@ includes DHMU & DEMU
$ includes Rail Cars & Rail Buses
*revised

Percentage of Gross Tonne Kms. by types of traction

	Passenger				Freight		
	Steam	Diesel@	Electric		Steam	Diesel	Electric
			Loco	EMU			
1950-51	92.4	-	2.8	4.8	98.3	-	1.7
1960-61	91.9	-	2.7	5.4	90.5	8.1	1.4
1970-71	74.1	10.7	8.2	7.0	32.2	47.7	20.1
1980-81	41.2	33.0	17.2	8.6	9.0	67.0	24.0
1990-91	15.1	47.1	29.5	8.3	0.8	57.8	41.4
2000-01	-	52.8	40.2	7.0	-	40.2	59.8
2010-11	-	48.8	44.0	7.2	-	35.7	64.3
2018-19	-	43.8	50.4	5.8	-	34.6	65.4
2019-20	-	*39.4	*54.7	*5.9	-	32.7	67.3
2020-21	-	**21.2**	**69.1**	**9.7**	-	**25.5**	**74.5**

@ includes DHMU & DEMU
*revised

Electric Traction:

Highest-ever Electric Loco Production:

CLW has turned out 390 High Horse power three-phase energy efficient electric locomotives in year 2020-21. A cumulative production of 721 electric locomotives has been achieved during 2020-21 utilizing the capacity of CLW, DLW & DMW.

Operation of Trains with WAP-5/WAP-7 Locomotive in Push-Pull mode:

In order to increase average speed of passenger trains, IR has successfully introduced Push-pull operation (one locomotive in front of rake and one rake in rear of rake with all controls from front locomotive) in train no. 22221/22 between Mumbai - Delhi (CSMT - NZM) over Central Railway Route. With the push-push arrangement in this train, attaching / detaching of banker locomotive at ghat section between Kasara - Igatpuri is no more required. Average speed of train has also been enhanced and journey time has been curtailed by about 90 minutes. New Delhi-Mumbai and New Delhi-Kolkata Rajdhani trains are planned to be converted in push-pull scheme. This will result in saving of 60-90 min. in travel time.

Manufacturing of High Horse Power (9000 hp) Freight Locomotives:

Enhancement of average speed of freight trains is one of the Mission of Indian Railways. At present Horse Power to Trailing Load ratio of freight trains is less than one which is just adequate. Thus average speed of freight trains on IR is only 24.7 kmph (ASS 2019-20) even after deployment of multi locomotives in heavy freighters. To the solution, IR has taken initiative and developed High Horse Power Freight electric locomotives (9000 HP) in-house successfully. The upgradation is 'Make in India' initiative and only with the incremental increase in initial cost of locomotive. Three such locomotives have been turned out from CLW and are under service.

New Era of Green Technology-HOG power supply:

As on 31st March 2021, 1,034 electric locomotives have been provided with Hotel Load Converter for deployment in Head on Generation (HOG) enabled coaching rakes/trains. Further, Production units have been directed to produce all Passenger (WAP7) locos Hotel Load Converters. The main benefits of this system are supply of pollution free and cheaper power from OHE as compared to End on Generation (EOG) system besides other advantages like reduction of carbon emission, noise level and consumption of fossil fuels helping in protecting the environment.

Crew Voice/Video Recording System (CVVRS):

Provision of Crew Voice & Video Recording system (CVVRS), similar to provision of black box in aeroplanes is being tried on electric locomotives for recording of cab voice & video and track side through microphones & cameras. Recording of crew communications & crew interactions that occurred immediately prior to the accident will provide assistance to identify & address the operational and human factors issues within a proactive safety management system. Procurement of 5000 & 500 CVVRS are being procured through CLW & DMW respectively. Subsequently it will be provided in all locomotives as a regular measure.

Up-gradation of WAP-5 Locomotive from 5400 hp to 6000 hp:

The entire fleet of WAP-5 locomotives has been upgraded from 5400 HP to 6000 HP by modifying the Vehicle Control software. This has not only increased the power on-wheel but also the acceleration reserve. Above up-gradation has been carried out indigenously. All WAP-5 locomotives turned out from CLW are of 6000 hp.

Real Time Train Information System (RTIS)

For availability of actual train information in public domain, a GPS based 'Real Time Train Information System' (RTIS) has been developed and is being installed on electric locomotives. Total 2,700 locomotives have been provided with RTIS so far.

Electric Locomotives for High Speed Train Operation:

In order to enable operation of passenger trains at a speed of 160 kmph, haulage capacity WAP-5 electric locomotive has been increased by making MU of two WAP-5 locomotives. By this arrangement, total traction power of MU locomotive has increased and can haul 22 – 24 coach train upto 160 kmph speed. This MU is equipped with 25kV jumper to enable its operation with single pantograph along with some other features such as provision of High speed cattle guard, H-type coupler, HOG operation etc. for ensuring safety in high speed train operation.

Electric Loco Simulators for Training of Loco Pilots:

With the increase in train speeds, density of traffic, number of automatic signal territories, type of signals, intensive training to running staff through modern teaching techniques is essential to minimize human error in train operation. Simulator is accepted worldwide as one of the vital tool for training of running staff to improve their response time, driving skills and train handling in various situations thereby enhances the safety and energy

efficiency in train operation. At present 11 electric loco simulators are functioning on IR. 15 more electric loco simulators are under procurement through COFMOW.

Software for Loco Asset Management (SLAM):

A computer application 'Software for Loco Asset Management (SLAM)' has been successfully developed by CRIS for monitoring of electric locomotive performance and reliability. During Phase-I, the system was rolled out in two electric locos sheds namely Ghaziabad (NR) & Tuglakabad (WCR). In Phase-II, software is being proliferated in all electric loco sheds & trip sheds across IR. The application will help Indian Railways in the following:

- Sharing of data across IR electronically in standard formats on real time basis.
- Real time monitoring of electric loco under maintenance at all levels from anywhere.
- Improve reliability of locomotives through easy and automated monitoring.
- Repair cost & time optimization through benchmarking.
- Real time shed performance monitoring and redistribution of major equipment.

Diesel Traction:

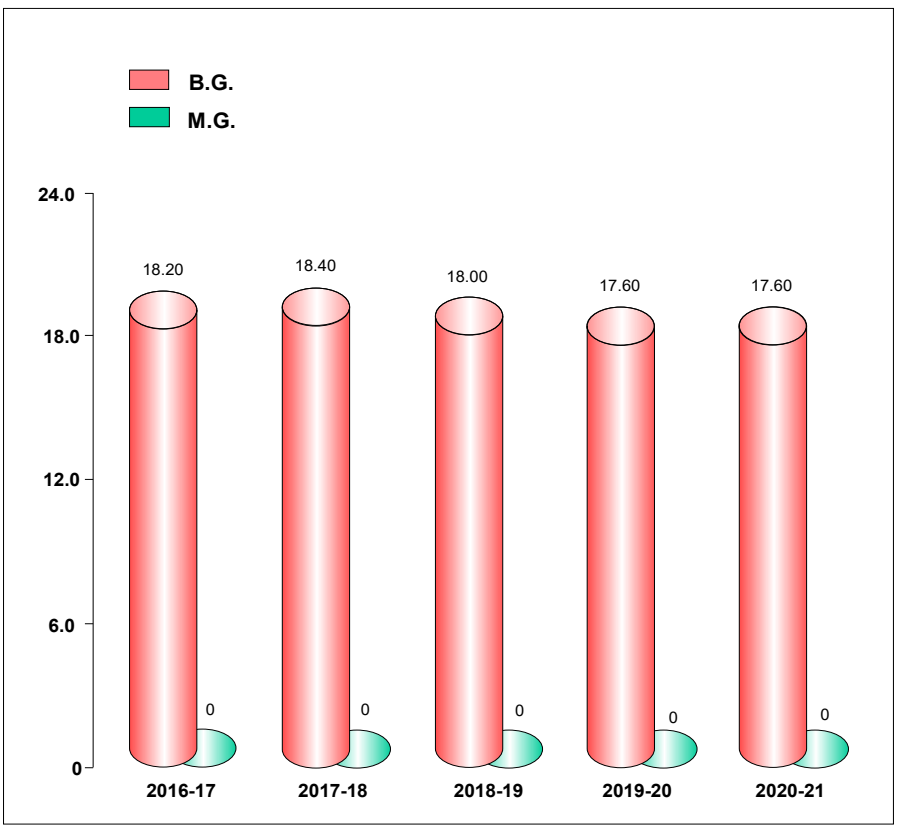
Indian Railways has a fleet of about 5,321 (including 296 locomotives manufactured at Marhowra plant under PPP) mainline BG diesel locos based in 43 Sheds. Following initiatives have been taken by Mech. Engineering (Traction) Directorate for improving availability & reliability and enhancing the safety concerning to diesel locomotives and train operation.

Auxiliary Power Unit (APU) - APU is a self-contained unit with a small diesel engine coupled with compressor and alternator for battery charging. It has its own set of controls, accessories and is integrated to the existing control system of locomotive. In APU System, Main Engine shuts down and small 25 hp Engine starts and charges batteries and air brake pipes, when locomotive idles for more than 10 minutes. The diesel engine of APU consumes only 3 liters of diesel per hour in comparison to 25 liters by the main engine of the locomotive. Expected savings per loco fitted with APU is ₹20 lakh/year on account of savings in fuel oil only. So far, APUs units have been fitted in 1,141 Diesel Locomotives. Further all the new diesel locomotives being manufactured at Marhowra plant have this unit.

Multi-Genset Locomotive - Multi-genset has been developed by RDSO and DMW in collaboration with NREC of USA. In a multi- genset locomotive, single large engine is replaced by three smaller engines. An on-board computer monitors the power requirement and shuts down/ starts engines as per load demands, which makes it more fuel-efficient. Three such locomotives have been turned out by DMW/PTA. Trials at Itarsi Diesel shed have shown saving up to 17% fuel in shunting and passenger operations. Besides fuel saving, there is a reduction of 85%-90% in NOx and particulate emissions compared to uncontrolled locomotive emissions.

Export of Diesel Locomotives - In view of the policy for complete electrification of Broad gauge routes, Indian Railway has stopped manufacturing new diesel locomotives for its own use at DLW and DLMW plants. However, manufacture for non-railway customers (NRC) continues. Indian Railways has exported 02 nos. Diesel Locomotives to Mozambique having 12 cylinders 3000 hp engines.

ENERGY CONSUMPTION (IN COAL EQUIVALENT)
GOODS SERVICES
(KGS. OF COAL/1000 GTKMS.)



Steam Locomotive

Steam Locomotives are the icons of Indian Railways rich industrial heritage. The sound and smells of the gallant stalwarts of a bygone era are major tourist attractions. The following routes have currently been earmarked for running of steam locomotive hauled tourist trains:

(i) Broad Gauge Steam service on demand between Delhi Cantt & Rewari and Garhi Hasru & Farukhnagar (Delhi Division)

(ii) Broad Gauge Steam Tourist specials over selected routes of Southern Railway.

(iii) Narrow Gauge steam services over Darjeeling Himalayan Railway (DHR), now in its 142nd year and a UNESCO World Heritage Site.

(iv) Meter Gauge Steam services over Nilgiri Mountain Railway (NMR), now in its 114th year and a UNESCO World Heritage Site.

(v) Narrow Gauge steam services over Kalka-Simla Railway (KSR) now in its 119th year and UNESCO World Heritage Site.

(vi) Narrow Gauge steam services over Neral-Matheran on Matheran Light Railway (MLR), now in its 115th year.

(vii) Narrow Gauge steam services over Kangra Valley Railway (KVR), now in its 93rd year.

Indian Railways are preserving 242 Steam Locomotives/Engines, 224 vintage coaches and wagons and 126 Diesel and Electric vintage locomotives at prominent places including museums, heritage park etc., for public display. Many of these rolling stocks are more than 100 years old and include 39 Steam locomotives as working heritage. The Rewari Steam Shed that was renamed as "Rewari Heritage Steam Centre" in 2002 works towards recreating the memories of a Steam Shed.

The Rewari Steam Centre maintains nine Broad Gauge (BG) and six Meter Gauge (MG) steam locomotives in the shed, including the iconic "Fairy Queen" (1855), placed in the Guinness Book of Records as being the oldest working locomotive in the World. Another proud possession is "Akbar" that featured in memorable Bollywood movies like Sultan & Gadar. Ramgotty BG Steam Locomotive was revived and put to working condition at National Rail Museum by the Shakurbasti Diesel Shed. A recent acquisition at Rewari Steam Shed is the MG Steam Locomotive EIR-1644 used in Riga Sugar Company at Sitamarhi, Bihar.

Personnel

The The number of regular employees on Indian Railways as on 31.3.2021 stood at 12,52,347.

The table below shows the strength of railway employees under various groups, together with total expenditure incurred on them, for some selected years:

	Number@ of staff as on 31st March (in thousands)				Expenditure@ on staff
Year	**Groups A&B**	**Group C**	**Group D**	**Total**	**(₹ in crore)**
1950-51	2.3	223.5	687.8	913.6	113.8
1960-61	4.4	463.1	689.5	1,157.0	205.2
1970-71	8.1	583.2	782.9	1,374.2	459.9
1980-81	11.2	721.1	839.9	1,572.2	1,316.7
1990-91	14.3	891.4	746.1	1,651.8	5,166.3
2000-01	14.8	900.3	630.2	1,545.3	18,841.4
2010-11	16.9	1,079.2	235.9	1,332.0	51,776.6
2018-19	16.8	1,075.8	135.1	1,227.7	1,35,171.13
2019-20	18.5	*1,235.9	#	*1,254.4	1,56,243.06
2020-21	**18.6**	**1,233.7**	**#**	**1,252.3**	**1,56,730.29**

*revised

@ Includes number of Railway Protection Special Force (RPSF) personnel and expenditure on them from 1980-81 onwards. These were not included in earlier years.

erstwhile Group D merged in Group C for 2019-20.

Number of personnel (Groups A&B) constitute 1.49% of the total strength, while Group C(including Group D merged in Group C) account for 98.51% . Of the employees in Group C 1.26 lakh (10.27%) are workshop employees and artisans and 11.07 lakh (89.73%) from other categories including running staff. Railway Protection Force/RPSF personnel totaled 76,639.

Representation of Scheduled Castes (SCs) and Scheduled Tribes (STs):

Representation of scheduled caste and scheduled tribe employees on IR (excluding MTP Railways) for the year 2020-21 as compared to the previous year is given below:

	Number of SC Employees		Number of ST Employees	
	As on 31.03.2020	As on 31.03.2021	As on 31.03.2020	As on 31-3-2021
Group A	1,413(12.50%)	**1,407 (12.51%)**	736(6.51%)	**785 (6.98%)**
Group B	1,236(17.18%)	**1,168 (15.87%)**	558(7.75%)	**509 (6.92%)**
Group C #	2,03,931(16.51%)	**2,02,907 (16.45%)**	96,621(7.82%)	**94,376 (7.65%)**
Grand Total	2,06,580(16.84%)	**2,05,482 (16.41%)**	97,915(7.81%)	**95,670 (7.64%)**

Including erstwhile Group 'D'

Note: Figures mentioned in brackets indicate the percentage of SCs/STs to total number of employees.

A fully dedicated reservation cell exists each at the level of Ministry/ Railway/Zones/ Divisions/Workshops/Production Units, for dealing with the reservation matters.

Wage Bill:

Wage bill including pension etc. during 2020-21 was ₹1,56,730.29 crore registering an increase of ₹487.23 crore over the previous year. The average wage per employee was up by 0.36% from ₹12,45,328 per annum in 2019-20 to ₹12,49,755 per annum in 2020-21. The ratio of staff cost on open line (excluding payment towards pension and gratuity) to ordinary working expenses (excluding appropriation to DRF and Pension Fund) was 68%.

The average annual wage (excluding fringe benefits) per employee paid under various categories in 2020-21 is given below:

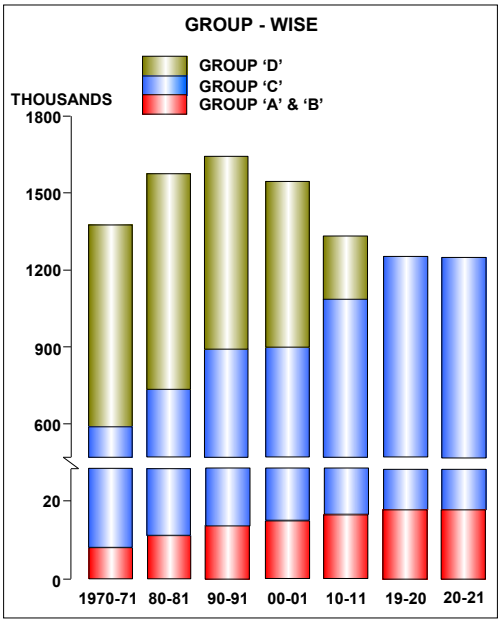
Category	Groups A & B (₹)	Group C (₹)	Group D (₹)	Total (₹)
Workshop and artisan	-	16,02,595	-	16,02,595
Running*	-	15,39,178	-	15,39,178
Others	-	11,25,998	-	11,25,998
Total	**30,57,401**	**12,22,507**	**-**	**12,49,755**

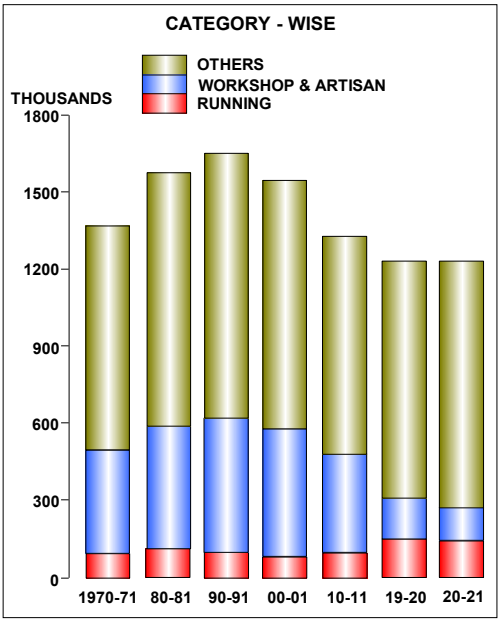
*Emoluments include running allowance.

Productivity Linked Bonus:

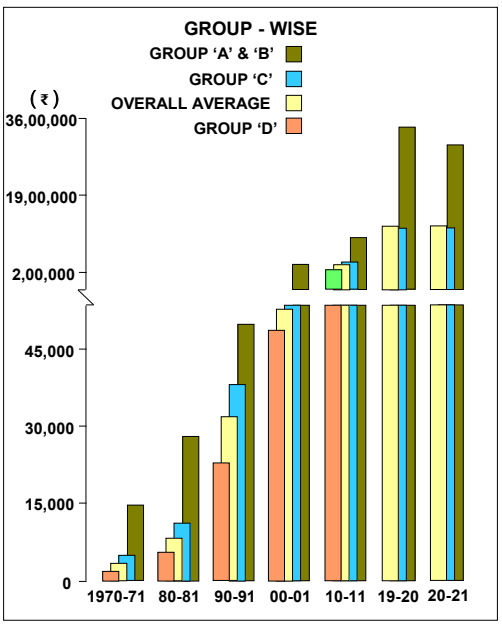
In 2020-21, all non-gazetted Railway employees (excluding RPF/RPSF personnel) were sanctioned Productivity Linked Bonus (PLB) for 78 days. This benefitted an estimated 11,56,131 Railway employees. Further, Group 'C' and RPF/RPSF personnel have been sanctioned ad-hoc bonus equivalent to 30 (thirty) days' emoluments for the year 2020-21.The PLB and ad-hoc bonus both have been paid on an enhanced calculation ceiling of ₹7,000/- p.m. Financial implication for PLB and ad-hoc bonus was approximately ₹1984.73 crore and ₹53.72 crore respectively.

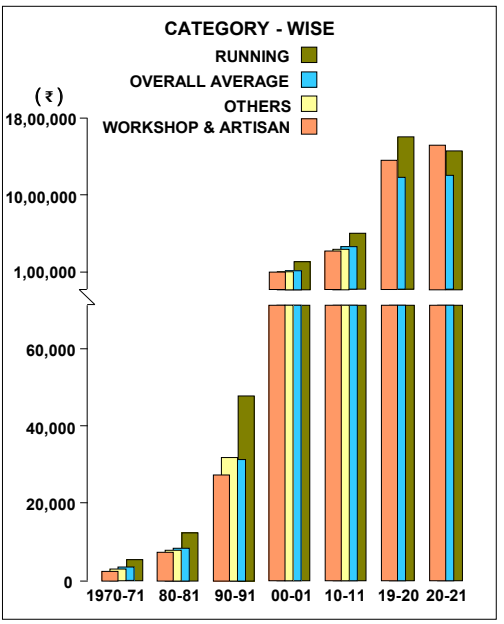
NUMBER OF PERSONNEL





AVERAGE ANNUAL WAGE PER EMPLOYEE





Human Resource Development (HRD) and Manpower Planning:

Training

There are different sets of Training Centers for Gazetted and Non-Gazetted Staff. These Training Centers located all over Indian Railways imparts various type of trainings i.e Probationary/Initial training (i.e before taking up a working post), Promotional training (i.e on promotion), Refresher training (i.e mid-career/on introduction new developments in technology) and Specialized training (for Specialized courses). During 2020-21, around 3,80,000 non-gazetted employees have been provided different types of training i. e. initial, promotional, refresher and specialized.

To meet the challenges posed by changes/advancement in technology, quality of services and safety of operations, significant initiatives have been taken to train the human resources.

All safety category railway employees are given structured training at various stages of their career. Detailed training modules as per prescribed periodicity are available for each category at initial/promotional stages along with refresher courses and specialized training courses laying emphasis on more practical aspects which helps them in assimilating technology transferred and skill upgradation. These modules are updated keeping in view the technological changes in working practice. Safety Category staff like loco staff also undergo simulation training. Online training materials have also being made available to the trainees.

All frontline staff involved in train operations are imparted a special one day capsule training on Threat Perception & Emergency Response. Training module has also been formulated for running staff to include training course on fire fighting & use of fire extinguishers, in initial and periodic refresher courses for Assistant Loco Pilots, AC Attendants and other running staff. Safety staff are given exclusive training on First Aid and on Disaster Management with the emphasis on Relief, Rescue and Rehabilitation (three 'R's). Yoga and Meditation lessons have been introduced in training centres with an aim to help railway men in coping with the stresses involved with their jobs. Some of the other Specialized Courses run by the Training Centres include Management Development Programme for Supervisors, Safety Oriented Course for Permanent Way supervisors, Air Brake Operations Training for Guards and Drivers, Inspection and Rehabilitation of Bridges for Junior Engineers/Senior Section Engineers (Permanent Way)/Bridge/ Works.

Apart from in-house training, railway employees are also dent for foreign trainings under transfer of technology and are also provided inputs

through leading training institutes within India.

Apprenticeship Training

Apprenticeship training is one of the most effective ways to develop skilled manpower for industry by using training facilities available in the establishments without putting any extra burden on exchequer to set up training infrastructure. Persons after undergoing apprenticeship training can easily adapt to industrial environment at the time of regular employment. The other advantages of apprenticeship training are as follows:

- Improved quality of training, experiential learning and enhanced employability.
- Providing apprentices a real chance to put skills into practice and helps them to gain confidence in working environment.

Indian Railways have also been awarded "CERTIFICATE OF APPRECIATION" for outstanding contribution towards engagement of apprentices.

Training Modules

In view of technological upgradation and changed job requirements, there was a need to review the existing training modules of all the departments. Therefore, the existing training modules of all the departments viz. Traffic, Commercial, Electrical, Civil, Mechanical, Signal & Tele and Finance were reviewed, updated & uploaded on Railway's website. These Training modules have been converted into online mode and the same have been uploaded.

Online Training

The training material for different categories of staff has also been converted in online mode in the form of powerpoint presentations, pdf documents and videos of lectures etc. These training materials can now be accessed by Railway employees even from his remotest place of posting. Most of the trainings are now being conducted in online/blended mode.

Railway Recruitment Boards:

During 2020-21, the following activities/initiatives have been undertaken by RRBs.

The Computer Based Tests(CBTs) against Centralized Employment Notification (CENs) No. 03/2019 (Ministrial & Isolated Categories) having 1923 vacancies for about 4.4 lakh candidates and 01/2019 (NTPC Categories) having 35,281 vacancies for about 1.26 crore candidates have

been completed during 2020-2021.

Further, during 2020-21, panels of 2123 candidates have been supplied to the Indenting Railways/Production Units by 21 RRBs across India.

Staff Welfere

IR's welfare schemes cover a wide spectrum of activities in the areas of education, medical care, housing, sports, recreation and catering.

Staff Benefit Fund is an important channel for providing additional facilities to railway employees and their families in the spheres of education, recreation, medicare, sports, scouting and cultural activities. Dispensaries under the indigenous systems of medicine, viz. Ayurvedic and Homeopathic, are run with the help of this Fund.

Approximately 42.62% staff have been provided with railway quarters, 2,603 staff quarters were electrified during 2020-21.

Canteens served subsidized meals and refreshments to employees during the year at their work-places.

Co-operative societies of various types are functioning on Indian Railways. These Co-operative societies are registered under the Multi-State Cooperative Societies Act, 2002 and are under overall supervision of the Central Registrar of Co-operative societies, Deptt. of Agriculture & Coop. Krishi Bhawan, New Delhi. Railway Administration has no jurisdiction over the administrative, financial, managerial, appointment & service matter of the employees of the society. Railways only provide certain facilities & concessions to these Co-operative societies as per the provisions of Chapter XXIII of IREM Vol.II. There are 46 Thrift and Credit Societies, 116 Railway men's Consumer Co-operative Societies, 11 Labour Co-operative societies and 3 Railway men's Housing societies functioning on Indian Railways during 2020-21.

Indian Railway Medical Service:

Indian Railway Medical Service was primarily constituted to look after the health of Railway employees. It also provides medical facilities to the family members and dependents of the employee, retired employee & their family members and dependents as per pass rules.

With a sanctioned strength of 2,559 Medical Officers and 37,087 paramedical staff it is the largest industrial health services in the world. It is running 24x7 round the year, with 129 hospitals & 586 health units having a total of 13,719 indoor beds spread throughout the length & breadth of country. It attends to roughly one crore beneficiaries.

Besides, curative services Indian Railway Medical Service provides: Preventive, Promotive, Occupational & Industrial health, Public health services also. It also plays a significant role in monitoring the quality of water & food within Railway premises.

Ayushman Bharat Pradhan Mantri-Jan Arogya Yojana has been implemented the Railway Hospitals. As on date, 91 hospitals have been opened for AB PM-JAY beneficiaries.

Ten of our zonal hospitals are functioning as institutions for training for the very prestigious DNB program in most of the specialties and some super specialties.

Other activities carried out by IRHS are providing first aid to travelling passengers, attending Railway accidents, colony sanitation, and implementation of Food Safety Standards Act (FSSA), various National Health Programmes and providing post-graduation training & study program. Our health services inspire great confidence amongst the beneficiaries.

Performance Statistics (2020-2021)

Total OPD cases attended	1,35,65,600
Total Indoor cases admitted	2,83,115
Total no. of Surgeries performed	77,167
Percentage of man days lost due to sickness	2.11
No. of New Candidates examined for fitness	15,631
No. of employee examined under Periodical Medical Examination (PME)	1,23,212
No. of food samples collected/found faulty	985/79
Water sample for residual chlorine tested/ fit	11,26,508/10,28,864
Water sample for bacteriological tested/fit	52,629/50,303
No. of Sick Passengers attended by Railway Doctors	16,304
No. of Children immunized	13,781
No. of multipurpose health drives conducted	6,494
Total no. of persons examined in the multipurpose health drives above	2,61,527

A special reference goes for Indian Railway Health Service fighting the current COVID-19 pandemic.

S. No.	Item	Pre Covid	During Covid Pandemic (first and second wave)
1	No of Fever Clinic	Zero	216
2	Covid Coach train	Zero	5,601 coaches converted having capacity for 90,000 beds
3	Covid beds	Zero	Initially 2,539 then later increased to 6,972.
4	ICU beds	273	Increased to 576
5	Invasive Ventilators	62	296 and 449 non invasive ventilators
6	Oxygen Plants	2	92 sanctioned, 18 already commissioned

- Railway hospitals are working as a team with Central and State Governments for providing COVID treatment facility. Railway workshops were used to make Personal Protective Equipment (PPE), hand sanitizer, masks etc. as they were initially not available in market.
- 86 Railway hospitals having 6,972 beds are offering medical treatment to COVID patients and few Railway hospitals have been taken by State authority as Designated COVID Centers for providing treatment to COVID patients.
- COVID patients are being treated in the Railway hospitals including CGHS beneficiaries and non railway patients.
- Instructions have been issued for reimbursement of medicines procured by Railway beneficiaries during COVID pandemic to avoid multiple visits to hospital.
- RT-PCR test for COVID started in house in 7 zones and is also in process in other Railways.
- Telemedicine consultation and a mobile App started by Railtel.
- GM's have been empowered to hire doctors & para-medics as per requirement over and above the cadre strength for Covid management.
- With 184 COVID vaccination centers in Railway health facility, 9,64,433 employees have taken first dose and 3,30,621 railway employees have received complete vaccination.

Pension Adalats

In accordance with the directives of Department of Pension & Pensioners' Welfare (DOP&PW), instructions have been issued to Zonal Railways & Production Units to conduct Pension Adalat annually on Zonal level and quarterly at Divisional level to examine & settle the grievances of pensioners. Every efforts are made to settle these cases on the spot. A number of 3,783 cases were taken up in the Pension Adalat held in the month December, 2020.

Railway Minister's Welfare and Relief Fund

The Fund provides financial assistance and relief to Railway employees and their families in the times of distress. Voluntary contributions from the employees and Railway Women's Organizations constitute the primary source of the Fund.

Railway Schools

IR runs and manages one Degree College and 99 Railway Schools. These schools are being operated purely as a measure of Staff Welfare and they provide quality education at subsidized cost to children of Railway employees as well as non-Railway wards. In addition to this, 87 Kendriya Vidyalayas are also functional on Railway land, to caters to the needs of the students residing in the vicinity of these schools.

Promoting Hindi

In accordance with the provisions of the Official Languages Act,1963 and the Official Language Rules,1976 promotion of usage of Hindi is a continuing endeavour on Indian Railways. Till the end of 31st March, 2021 the total number of notified Railway Offices is 3,592. In these Railway Offices, employees proficient in Hindi have already been given directions to transact cent-percent work in Hindi in the subjects specified under Official Language Rules. Besides this, Official Language officers of Railway Board Office and Zonal Railways regularly inspect the Railway Offices to monitor the implementation of Hindi. In the year 2020-21 a total number of 24 inspections have been carried out by the second Sub-Committee of Parliamentary Committee on Official Language and has appreciated the use of Hindi in these Offices during inspections by Parliamentary Committee. In addition to this Grih-Patrika 'Rail Rajbhasha' in Hindi is also published by Railway Board Office. Till now 125 editions of the patrika have been published and circulated to all the Railway Offices. 'E-Rajbhasha' web magazine is also being brought out regularly in every quarter. Till now 30 editions of this patrika have been brought out. About 118 Hindi Grih-Patrika are also being published by Zonal Railways/Divisions etc. at their level.

Training in Hindi Typewriting, Hindi Stenography and Hindi Language

In addition to the Training Centres set up by the Ministry of Home Affairs, arrangement are also made by Indian Railways to provide in-service training in Hindi language, Hindi typing and Hindi stenography. The number of employees trained at the end of 2020-21 as compared to 2019 -20 as follows:-

Activity	As on March 31st, 2020	As on March 31st, 2021
Working knowledge/ Proficient in Hindi	8,62,446	8,76,602
Hindi Typing	7,942	7,321
Hindi Stenography	3,112	2,863

Other activities

The existing policy of purchasing bilingual electronic equipments, like computers etc. is being followed. During 2020-21, 52,927 bilingual personal computers are available in various Offices of Indian Railways. Websites of the Zonal Railways including Railway Board are also available in bilingual form. In order to promote usage of Hindi in Railway Offices, 935 Codes/ Manual and 6601 Station-Working Rules have been published bilingually. Besides this, 26,461 Local, Statutory and Standard Forms have been made available in bilingual form in Zonal Railways and Production Units including Railway Board. Presently, more than 17 lakh books in Hindi are available in 982 Hindi Libraries on Indian Railways and most of the libraries have been named after the names of famous litterateurs of Hindi.

Official Language Implementation Committees

To review the progress of the use of Hindi, total 968 Official Language Implementation Committees are constituted on the Zonal Railways, in Production Units etc. and meetings of these committies are being virtually organized. Beside this, Railway Board Official Language Implementation Committee has been constituted at Railway Board level also and its meetings are being virtually organized.

Railway Hindi Salahakar Samiti

In order to propagate the use of Hindi in Ministry of Railways and Zonal Railways, Railway Hindi Salahakar Samiti constituted under the Chairmanship of Hon'ble Minister of Railways, whose main objective is to give valuable suggestions to propagate the use of Hindi.

Incentive Schemes for the use of Hindi

Various incentive schemes have been implemented to encourage railway personnel to work in Hindi. Prominent among them are the Kamlapati Tripathi Rajbhasha Swarn Padak award scheme, Rail Mantri Rajbhasha Rajat Padak award scheme, Rail Mantri Rajbhasha shield/trophy and other running shields award scheme, Rajbhasha Individual cash award scheme, Rail Mantri Hindi essay competition, Premchand award scheme, Maithilisharan Gupt award scheme, Lal Bahadur Shastri Takniki Maulik Lekhan award scheme, Rail Yatra Vritant award scheme, Zonal/All Railway level Hindi Essay, Elocution, Noting & Drafting competition, Akhil Rail Hindi Natyotsav Competition. General Manager, West Central Railway, Jabalpur was awarded Kamalapati Tripathi Rajbhasha Swarn Padak for the outstanding work in Hindi.

On 31.07.2020, Premchand Jayanti was organized under the chairmanship of Director (OL). On this occasion, lecture on the life of Munshi Premchand presented by Director (OL).

In order to promote usage of Hindi, "Hindi Week" was organized from 14th to 18th September, 2020 in the Ministry of Railways. On the occasion of Hindi Diwas on 14th September 2020, a message from the Hon'ble Minister of Railways was read and circulated to all the offices of Indian railway to work in Hindi.

On 15.09.2020, online Hindi essay competition was organized on the topics of New Education Policy and Indian Languages, Role of Indian Railways during corona pandemic and Indian Railways and Tourism. Also, On 17.09.2020, online Hindi Seminar was organized.

Prize distribution programme was organized on 08.10.2020, in which a total of 12 prize winners were rewarded by the Executive Director E(R) who got first, second, third and consolation prizes in Hindi essay, noting & drafting competition organized during "Hindi Week".

On 03.11.2020, a full day Hindi workshop was organized under the chairmanship of Director (OL). During the year 2020-2021, a total 330 Hindi workshops were also organized on all Zonal Railways and production

units etc. including Railway Board on different subjects, in which about 6,476 officers/employees were participated.

Outstanding Achievements in Sports:

1. At International Level:

Due to COVID -19 there was no International participation in 2020-21.

2. At National Level:

During 1st April, 2020 to 31st March, 2021, Indian Railways participated in total 20 National Championship, out of which Indian Railways team, were Champion and Runners-up in 07 championships.

III Following Railway players have been honored with National Sports Awards during 2020-21:

S. No.	Name	Game	Award	Railway
i.	Ms. Divya Kakran	Wrestling	Arjuna Award	NR
ii.	Ms. Deepika	Hockey	Arjuna Award	RCF
iii.	Ms. N. Usha	Boxing	Dhyanchand Award	ECoR
iv.	Sh. Gaurav Khanna	Para-Badminton	Dronacharya Award	NR
v.	Ms. Vinesh Phogat	Wrestling	Rajeev Gandhi Khel Ratna	NR
vi.	Ms. P. Anita	Basketball	Padma Shree	SR
vii.	Ms. Sudha Singh	Athletic	Padma Shree	CR

Finance

Indian Railways financial results for 2020-21 compared with the previous year are tabulated below:

		(₹ in crore)
	2019-20	**2020-21**
Capital Investment	*3,21,141.96	**3,34,239.78
Investment from Capital Fund	53,449.91	**53,449.91**
Total	3,74,591.87	**3,87,689.69**
Passenger Earnings	50,669.09	**15,248.49**
Other Coaching Earnings	4,640.79	**2,096.74**
Goods Earnings	1,13,487.89	**1,17,231.82**
Sundry Earnings	5,862.75	**5,938.61**
Gross Earnings	1,74,660.52	**1,40,515.66**
Suspense	-303.92	**54.86**
Gross Traffic Receipts	1,74,356.60	**1,40,570.52**
Ordinary Working Expenses	1,50,211.21	**1,35,844.51**
Appropriation to Depreciation Reserve Fund	400.00	**200.00**
Appropriation to Pension Fund	20,708.00	**523.00**
Total Working Expenses	1,71,319.21	**1,36,567.51**
Net Traffic Receipts	3,037.39	**4,003.01**
Miscellaneous Transactions	-1,447.77	**-1,455.53**
Net Revenue Receipts	1,589.62	**2,547.48**
Dividend payable to General Revenues $	0.00	**0.00**
Excess (+)/Shortfall (-)	1,589.62	**2,547.48**
Percentage of Net Revenue to Capital Investment including investment from Capital Fund	0.42	**0.66**
Operating Ratio (%)	98.36	**97.45**
Capital Investment (including investment from Capital Fund) per NTKM (in paise)	479	**539**

* Excludes ₹16,636.14 crore of MTPs, ₹1,898.79 crore of Circular Railways, ₹16,026.70 crore of Udhampur-Srinagar-Baramulla Project (National Project), ₹11,954 crore of appropriation to SRSF, ₹40,987.75 crore investment in DFCCIL, ₹45,000 crore investment in RRSK and ₹22,357.03 crore investment in RSF. Includes ₹16,952.12 crore of Production Units.

** Excludes ₹16,886.34 crore of MTPs, ₹1,911.10 crore of Circular Railways, ₹16,026.70 crore of Udhampur-Srinagar-Baramulla Project (National Project), ₹11,954 crore of appropriation to SRSF and ₹56,617.40 crore investment in DFCCIL. ₹45,000 crore investment in RRSK and ₹22,357.03 crore investment in RSF. Includes ₹17,041.72 crore of Production Units.

Revenue:

Revenue from Freight accounted for 83.43% of Gross Earnings. Passenger Earnings constituted 10.85% of the Gross Earnings, of which

3.86% was from Suburban Services, 94.71% from Express Long distance and 1.42% from Ordinary Short Distance traffic. Bulk freight like coal, ores, iron & steel, cement, foodgrains, fertilizers, POL products, limestone, dolomite, stones other than marble, salt and sugar contributed 90.09% of the total goods earnings, while commodities other than the above accounted for 8.63%. Miscellaneous realization like demurrage, wharfage, shunting and siding charges etc. made up the remaining1.27%.

Balance Sheet:

A brief summary of Balance Sheet as on 31st March, 2021 compared with the previous year is given below:

(₹ in crore)

	As on 31.03.2020	As on 31.03.2021	Variation
Assets			
Block Assets	6,40,408.27	**6,70,725.78**	30,317.51
Fund with Central Government			
(i) Reserve Fund	-25,730.65	**6,893.93**	32,624.58
(ii) Banking Accounts	69,164.16	**62,324.04**	-6,840.12
Sundry Debtors	4,649.96	**4,998.64**	348.68
Cash in hand	604.78	**703.98**	99.20
Total	6,89,096.52	**7,45,646.37**	56,549.85
Liabilities			
Represented by:			
Capital Investment	*3,78,468.48	****4,06,883.88**	28,415.40
Investment financed from internal resources etc.	2,61,939.79	**2,63,841.90**	1,902.11
Total (i)	6,40,408.27	**6,70,725.78**	30,317.51
Reserve Fund	-25,730.65	**6,893.93**	32,624.58
Total (ii)	-25,730.65	**6,893.93**	32,624.58
Banking Accounts			
(i) Provident Fund	39,341.70	**40,292.15**	950.45
(ii) Miscellaneous Deposits etc.	29,762.66	**21,974.81**	-7,787.85
(iii) Loans and Advances	59.80	**57.08**	-2.72
Total (iii)	69,164.16	**62,324.04**	-6,840.12
Sundry Creditors etc. **(iv)**	5,254.74	**5,702.62**	447.88
Total (i) to (iv)	6,89,096.52	**7,45,646.37**	56,549.85

* Excludes ₹16,636.14 crore of MTPs, ₹1,898.79 crore of Circular Railways, ₹11,954 crore of appropriation to SRSF, ₹45,000 crore appropriation to RRSK and ₹22,357.03 crore appropriation to RSF. Includes ₹16,026.70 crore of Udhampur-Srinagar-Baramulla Project (National Project) and ₹40,987.75 crore investment in DFCCIL

** Excludes ₹16,886.34 crore of MTPs, ₹1,911.10 crore of Circular Railways, ₹11,954 crore appropriation to SRSF, ₹45,000 crore appropriation to RRSK and ₹22,357.03 crore appropriation to RSF. Includes ₹56,617.40 crore investment in DFCCIL ₹16,026.70 crore Udhampur-Srinagar-Baramulla Project (National Project).

Cash Flow:	2020-21	(₹ in crore)
Acquisition of new assets and replacement of existing assets:		
Acquisition of new assets and improvement element in replacement of assets like replacement of assets	16,198.17	**16,355.20**
By replacement of assets	157.03	
Payments of interest on loans, repayment of loans and increase/decrease in Reserve Funds		
Payments of interest on loan for Development Fund	0.00	**32,624.57**
Repayment of loan for Development Fund	0.00	
Increase (+)/ Decrease (-) in Funds balances	32,624.57	
Payment for Accident Compensation	0.00	
	Total	**48,979.77**
Finance for these requirements was provided from the following sources:		
Internal sources:		
Contribution from Revenue/Capital to fund and interest occurring on the balances of the fund.	32,136.24	**34,683.72**
Development Fund financed from Surplus	1,547.48	
Development Fund financed from General Revenue	0.00	
Capital Fund financed from surplus	0.00	
Capital Fund financed from Railway Revenue (for capital component of IRFC lease charges)	0.00	
Railway Safety Fund financed from surplus	0.00	
Debt Service Fund financed from Surplus	0.00	
Railway Safety Fund financed from General Revenues(from Central Road Safety Fund)	0.00	
Spl. Railway Safety Fund financed from General Revenues	0.00	
RRSK Finance from General Revenue (Capital)	0.00	
RRSK Finance from RSF	0.00	
RRSK Finance from Surplus	1,000.00	
OLWR	0.00	
Cash Surplus - Working Results		**2,547.48**
Appropriation to Development Fund		**-1,547.48**
Appropriation to Capital Fund		**0.00**
Appropriation to Debt service fund		**0.00**
Appropriation to Railway Safety Fund		**0.00**
Appropriation to RRSK		**-1000.00**
Investment from capital		**14,296.04**
	Total:	**48,979.77**

Composite Input Cost Index

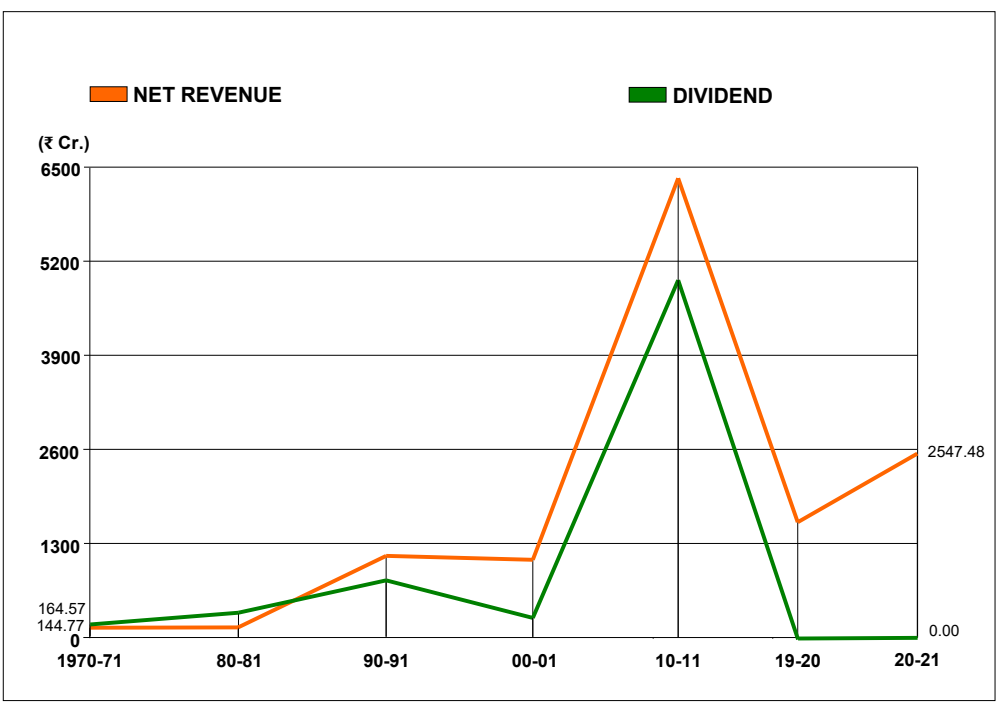
Base 2011-12=100

S.N.		2019-20		**2020-21**	
		Revenue Index	Cost Index	**Revenue Index**	**Cost Index**
I	Unit Revenue				
i	Average receipt per pkm	162.69		**253.63**	
ii	Average receipt per ntkm	158.05		**160.52**	
II	Cost Indices of Inputs				
i	Labour: Average annual wage per employee @		*272.9		**273.9**
ii	High Speed Diesel(H.S.D.)		93.7		**80.2**
iii	Electricity (Railway traction)		111.8		**109.6**
iv	Transport equipment and parts		114.5		**117.8**
v	Non-Ferrous Metals		107.0		**112.3**
vi	Electrical machinery, equipment & battery		111.3		**113.6**
vii	Lubricants		131.7		**137.2**
viii	Manufactured products		118.3		**121.5**
ix	Ferrous Metals		106.2		**111.4**
	Composite weighted index of inputs		*206.3		**206.0**

* revised

S.No. ii-ix (cost Indices of inputs) based on information received from Office of Economic Adviser, Department for Promotion of Industry and Internal Trade.

NET REVENUE AND DIVIDEND



Social Service Obligation

Indian (IR), in the larger social and national interest, undertakes certain uneconomic operations in transportation to provide affordable transport facilities to poorer sections of society and to facilitate the movement of essential commodities meant for mass consumption. Losses incurred on this account fall under Social Service Obligation of IR.

Net Social Service Obligation borne by IR in 2020-21 is assessed at ₹56,651.81 crore excluding staff welfare cost (₹7,954.14 crore) and law and order cost (₹5,324.61 crore). These costs impinge upon the viability of Indian Railways system.

Elements of Social Service Obligation:

The main elements of Social Service Obligation in IR are losses relating to:

- Essential Commodities carried below cost;
- Concession in passenger fares;
- Losses on EMU Suburban Services;
- Operation of Uneconomic Branch & New Lines opened for Traffic during the last 15 years;
- Operation of Strategic Lines;
- Pricing of passenger fares below cost.

Losses on transportation of Essential Commodities carried below cost:

As part of the Railway's Social Service Obligation, certain essential commodities of mass consumption like fruits and vegetables, salt, charcoal, bamboos etc. are carried below cost of operation in order to contain their market prices. The total losses on the movement of these commodities in 2020-21 amounted to ₹1371.14 crore.

S. No.	Commodities	Losses (₹ in crore)
1	Total Food Grains	591.62
2	Salt	368.88
3	Jute manufactured	149.47
4	Sugar & khandsari	95.66

5	Total edible oil	75.42
6	Fruits & vegetables	69.12
7	Cotton Manufactured other than piece goods	6.89
8	Charcoal	5.41
9	Paper	4.37
10	Bamboos	1.62
11	Others	2.68
	Total	**1,371.14**

These commodities constituted 9.66% of the total revenue NTKMs and 14.38% of freight earnings in the year 2020-21.

Concession in passenger fares:

Revenue foregone due to concession in passenger fares during the year 2020-21 amounted to ₹37.94 crore.

Losses on EMU Suburban Services :

Analysis of the profitability of EMU Suburban Services in Chennai, Kolkata, Mumbai and Secunderabad during the year 2020-21 has revealed an overall loss of ₹7,798.60 crore. Lag in the rise of passenger fares with respect to inflationary pressures prevalent in the economy has contributed to EMU Suburban losses.

Uneconomic Branch Lines:

Despite concerted efforts to enhance earnings on branch lines, most of such lines remain commercially unviable. The Railway Reforms Committee recommended closure of 40 such lines but due to stiff public resistance and opposition of State Governments towards withdrawal of such services, only 15 lines have been closed permanently by the Railways. A review of the financial results of existing 89 uneconomic branch lines for the year 2020-21 shows that, on an original investment on these lines of the order of ₹ 3,775 crore, loss during the year 2020-21 amounted to ₹2,255.49 crore.

New lines opened for traffic during the last 15 years:

In the present state of Railway finances and prevalent high costs of construction, the Railways are not in a position to inject adequate capital investment in under-developed areas. Therefore, reliefs like making available land free of cost and sharing of construction cost by the concerned State Governments are the need of the hour. Periodic reviews have revealed that of the 14 lines examined in 2020-21, as part of Social Service Obligations of the Railways for development of backward areas, most lines are showing either negative or unremunerative returns.

Financial Results of New Lines for The Year 2020-21

S.No	Name of the branch line	Date of opening	Cost (₹ in crore)	Expected return on investment	Actual return on investment (%)		
				(%)	2018-19	2019-20	**2020-21**
1	Abohar-Fazilka (BG) 34 Kms.	16.07.2012	232.50	-7.44	-15	-16	**-12**
2	Taran Trn-Govindwal (BG) 21.416 Kms.	06.08.2011	81.44	NA	-28	-29	**-22**
3	Ludhiana-Sahnewal (BG) 15.11 Kms.	17.11.2012	289.40	-2.26	-6	-6	**-4**
4	Udhampur-SVDK (BG) 25 Kms.	04.07.2014	1231.09	NA	-2	-2	**-2**
5	Banihal-Baramula (BG) 13.7 Kms.	26.06.2013	4917.00	-1.30	-3	-3	**-2**
6	Churaru Takrala-Amb Andaura (BG) 11.17 Kms.	2011-12	377.72	0.18	-11	-11	**-8**
7	New Morinda-Sahnewal (BG) 52.18 Kms.	2013-14	725.39	-2.26	-8	-9	**-8**
8	Chandigarh-Morinda (BG) 43.89 Kms.	2006-07	410.23	-2.26	-13	-14	**-13**
9	Rewari-Jhajjar-Rohtak (BG) 81.257 Kms.	08.01.2013	439.36	-4.78	-2	-2	**-2**
10	Jind-Sonipat (BG) 81 Kms.	26.06.2016	464.60	NA	0	0	**0**
11	Madar-Pushkar (BG) 25.7 Kms.	23.01.2012	132.12	-4.06	-1.76	-1.91	**-1.60**
12	Koderma-Giridhi (BG) 86.50 Kms.	08.08.2015	699.95	NA	-4.6	-2.13	**-2.13**
13	DRU-CMGR (BG) 45.12 Kms.	17.11.2013	353.45	NA	-1.04	-0.84	**-0.92**
14	MYS-CMNR (BG) 60.78 Kms.	2008	234.52	NA	-0.78	-0.09	**-0.64**

Operation of Strategic Lines:

At present, following six operational lines only have been categorized as strategic railway lines on Indian Railways:

(i) Pathankot-Mukerian (Northern Railway)

(ii) Rangapara North Lakhimpur-Murkongselek (Northeat Frontier Railway)

(iii) Siliguri-Jogighopa including BG conversion of Siliguri-Haldibari (Northeast Frontier Railway)

(iv) Jaisalmer-Pokaran (North-Western Railway)

(v) Bhatinda-Suratgarh (North-Western Railway)

(vi) Bhuj-Naliya (Western Railway)

Apart from the above, there are other lines which are located in the border areas and serving the strategic needs of Defence and Paramilitary forces. Some of the projects have been taken up as National Projects from strategic point of view in the northeast region. Indian Railways is maintaining these services essentially for strategic reasons despite steep operating losses. The losses accruing to IR on account of operation of Strategic lines during the year 2020-21 is ₹ 1,280.16 crore.

Pricing of passenger fares below cost:

IR being the major transport carrier of the country bears a Social Service Obligation owing to the nature of the services it is committed to offer affordable transportation solution to the poorest section of the society. This essential feature of IR contributes not only to promoting economic and industrial growth but also in providing certain services below their cost of operation in the interest of common men. Railways therefore have to fine tune between the need to maintain its financial viability and its commitments to society at large. This places certain curbs on the commercial freedom of IR in the matter of pricing and elimination of uneconomic operation and services. The resultant losses accruing to IR on account of fares below cost of operation during the year 2020-21 amounted to₹ 57,187.23 crore.

The Net Social Service Obligation borne by IR in 2020-21 assessed at ₹54,850.60 crore, constitutes 39.04% of the total revenue earnings and 28.49% of the total working expenditure.

Sharmik Special Train

Research and Development

RDSO under Ministry of Railways is the sole R&D organisation of Indian Railways and functions as the technical advisor to Railway Board, Zonal Railways and Production Units. RDSO's major functions involve:

- Development, adoption, absorption of new technology for use on Indian Railways.
- Development of new and improved designs of equipment and systems.
- Setting standards for adoption on Indian Railways.
- Development of specifications for materials and products needed for Indian Railways.
- Technical investigation, statutory clearances, testing and providing consultancy services.
- Inspection of critical and safety items of Rolling Stock (including Metro Stock), Locomotives, Signalling & Telecommunication equipment and Track components.
- Vendor development for safety and critical items controlled by RDSO.

RDSO also offers international consultancy services in matters pertaining to design, testing and inspection of railway equipment as well as survey for construction of new lines. RDSO attracts worldwide attention in the area of Research & Development in Railway equipment and systems.

Some of the important activities during the year are given as:

Technology Mission for Indian Railways (TMIR): TMIR was announced in Budget Speech of 2015-16 with consortium of Ministry of Railways, Department of Education (erstwhile MHRD), Department of Science & Technology & Industry in funding sharing model. TMIR functions through the Mission implementation and co-ordination committee (MICC) which consists of members from IITs, Railways, departments & Industry. Total five projects related to areas for industry 4.0, Geo formation validation model, measurement of NVH etc. have been approved for execution under TMIR.

Recognition of RDSO as 'SDO' under "One Nation One Standard" Scheme of BIS: RDSO (Research Design & Standards

Organization), Research wing of Indian Railways has become the FIRST Institution to be declared SDO under "One Nation One Standard" mission on BIS (Bureau of Indian Standards) with following scope "Standards developing organization for products, processes and services for railway transportation sector in India". The recognition granted to RDSO shall be valid for a period of three years from 31st May 2021 to 30th May 2024.

Quality Audit of Railway Units: A system of Quality Audit at Railway Units is followed to have interaction with Railway units & to ensure conformance to the requirement of laid down work instructions & maintenance practices. During the year areas like corrosion repair the coaches, CTRB overhauling, interior furnishing coaches, ICF bogie overhauling have been considered for Quality Audit. The observation of the audit is briefed to unit head instantly. The audit reports are uploaded on railnet (10.100.2.19) for perusal by all Railway Units. Audit reports are highly useful to plan & take corrective action on the areas identified by the audit team, which has a bearing on equipment reliability and train safety.

Quality Audits of Vendor Manufacturing Facility: A system of Quality Audit at vendors' premises has also been streamlined. Emphasis is now being given on process audit/inspection in addition to product inspection. Quality audits are found highly effective to review the compliance of requirement as per approved QAP.

Unified Vendor Approval Module (UVAM): For all the Vendor Approving Units over Indian Railways have been launched by RDSO on the software platform by CRIS on 4th May 2021. It is a digitization initiative of Indian Railways through which all the activities related to approval of vendors has been digitized. Indian Railways procure various items related to safety of passengers and trains from approved vendors. Various units of Indian Railways like RDSO (Research Design & Standards Organization, Lucknow), ICF (Integral Coach Factory, Perambur), MCF (Modern Coach Factory, Raebareli), RCF (Rail Coach Factory, Kapurthala), BLW (Benaras Locomotive Works, Varanasi), CLW (Chittaranjan Locomotive Works, Chittaranjan) and CORE (Central Organization for Railway Electrification, Prayagraj) are engaged in approval of vendors for various items. Requests for approval can be submitted by the vendors online through their IREPS account, and the status of application can also be tracked.

Technological Input for Safety and Reliability

Development of Specification for Self-Propelled Tunnel Rescue Train: Indian Railways (IR) network consist of many long tunnels and many more long tunnels are being constructed on new strategic railway track,

mainly in northern and north-eastern mountain regions. Long tunnels pose many challenges in terms of rescue operations in case of accident / fire. IR has therefore decided to procure Self-Propelled Tunnel Rescue Train (TRT) with speed potential of 100 kmph with a view to putting faster effective medical attention and restoration in case of fire/accident inside the tunnel.

Revision of Specification of Battery Operated LED Based Hand Signal Lamp: LED based Battery operated Hand Signal Lamp has been revised, with use of light weight 'AÁ' batteries in place of R-20/LR-20 batteries as prescribed earlier. Use of 'AA' batteries has reduced size as well as weight of Hand Signal Lamp and it has become quite handy to use.

Operational Efficiency

Design Review and Development of 12000 HP (WAG12B) Locomotives: As per agreement signed between Indian Railways and M/s ALSTOM Manufacturing India Ltd. (joint venture named as Madhepura Electric Locomotive Pvt Ltd.- MELPL), M/s MELPL manufactured prototype WAG12B locomotives of 9000KW (12000 HP) and offered to IR for oscillation trials and rating & performance trials.

Introduction of Advance Technology High Horse Power Diesel Locomotive (WDG6G): An agreement has been signed between Indian Railways and M/s GE Diesel Locomotive Pvt. Ltd for setting up a diesel locomotive factory at Marhowra, Saran District Bihar (India) and Procurement and Maintenance of 300 nos. of 6000 HP and 700 nos. 4500 HP Main line Diesel Electric Locomotives. These locos will be maintained in start of art maintenance sheds at Roza (MB division of NR) and Gandhidam (ADI division of WR).

RDSO played an active role in design and drawing development, prototype clearance and conducted service worthiness trials of these locomotives.

Equipped with latest design and technological features, WDG6G is the most powerful diesel locomotive introduced over Indian Railways, so far. It will help in increasing the speed of freight trains to a great extent. Key features of this Loco are as under:

- HVAC equipped Cab.
- GEVO-16 Cyl. Engine with EUI Injection for improved fuel efficiency.
- UIC 1 Emissions compliant locomotive diesel engine.
- Alternator start Engine mounted on isolators for reduced vibration.
- Enhanced operator and cab amenities with four 15" display screens, hot plate, tool Box, Heated wind shield, Urinal.

- Separate air to air cooling circuit (split cooling) for optimized engine cooling.
- LED headlights and Marker lights.

Upgradation of WAG-9HC to 9000 HP WAG-9HH: Under 'Make in India' initiatives, the power of existing WAG-9HC loco has been upgraded from 6000 HP to 9000 HP. Power enhancement of upgraded WAG-9HC loco (designated as WAG-9HH) has increase the balancing speed of WAG-9HC locomotive from 35 kmph to 50 kmph. This will reduce the journey time and will improve line capacity. Prototype unit of WAG-9HH locomotive has been manufactured by CLW, Chittaranjan by upgrading the continuous rated power of the existing WAG-9HC (With Conventional Brake rigging) locomotive from 6000 HP to 9000 HP through upgradation kit (by upgrading Transformer, Traction Converter, Traction Motor etc. supplied by M/s BHEL, M/s Medha and M/s Siemens).

Development of 4500 HP WDAP5 Dual Mode Locomotive: RDSO had issued a specification no. MP.0.0800.108, Rev-02 in March 2016 for development of a dual mode loco. Benaras Locomotive Works has manufactured a prototype dual mode locomotive, which has been assigned transportation code WDAP5 by Railway Board.

This loco developed by IR on WDP4D platform can work both in Electric Mode (with rail power of 4500hp) taking power from OHE supply and in Diesel Mode as well (with gross horse power of 4500 hp). It's a Dual CAB loco fitted with HVAC. Benefits of this loco shall be:

- Availability of locomotives with flexibility for seamless operation on mixed routes.
- Reduction in detention time of locomotive on the traction change points to less than 15 minutes.
- Reduction of man days for shunting of locomotives at traction change over points.

Guide on capacity of freight locomotives for hauling 25t axle load wagons on IR BG Track: Load charts of diesel electric locomotives have been prepared for hauling 25 t axle load wagon, considering the maximum trailing load of 59 BOXN as 5900 t. Also, new load charts have also been added for new variants of locos viz. WDG4G (4500 HP) & WDG6G (6000 HP), inducted on IR in recent past.

Development of 2x25KV AT traction distribution system: To cater the high power requirement of fast accelerations of future high speed trains, Traction Installation directorate has developed complete overhead

equipment and Power Supply installation schemes of 2x25KV AT traction distribution system over Delhi-Howrah and Delhi-Mumbai routes. The complete scheme and all specifications of OHE & PSI equipment has been finalized and the relevant drawings and vendor development is under process. This scheme utilized the minimal changes in OHE & PSI based on the experienced gain of high speed routes in Indian Railways.

E- Office: 100% Implementation of e-Office projects for RDSO has been completed. The VPN facility has been provided to the officials residing outside the RDSO campus and working in field units to facilitate work from home in view of Covid19 Pandemic. A new dedicated WebEx meeting facility has been created for RDSO through Railtel to facilitate smooth meetings in RDSO. This platform is extensively used for various meetings in RDSO during the period of Covid19 Pandemic. On average around 40 meetings are being regularly held in RDSO using the newly developed WebEx Platform.

Development of Short Neutral Section Indigenously: Short Neutral Section Assembly (phase Break) is used to separate two phase with providing mechanical continuity to glide pantograph. Till now there is only two foreign approved firm for SNS. The requirements of short Neutral Section Assembly in Indian railways are almost 300 Nos of ₹26 crore In 2016, RDSO have revised Specifications and STR to indigenize this item. One indigenous firm has been approved for field trial after Proto-type test carried out successfully during July-2020 to conduct field trial of SNS.

Improvement in Passenger Services

Development of IP Based Integrated Passenger Information System: As a policy matter, most of the Equipment in Indian Railways are being shifted to IP platforms as a technological upgrade. In line, "IP Based Integrated Passenger Information System" has been developed by Telecom Directorate/RDSO & Specification No, RDSO/SPN/TC/108/2019 ver.0 has been issued. The system consists of networked Indoor & Outdoor Video Display Boards, Train Indication Displays, Coach Guidance Displays and PC Based Announcement System. The system is also capable of displaying commercial advertisements and video information in a multi-colour display board. The important fields like "Train number, Train name, Arrival and Departure status, Expected Time of Arrival/Departure, Platform Number" can be displayed in different colours to easily read and differentiate by the passengers. Trains having certain special status can be displayed in different colours. Status of trains like cancelled, diverted, platform changed etc. can also be displayed in special colours to quickly capture the attention of the passengers.

Indigenous Development

Standardization of Welding Parameters of Flash Butt Welding Machine: 10nos. of mobile flash butt welding machines have been standardized for welding parameters for flash butt welding of rails in Indian Railways/Metro rails.

Developments of Higher Strength Rail: Indian railways operate in a mixed traffic regime of passenger and freight operations. Speed of passenger operations at 130/160 kmph and freight operation at 100 kmph with axle load of 25t is planned. A highly reliable infrastructure is required to support safe operation of the envisaged traffic. Rail, being a critical component of track infrastructure, needs an upgrade, accordingly. Following are the related developments in rail.

- **R260 Grade Rail:** RDSO has developed specification for rail grade R260.This high carbon steel rail will have cleaner steel as compared to the presently used 880 grade (90 UTS) rail. It will have better mechanical properties, including higher yield strength. This is likely to result in reduced number of rail failures under the operating conditions prevailing on the Indian Railways.
- **1175HT Grade Rail:** RDSO has developed specification for rail grade 1175 HT rail. It is a heat treated grade having better mechanical properties, compared to the high carbon steel rail (880 grade) presently being used on the Indian Railways. It has a minimum Ultimate Tensile Strength (UTS) of 1175MPa and hardness in the range of 340 to 390BHN. Yield Strength and Fracture Toughness values are also higher. These properties of rail would cater to the requirements of planned traffic on Indian Railways, which will have a mixed traffic of Heavy Axle load (25 t) freight trains at 100 kmph along with high speed passenger trains at 160 kmph .

Infrastructures

Track Laboratory: Track laboratory is having well qualified research and technical staff with static and dynamic testing facilities of track components. Track components can be tested on hard as well as ballasted deck under simulated dynamic loading condition as occurring in the field by actual rolling wheel axle load. For upgrading the Track Lab, a work of Track Lab Modernization at a cost of ₹13.67 crore has also been vetted by finance, Indent placed for procurement.

Construction of Dedicated Test Track : Work has been sanctioned at an estimated cost of ₹353.48 crore on "Out of Turn" basis in Works

Programme 2018-19. Phase–II of dedicated test track has also been sanctioned in 2020-21 at a cost of ₹466.42 crore. Work is being executed by Construction Organisation of NWR under technical advice of RDSO. Tenders for earth work & bridge of Dedicated Test Track (Phase-I) has been finalized by NWR and work is in progress. ₹23.86 lakh cum earthwork, 5000 Cum blanking and 12 minor bridges have been completed. Work on 12 no. minor bridges and 2 no. major bridges are in progress. Construction of Twisted track including track linking for 3.3 TKM for carrying out stability test as per EN 14363 and related NI of Gudha station has been completed.

Pilot Project for Solar Power Evacuation and Feeding to LB bus at Bina TSS: The scheme for evacuation of solar power of 1.7 MW at 25 KV sent to PCEE/WCR on 20.01.2020, is shown below. Proper protections from both the sides have been incorporated for the transformer and for the feeder between solar substations to TSS. It is important to isolate solar feeder in case of the faults /breakdown and when power is switched off for maintenance through Circuit breakers to avoid unwanted feed and safety.

Development of Traction Substations (TSS) and Switching Station Layout in Reduced Area for 160KMPH in Delhi-Howrah and Delhi-Mumbai route: Indian Railways has decided to upgrade the existing NDLS-HWH and DLI-KOTA-MUMBAI routes for 160kmph routes. To cater the required power requirement at these routes, 2X25 KV system has been adopted. For this, new Traction Sub Stations and switching stations are to be commissioned along the tracks of the Indian Railways and sufficient land is required for this. In the present scenario, land acquisition is a major problem for the new works. Also, it was decided to construct the Traction substation and switching stations in a minimum width as the space is not available in the width along the Track.

Test & Trials

Track Recording: To ensure safety of traffic periodic track monitoring of Indian Railway track is done by TMM Directorate.

- In this financial year track recording of 1,29,573 Km have been completed up to December' 2020 which is the highest ever in the history of IR.
- New Track Tolerance Limits have been developed after analysis of huge amount of track recording data and introduced in Indian Railways to access the ride quality of track and to plan necessary maintenance interventions during the service life.
- In order to achieve complete Track Monitoring modernization and to

meet out the total liability of track recording as per new system of track maintenance and for need based replacement of track components & maintenance of track, 07 integrated track monitoring system, 16 track inspection & monitoring system and 16 turnout measurement systems are being acquired by TMM Directorate. For continuous track inspection of important routes 40 unattended axle box level acceleration measurement systems are being procured.

Inspection & Quality Audit

Metallurgical Inspection: Carried out Metallurgical Inspection of 36098 MT of bridge girder, 3803 Nos. of track items, 264 LHB wheels (Carriage item) and 2002 nos. of 6 mm thick nylon cord reinforced rubber pads.

Name Plate for Galvanised Steel Structures: Drawing of name plate has been prepared for traceability of steel structures with engraving/ punching mentioning name of manufacturer's/contractors/group-section and standard weight and serial number with code.

Delegation of Fabrication Inspection Work: Inspection of Railway Workshop, Rail cum Road, ROB (except Bow String Girder and special composite special plate girder) has been delegated by RDSO. Inspection of POT-PTFE type bearings also delegated.

Revise STR and Specification: To revise STR and Specification applicable for vendor registration. STR of HSFG bolting assemblies has been revised. STR of elastomeric bearing, Pot-PTFE bearing, expansion joint and fabrication of steel bridge girder (Part B) has been modified and under finalization as per ISO procedure of revision of specification.

Consultancy

Development of AC-AC 3000hp Cape Gauge Locomotive for Mozambique Railways: RDSO in association with BLW is developing a 3000hp Cape Gauge Locomotive for Export to Mozambique Railways. In this regard, Development and prototype inspection of bogie frames, Traction Motor, Traction alternator and Brake system of CG locomotive carried out by RDSO and completed.

Guidelines for providing Insulators in snow bound, stone pelting and high altitude (1600m) areas of J&K: A detailed study has been carried out on usage of insulators for 25 KV Traction Lines in snow bound, stone pelting and high altitude (1600m) areas of J&K. Based on the International Standards (IEC), Technical papers and design calculations, a guideline for providing insulator in snow bound, stone pelting and high altitude (1600m) areas has been issued.

Other Miscellaneous Activities

Surveillance System: IP Based Video Surveillance System (CCTV) has been installed in RDSO Complex on important points including Office Campus, Residential Area & RDSO Hospital.

Development of Human Resources: NDT Training Centre is imparting training to supervisors from Engineering & Mechanical Deptt. of Zonal Railways and PUs in the field of ultrasonic testing of Railway track & Rolling Stock components. During the year, NDT Training Centre trained 136 USFD operators for Rail & Rail Welding, 201 Ultrasonic operators for Axle & Wheels testing from various Indian Railway Workshops & PUs. Besides this, 302 ultrasonic operators of various outsourcing agencies were also trained and certified on payment basis. Online Training was also conducted as per guidelines issued by Railway Board due to COVID-19 pandemic.

Tele-Counselling during Pandemic: Due to Corona virus pandemic, when national lockdown was imposed, the Psycho-technical directorate in collaboration with eminent psychologists took an initiative to offer help to railway personnel and their family members through tele-counselling for the entire lock down period enabling them restore issues pertaining to anxiety, depression and adjustment problems and over all well-being while at the same time maintaining absolute confidentiality. Many Officers and staff and their family members availed the facility.

Introduction of Advance Technology High horsepower diesel Locomotive WDG6G RDSO

Undertakings and other Organizations

As many as 14 Public Sector Undertakings and other Organizations are functioning under the Ministry of Railways, as detailed below:-

S. No.	Name	Year of Incorporation/ Inception	Core competence
1	RITES	1974	To design, establish, provide, operate, maintain and perform engineering, technical and consultancy services for development of projects/ systems of all types and descriptions pertaining to Railways and Other Sectors/Industries in India and outside India.
2	IRCON	1976	To undertake construction activities in India and abroad on turnkey basis or otherwise in various fields of infrastructure like Railways, Bridges, Roads, Highways, Industrial and Residential Complexes, Airports, etc.
3	CRIS	1986	CRIS is the IT arm of Indian Railways. It designs, develops, implements and maintains centralized IT system for all departments of Indian Railways.
4	IRFC	1986	To raise funds from the market to part finance the Plan Outlay of IR.
5	CONCOR	1988	To develop multi-modal logistics support for India's international and domestic containerized cargo and trade.
6	KRCL	1990	To construct and operate railway lines, construct Road Over Bridges and rail line projects.
7	RCIL (RailTel)	2000	To utilize the surplus telecom capacity and right of way available with the IR to build nationwide optical fibre cable based broadband telecom and multimedia network.
8	IRCTC	2001	To undertake catering and tourism activities of the Railways. Also facilitates internet ticketing through its website.
9	PRCL	2001	To execute the Surendranagar-Rajula-Pipavav Port gauge conversion and new line projects in Gujarat.

10	RVNL	2003	To create and augment the capacity of rail infrastructure. To mobilize resources mainly through multilateral/bilateral funding agencies and also through domestic market for successful implementation of projects.
11	RLDA	2005	To develop vacant railway land for commercial use for the purpose of generating revenue by non-tariff measures for IR.
12	DFCCIL	2006	To plan and construct Dedicated Rail Freight Corridors (DFCs) for movement of freight trains on the corridors.
13	MRVC	1999	To plan and implement rail projects in the Mumbai Metropolitan Region.
14	BCL	1976 (In MOR from 2010)	To manufacture wagons, undertake structural fabrication jobs and manufacturing, retrofitting of EOT crane.

Rail India Technical and Economic Services Limited (RITES)

RITES Ltd., a Mini Ratna (Category-I) and Schedule 'A' Central Public Sector Enterprise under the Ministry of Railways, incorporated on April 26, 1974, is a leading player in the transport consultancy and engineering sector and uniquely placed in terms of diversification of services and geographical reach in various sectors such as railways, highways, airports, ports, ropeways, urban transport, inland waterways and renewable energy. The company is the only export arm of Indian Railways for providing rolling stock overseas (other than Thailand, Malaysia and Indonesia).

RITES became a listed company in July, 2018. Within the one year of listing, the company has made it to the top-500 companies in terms of market capitalization. As on 30th June, 2021, the company's market capital stands at approx ₹6,600 crore.

Domestic Projects

During RITES have executed many projects of national importance over the years. During the year, it completed the electrification works between Sawai Madhopur – Jaipur – Ringas Section (188 km) and Vijaypur - Maksi Section (188 km) and further secured work for electrification of around 489 km.

Foreign Projects

During the year 2020-21, RITES not only signed (post negotiations through video-conferencing) the contract for supplying 06 Cape Gauge AC-AC Traction Diesel Electric Locomotives and 90 Cape Gauge Passenger

Coaches, including 5 sets of DEMUs, to CFM Mozambique but was able to supply 2 locomotives despite supply chain disruptions. Also, export to Sri Lanka, of 160 main line passenger coaches and 2 sets of fully air conditioned DMUs, has started.

RITES is also executing PMC for 4-Lane National Highway project in Bangladesh, Trident Port in Mauritius and Construction Supervision Services for Metro Express project in Mauritius. It has also completed the work of Integrated Check Post (ICP) at Biratnagar in Nepal and secured work of ICP at Nepalgunj and Bhairahawa in Nepal. It also secured consultancy work for old runway rehabilitation at Gautam Buddha International Airport; Nepal. It has also completed the detailed project report for Georgetown road project in Guyana (South America).

Subsidiary & joint venture

RITES' subsidiary company, REMC Ltd., which has been mandated to handle the power procurement under 'open access' for the Indian Railways, besides handling renewable energy and energy-efficiency projects, has registered a revenue of ₹69 crore and PAT of ₹24 crore in the year 2020-21.

RITES' joint venture, SAIL RITES Bengal Wagon Industry Private Limited (SRBWIPL), has been manufacturing specialised high-end wagons for the Indian Railways and other clients. During the year 2020-21, it has achieved a profit of ₹2.5 crore with revenue of ₹161 crore.

Besides, RITES has recently acquired 24% stake in Indian Railway Stations Development Corporation, a nodal agency for redeveloping stations in the country.

Financial Performance

In the year 2020-21, affected by pandemic-induced disruptions, RITES has recorded a consolidated revenue and profit after tax of ₹2,005 crore and ₹444 crore, respectively, while sustaining its profit margins at 22.2%.

RITES achieved total standalone revenue of ₹1,947 crore and the operational revenue, excluding other income, of ₹1,797 crore. Its profit before tax and profit after tax stood at ₹562 crore and ₹424 crore, respectively, down by 31.6% and 28.8% over the year 2019-20. The key business segments continued to sustain margins due to timely cost-control measures. Sectoral diversity, geographical distribution and digitalisation helped RITES in identifying business opportunities, consolidating order book and maintaining a diversified business portfolio.

Ircon International Limited (IRCON)

Ircon International Limited (a Mini Ratna and Schedule 'A' PSU), formally known as Indian Railway Construction Company Limited was incorporated on 28th April, 1976, mainly for the purpose of construction and development of Railway Infrastructure in India and abroad with the expertise from Indian Railways .

During its operation of 45 years the company has diversified and developed core competence in other areas also like Highways, Tunnels, Bridges, Flyovers, ROBs, Airport Hangar & Runways, Metro Rail and Buildings (Industrial, Commercial & Residential complexes), EHV Transmission Line & Grid Sub - stations, Industrial Electrification, Signalling and Telecom Systems etc. Considering its major share of business from projects abroad, its name was changed to "Ircon International Limited" w.e.f. 17th October, 1995.

IRCON has emerged as front ranking construction company of international repute having executed prestigious projects during the last 45 years of its operations. It has so far completed more than 390 infrastructure projects in India and 128 projects across the globe in more than 25 countries.

IRCON is actively engaged in infrastructure development in several Asian and African countries. IRCON's expertise coupled with its experience has helped in successful completion and commissioning of a mega project valuing over USD 1 billion in Malaysia, the largest ever Transportation project completed by any Indian company abroad.

As close neighbours, India shares a unique relationship of friendship and cooperation with Nepal and Bangladesh. Taking the bilateral relationship to new heights, IRCON is executing Rail connectivity projects to Nepal and Bangladesh. These projects are New Broad-Gauge Railway Line between Jogbani (India) and Biratnagar (Nepal) & Jayanagar (India) and Bardibas (Nepal) besides the work of design and construction of Akhaura (Bangladesh) - Agartala (India) rail link.

In India, IRCON has undertaken various prestigious projects, which are emblematic to the country's rise on global infrastructural map. The Company is involved in the biggest Railway construction project in Jammu & Kashmir. IRCON is also constructing a new Broad-Gauge railway line from Sivok in North Bengal to Rangpo in Sikkim to provide rail connectivity to Sikkim.

Among the other ongoing domestic projects, some of the key projects are :

- Civil and Track Works of DFCCIL in three packages between JNPT -Vaitarana, Vaitarana -Sachin and Sachin -Vadodara sections
- Construction of Railway lines of approx. 300 km length at an estimated cost of ₹5,000 crore in Chhattisgarh.
- Survey, Feasibility study, detail design and construction of various identified rail connectivity projects of MCROREL.
- Kiul-Gaya Doubling Project (East Central Railway)
- Hajipur Bachwara Doubling Project (East Central Railway)
- Katni-Singrauli Doubling Project (West Central Railway)
- Katni Grade Separator By pass Line Project.
- Rampur Dumra - Tal - Rajendrapul Doubling including Ganga Bridge (East Central Railway)
- Gurgaon-Pataudi-Rewari Road Project.

Achievements of IRCON in the year 2020-21 Overall:

- In the year 2020-21, IRCON has secured projects worth ₹4,157.08 crore. This includes two ROB projects by Western Railway, one PMC project by RLDA, one highway project, three S&T projects by Northern Railway and seven electrical projects.
- In the year 2020-21 IRCON has successfully executed following projects:
  i. Construction/ upgradation of rural roads including bridges in 5 districts (Garhwa, Gumla, Ranchi, Lohardaga and Simdega) in the state of Jharkhand.
  ii. Mathura-Kasganj-Kalyanpur Railway Electrification Project with Signalling, for North Eastern Railway.
  iii. Katni Singrauli Railway Electrification work.
- IRCON is the only Indian PSU ranked among the Top 250 International Contractors 2020 (Only Indian PSU) by Engineering News Record (ENR), USA.
- Recently in February, 2021 for Vadodara Mumbai Expressway, a record of continuously laying of Pavement Quality Concrete covering an area of 24,970 square meters was started at 8:00 AM on 1st February, 2021 and was completed by 8:00 AM the next morning.

- SAP latest version S4HANA is under Implementation in IRCON to improve the overall performance and efficiency of the company.

Covid Appropriate Behaviour:

- For educating all officials, employees and contract staff across the IRCON pledge have been administered starting with the corporate office by CMD followed by all Projects team by PD and Project heads to grass route level.
- Special measures and massive education and awareness programmes through various medium/platforms have been launched to take the necessary precautions to contain the Covid-19 pandemic.
- All other necessary arrangements i.e. temperature measurement tools, masks and sanitizers etc. have been ensured at our Corporate Office and all of the field offices to carry out the works at full swing.

Financial Performance

In the year 2020-21, the Company has registered total income of ₹5,200 crore. The Profit before tax achieved by the company is ₹574 crore and the Profit after tax achieved is ₹405 crore. The Net Worth of the company is ₹4,406 crore.

Despite the headwinds faced by the economy due to the emergence of Covid-19, the Company's net profit for quarter ended 31st March, 2021 rose to ₹185.33 crore from ₹122.42 crore in the year ago period.

Centre for Railway Information Systems (CRIS)

The Centre for Railway Information Systems (CRIS) is an Autonomous Organization of the Ministry of Railways, with its headquarters in New Delhi and Regional Offices in Delhi, Kolkata, Mumbai, Secunderabad and Chennai. It develops and manages the IT systems of the Indian Railways, with terminals and counters spread across the country from Kargil to Kanyakumari and from Tawang to Port Blair. Together with a team of IT professionals with rich practical experience, CRIS has successfully positioned itself at the vanguard of Indian Railways' digital transformation.

Achievements and Developments

CRIS is developing and managing IT applications in all areas of Railway working and has been focusing on integrating these applications to provide a unified IT platform for Indian Railways. The activities & developments during 2020 - 21 done by CRIS are given below.

Enhancement of e-Drishti - A dashboard for Indian Railways –The e-Drishti Portal was enhanced to display information relating to data collection, analysis and reporting of Face Covers, Hand Sanitizers and PPE kits produced by different divisions, zones and PUs Live CCTV feeds of cameras from Hospitals, Stations, Platform were provided a module for improvement in Good Sheds, ideas for Business Development etc. were developed, e-Drishti was integrated with DARPAN & PRAYAS platforms of Prime Minister's Office.

Freight Operations Information System (FOIS) - Freight Business Development Portal (FBD) was launched and was accessed by 2,500 to 3,000 customers per day, in view of the pandemic module developed for Monitoring of Oxygen trains, Monitoring of Essential Services, Shramik trains, Parcel Trains, integrated with MeitY, NITI Aayog, Implementation of Discount Schemes, RORO Services, in addition discount scheme Service Market at Rail Terminals market and Rail Sugam Mobile App, were provided, Dashboard bucket of SFOORTI application was enhanced with Loading/ Unloading Performance and Commodity Performance dashboards.

Human Resources Management System - Development of e-Pass, Settlement, Office Order, ESS, APAR, PF Loan and Grievance modules, Integration process with IPAS for Settlement, Integration with PRS and NGeT for e-Pass, HRMS main dashboard was modified to show figures on current status basis.

E-Procurement System - New modules for Single Stage EPC tendering Consignee Depot, Online tender decision, Trade Group-wise registration of vendors, User/Consignee Depot Module (UDM) was developed, New e-Report "COVID-19 Emergency Response and Health System Strengthening Project" was developed, New APIs was developed for integration of iMMS/IREPS with GeM. Consortium of RITES and CRIS was empanelled for a period of three years on 2nd December, 2020.

Indian Railway Finance Corporation Limited (IRFC)

Set up as a public limited company in December, 1986 with the sole objective of raising money from the market to part-finance the plan outlay of Ministry of Railways and for meeting their development needs, IRFC has been successfully meeting the borrowing targets set for it year after year. Funds are raised through issue of bonds, 54EC Capital Gain Bonds, Term loans from banks/financial institutions and through external commercial borrowings etc. The Department of Public Enterprises has consistently rated the company as "Excellent" for its performance vis-à-vis the parameters set out in the MOU.

The Company has leased rolling stock assets worth ₹2,56,149 crore to the Railways upto 31st March, 2021. Rolling Stock assets worth about ₹28,561 crore were financed during 2020-21. Funding has been made by IRFC in locomotives, wagons and coaches. The acquisition has helped in increasing traffic output and revenue growth in Indian Railways over the years. IRFC has also funded Railway projects through Institutional Finance to the extent of ₹1,15,495 crore till 31st March, 2021. Besides, IRFC has funded National projects worth ₹7,578.70 crore and Railway Projects under EBR-S worth ₹50,551 crore upto 31st March, 2021.

Rolling Stock assets funded by IRFC are leased to Ministry of Railways. IRFC has successfully brought down lease rentals from 17.5% p.a. in 1996-97 to 10.57% p.a. in 2020-21 which compares favorably with the borrowing of the Government of India. The Ministry has been making lease payments to IRFC regularly.

The company has also disbursed loans amounting to ₹7,165 crore to Rail Vikas Nigam Ltd. (RVNL) till the end of fiscal year 2020-21 for development of Railway Projects.

IRFC has consistent profit earning track record. It has so far paid ₹5,242.69 crore as dividend to the Government. Based on its strong financial strength and credit standing, it has got the highest possible rating from three prominent domestic Credit Rating Agencies and investment rating at par with 'Sovereign' from four major International Credit Ratings Agencies.

Further, during 2020-21, IRFC came out with its maiden IPO and its shares were listed on stock exchange (BSE & NSE) on 29th January, 2021.

Konkan Railway Corporation Limited (KRCL)

The Company was established in the year 1990 with equity participation by Ministry of Railways (51%), Maharashtra (22%), Karnataka (15%), Kerala (6%) and Goa (6%) for the purpose of construction and operation of Railway along the Western Coast of India.

Financial Performance:

There has been substantial financial impact in the Year 2020-21 due to the COVID-19 Pandemic.

Key Financial Highlights

		(₹ in crore)
Particulars	**2019-20**	**2020-21**
Total Income	2,734.80	1,657.29
Operating Margin	197.72	(-)164.75
Profit After Tax	3.84	(-) 366.41
Net Worth	1,919.58	1,570.18

Train Operating Performance:

During the year, 45 pairs of Mail/Express trains and 08 pairs of passenger trains on average per day were scheduled to run over Konkan Railway route. In wake of COVID-19 Pandemic, as per COVID-19 restrictions and guideline issued by the Government of India, regular passenger train operation remained suspended during most of the year. During the initial period of lockdown Shramik Special and Parcel trains were run. A total of 94 Nos. of Shramik Special trains were run for movement of stranded labourers of various States on Konkan Railway route. Out of which, 80 Nos. of trains originated from KRCL Stations. A total of 48 Nos. of Parcel trains were run on KRCL route during the year in co-ordination with Zonal Railways to facilitate movements of essential commodities, equipment, medicines, perishable items etc. Out of which 18 Nos. of Parcel trains originated from KRCL Stations. Further 4,427 Nos. of Mail Express/ Passenger special trains were run with gradual increase in frequency during the year. During Ganpati festival, a total of 194 Nos. of special trains were operated. The passenger revenue during the financial year was ₹200.70 crore registering a decrease of 71% over the corresponding revenue of ₹680.78 crore of previous year.

On the freight front during the year 2020-21, on an average, 12 freight trains were run per day including Roll-on/Roll-off (RORO) services. The freight revenue during the financial year was ₹387.94 crore, which is 13% less than that of previous year's ₹445.94 crore.

Project Performance

a. **Udhampur-Srinagar-Baramula Rail Link (USBRL Project, J&K):** So far, KRCL has completed 40.2 km tunnel excavation, out of total 45.24 km. 5.078 km of tunnel excavation, 4.66 km of Tunnel Lining and 11001 MT of launching have been completed during the year. A turnover of ₹827crore (excluding GST) was achieved from the Project during the year, as compared to ₹1,281 crore (excluding GST) of 2019-20. There was a reduction of 35.44% due to stoppage of work & reduction of work due to COVID-19 Pandemic.

b. **Anakkampoyil-Kalladi-Meppadi Tunnel Road Project:** Government of Kerala has assigned KRCL, as Special Purpose Vehicle (SPV), the execution of the Anakkampoyil-Kalladi-Meppadi Tunnel Road Project. A Tripartite Agreement has been signed between Konkan Railway, Public Works (H) Department, Govt. of Kerala and Kerala Infrastructure Investment Fund Board (KIIFB) to implement the project. The scope of work is preparation of Detailed Project Report and construction of Two-Lane Road Tunnel including approach roads

and River Bridge at a tentative cost of ₹658 crore FLS for the work has been completed. Preparation of DPR is in progress.

c. **Route Electrification of Konkan Railway Route:** CRS sanction has been obtained for introduction of commercial services for carriage of goods and passenger traffic on 25kV AC traction in Bijoor - Thokur Section (108.858 RKM), Bijoor-Karwar Section (131.74 RKM) and Roha-Ratnagiri Section (204.704 RKM). Works are in progress in section between Karwar and Ratnagiri which is likely to be completed by December, 2021.

RailTel Corporation of India Limited (RailTel)

RailTel Corporation of India Ltd. (Mini Ratna Category-1 CPSU), was formed on 26th September 2000 to facilitate Railways in expeditiously modernizing train operation and safety systems by providing state of art communication network infrastructure to Indian Railways through an internal entity. Formed with an authorized capital of ₹1,000 crore and an exclusive Right of Way (ROW) of the 67,956 RKM of Indian Railways network, the PSU started functioning with a hand full of talented, experienced and motivated Signalling & Telecommunication engineers of Indian Railways.

Over the years, it has grown from a small entity to one of the largest secure Neutral Telecom Services Provider in the country and an ICT service provider. It has two UPTIME, USA certified Tier-III Data centres and MietY empanelled Railcloud. The biggest USP of RailTel is its ownership of a Pan-India 60000+ RKM of Optic fibre network, with access network of 18000 RKM (approx.) including North Eastern States covering all important towns & cities and several rural areas. RailTel occupies a proud place with its unparalleled networking high bandwidth backbone segment. The network has the ability to provide mission critical customized connectivity platform for enhanced efficiency and growth. Presently this network is available at more than 800 cities in multiple rings of STM-64/16.

RailTel Network has capability of Service delivery from 2Mmbps to 800Gbps links and comprises of various technologies viz. Next Generation Network (NGN), Synchronous Digital Hierarchy (SDH), Packet Transport Network (PTN), Dense Wavelength Division Multiplexing (DWDM), Internet Protocol- Multi Protocol Label Switching (IP-MPLS) which are maintained round the clock by Network Operation Centres and trained field manpower. All the equipments provided on the network are of State-of-the-Art Technology and are as per International Telecom Standards.

The company has diversified into many fields offering a bundle of services viz. Internet Bandwidth, Leased lines, Tower Co-location, HD Video

Conferencing service, MPLS-VPN services, Data centre services such as Co-location Hosting, Managed Services, Cloud computing Services, Data recovery services, e-office implementation, HMIS (Hospital Management Information System), Security Operations Centre as a Service (SOCaaS) & IT enabled services etc. to private and Government clients.

Performance during last three years

a. In the last 3 years, the Company has consistently earned every year more than ₹179 crore profit (before tax).

b. The Company pays revenue share to Railways and license fee to DoT from its income. During the last three years, such revenue share and license fee paid are as under:

(₹ in crore)

	2018-19	2019-20	2020-21
Revenue share to Railways	28.43	31.81	**30.68**
Revenue share to DoT	45.21	47.93	**56.56**

Focus Areas

Hospital Management Information System (HMIS)

RailTel has been entrusted with the work of Hospital Management Information System over 125 Railway Hospitals and 650 Health units/ polyclinics of IR. This is integrated clinical information system for improved hospital administration and patient health care for providing an accurate, electronically stored medical record.

Total 156 Hospitals/Health units of Zonal Railways of IR are live on HMIS. The features of the software include customizing clinical data according to the departments and laboratories, multi hospital feature that provide cross consultation, seamless interface with medical and other equipments. The patients will have the benefit of accessing all their medical records on their mobile device.

To minimize footfall at Railway hospitals/ Health units for generic treatments, a teleconsultation app and HMIS beneficiary app has been developed and integrated with the (HMIS). The beneficiary app enables the medical beneficiaries to access their medical record at a single point. RailTel has also developed a Covid portal which captures and maintains all data related to covid patients (testing, line of treatment, current status etc.) for better monitoring of treatment.

Station Wi-Fi

RailTel is transforming Railway stations into Digital hubs by providing public Wi-Fi at all railway stations. 6,052 stations are live with RailTel's RailWire Wi-Fi including 15 Station of Kashmir valley. This is one of the largest and fastest public Wi-Fi networks of the world. The response to the service has been phenomenal, with around 2.9 crore user logins in a month and around 8,200 TB of aggregated data consumption pre-covid. Passengers use this facility for streaming High Definition (HD) Videos, download of movies, songs, game and do their office work online. Out of the stations commissioned 70% are in rural areas which are bringing free high-speed Wi-Fi services in the vicinity of a major chunk of rural population. It is helping in bridging the urban rural divide by providing the rural masses with access to high-speed free Wi-Fi which they can use for making digital payments, access to e-gov services, knowing the weather conditions and learning new vocational and skills. Company has now introduced paid Wi-fi service at a nominal charge for Rail users looking for high speed after initial 30 mins of free usage. Utilizing POPs at rural stations, it proposes to extend connectivity to villages and the Wi-fi infrastructure will also be used to provide access under PM WANI project.

Security Operation Centre

With world going digital, it is becoming increasingly important to safeguard your data from cyber security threats. To provide a centralized and consolidated cyber security solution to organizations, company has set up a Security Operation Centre (SOC) at Gurugram. It provides onsite and offsite cyber security incident prevention and security event monitoring services.

RailTel's Security Operations Centre as a Service (SOCaaS) proactively addresses the increasing threat to Data Security with detection and response capabilities. The services provided through SOC are Security information and event management solutions, Endpoint detection and response, which provides host level telemetry for both near real-time as well as forensic investigation, Network traffic analysis used to investigate alerts and obtain additional context about suspicious activity in the network, Packet capture for forensics, Sandbox for malware analytics, Vulnerability assessment tools, Web application and network firewalls and Auto ticketing tool.

E-office in Indian Railways

RailTel started implementation of e-office over IR to bring more efficient, effective and transparent government transactions and processes. e-Office is a Cloud Enabled Software Application developed by NIC, hosted at RailTel

Tier-III Certified Data Centre at Secunderabad with Disaster recovery at Gurugram. e-Office has been implemented in all 216 Units of Indian Railways. As on date, more than 1.3+ lakh users of Indian Railways are using e-Office Application. E-office has proven to be boon in a crisis time and part of Railway workforce was able to WORK FROM HOME, which would have been impossible in case of manual filing system. Company has also provided this service to other PSUs such as DFCCIL, IRCON, RVNL, IRCTC and CWC etc. It has also created Virtual Private Network for 13,163 users of Indian Railways.

Railway Display Network (RDN)

This is an initiative to provide contextually rich and relevant information to Rail users along with public awareness messages & entertainment content and use the latest digital technologies to unlock the true advertisement potential of the footfalls in stations. RDN is planned to be built and operated on a self-sustainable model.

The display screens will be provided at the station buildings, entrance, concourse, platforms, waiting rooms and foot-over-bridges. Various passenger related information from most appropriate sources like train charting server, NTES (National Train Enquiry System), PRS (Passenger Reservation System) etc. shall be provided. The Railway display network with the cloud analytics will provide the ability to generate rich analytics and context to provide Railway users accurate and relevant information to improve the Railway travel experience. Project is to be implemented at 2000 stations (all A1,A,B,C & D category stations).

HD Video Conference Service

RailTel's offers an end-to-end, full high-definition video conferencing service that gives users a virtual, face-to-face meeting experience. Before adoption of Video Conference Service, Indian Railways were spending huge amount of money/man hours for meetings/events, now number of travels for meetings/events has dropped drastically saving man hour, travel & lodging expenses. This has also helped in saving significant amount of carbon footprint.

The service now serves 602 elite users across 50 plus customers. The success is a result of the significant ease of use & 24X7 customer responsiveness of the RailTel team vis-a-vis the challenges faced with other service providers. Post covid there has been exponential growth in the usage of video conferencing services provided by RailTel.

The services are offered on a monthly subscription basis requiring no

investment into CAPEX by the customer while obviating the recurring need for investment due to technology obsolescence.

Video Surveillance System (VSS)

RailTel is also executing provision of IP camera-based Video Surveillance System at 5,102 railway stations and 14,387 premium train coaches and EMU coaches. This will go a long way in enhancing the safety and security of the passengers travelling over the IR network. RailTel is also integrating the various standalone video surveillance system installed at various stations by respective zonal railways so that the video recordings can be seen and monitored at the Divisional and Zonal head quarter level centrally. Under the project, all cameras to be provided in station premises will be networked on optical fiber cable and brought to a centralized place (CCTV control room) from where they shall be viewed on multiple LCD monitors by Railways security personnel. The system shall provide high capacity storage devices at stations to store recording of CCTV footage for a defined period. Work has been completed at 287 stations under Phase-1 and 54 stations provided for Migrant special by RailTel during lockdown.

RailWire – Retail Broadband Service

It is a collaborative model in partnership with local entrepreneurs & local cable operators for providing Last Mile Connectivity. There are more than 4.08 lakh + RailWire broadband customers in the SMEs/household segment. Due to high SLAs & last mile connectivity, this is suitable for providing rural connectivity at Gram Panchayat/village levels as well as for connecting banks and other Government institutions. There has been growth of 3.3 times in subscribers since April, 2020.

Data Center&Rail Cloud

RailTel has two UPTIME (USA) certified Tier-III Data Centers at Secunderabad and Gurugram & a MeitYEmpanelled "Rail Cloud". Company offers a host of Data Centre & Cloud services like Colocation Services, Managed services, Cloud Computing, Managed e-Office, Aadhaar Authentication Services, Dedicated Solutions etc, from these two state-of-the-Art Data Centres with combined total gross capacity of more than 6000 Sq.ft Server Farm area.

RailTel cloud services are backed by SLA of 99.95% and co-location services by SLA's of 99.98% which is one of the best by industry standard. Besides Indian Railways, a number of Government customers trust RailTel for the Data Centre services.

Modernization of Signalling System

RailTel Enterprises Ltd., a wholly owned subsidiary of RailTel Corporation of India Ltd., has been awarded the work of replacement of old mechanical signalling equipment with state-of the-art electronic interlocking system at 26 stations of Northern Railway. The existing mechanical signalling systems are using lever frames to both lower the signal and change the tracks. The new Electronic Interlocking signalling system will now enable lowering the signal and changing of tracks by click of a mouse and will enhance safety and improve efficiency of train operation. Three stations Pehowa Road, Kalayat and Kaithal have been commissioned. The Company is fully geared to complete the project for modernizing signalling system at remaining 23 stations.

RailTel is also supporting various state governments in their State Wide Area Network (SWAN).

IOT Project

RailTel is also executing project of making available IOT based Data from various civil engineering assets, Drone recording of track and CCTV camera feed from projects sites on a common Indian Railway Telemetry application Platform. It has deployed IoT Based Condition Monitoring and Predictive Maintenance system for Signalling assets as at one station on South Central Railway on trial.

PM WANI

PM-WANI is ambitious program to connect all silo of Wi-Fi networks for ease of use and proliferate broadband usage for masses. RailTel being the most widespread integrated Wi-Fi network of country supporting the largest footfall of Wi-Fi users, will play an anchor role in entire PM-WANI eco-system, by continuous engagement with regulatory bodies and industry players. It has already been registered as Public Data Office Aggregator (PDOA) and has obtained provisional PDOA certificate from CDOT. The Payment channel integration is already completed with payment aggregators.

One of the key features of PM-WANI is to facilitate ease of use and seamless roaming for Wi-Fi users. Interop Testing to check seamless roaming from one PDOA network to other PDOA, has been done with CDOT. The company will also be launching a PM-WANI App shortly.

Village Connectivity

RailTel is working in direction for providing Village connectivity from RailTel POPs at rural stations under viability gap funding. A proposal has

been submitted by RailTel to DOT to connect villages in Jharkhand and Maharashtra which is under consideration.

Indian Railway Catering And Tourism Corporation Limited (IRCTC)

Indian Railway Catering and Tourism Corporation Limited (IRCTC), was incorporated on 27th September,1999 under the Companies Act, 1956 as an extended arm of the Indian Railways to upgrade, professionalize and manage the catering and hospitality services at stations, on trains and other locations and to promote domestic and international tourism through development of budget hotels, special tour packages, information and commercial publicity and global reservation systems. The shares of IRCTC were listed on BSE limited (BSE) and National Stock Exchange of India Ltd. (NSE) on 14th October 2019. Post IPO, shareholding of the President of India (GOI) reduced from 100% to 87.40 % of the paid up equity share capital of the company.

During the year 2020-21, in accordance with the directives of the Department of Investment and Public Asset Management (DIPAM), Ministry of Finance, 20% of paid up equity capital in the company was divested through "Offer for sale (OFS) of shares by the Promoters through stock exchanges" method. As a result of the aforesaid offer for sale, the Government of India's holding in IRCTC has further reduced from 87.4% to 67.4 % of the paid up equity share capital of company.

The financial highlights of the year 2020-21 as compared with the year 2019-20 are as below:

(₹ in crore)

S. No.	Particulars	2019-20	2020-21
1	Total Income	2,342.41	**868.69**
2	Total Expenditure	1,563.98	**592.76**
3	Profit Before Tax	729.58	**260.89**
4	Provision for Tax	216.48	**70.99**
5	Profit After Tax	513.11	**189.90**
6	Net worth	1,313.82	**1,466.95**

Businesses of IRCTC

The businesses of IRCTC are broadly classified under four segments:

1. Catering and Hospitality
2. Travel and Tourism

3. Internet Ticketing
4. Packaged Drinking Water (Rail Neer)

IRCTC's New Business Initiatives:-

- IRCTC has introduced a strikingly new feature of instant refund to IRCTC Website / Mobile App users using "IRCTC iPay". IRCTC has now equipped its payment gateway "i-Pay" with "AutoPay" feature. In this feature, a user has to allow for debit to his UPI bank account / other payment instrument through a mandate facility which creates a lien on his payment instrument.
- IRCTC recently launched online Bus booking services through its tourism portal that was dedicated to the service of nation on 29th January, 2021. Through the new microsite www.bus.irctc.co.in, customers will now be able to book their choice of buses with seat selection sitting in the comfort of their homes. IRCTC has tied up with more than 50,000 state road transport as well as private bus operators covering 22 states and 3 union territories for proving the online bus booking services to the customers.
- Golden Chariot Train owned by Karnataka Tourism was taken over by IRCTC in January, 2020 for operations, marketing and maintenance. IRCTC successfully completed two tours of the luxury train in March, 2021.
- IRCTC is now offering its successful Artificial Intelligence (AI) based solutions to various government organizations and corporate sectors across various disciplines and businesses for their usage and larger benefit to the consumers. This will enable those organizations to answer/ interact general queries of the customers and garner good will too.

Catering & Hospitality:

During the year, IRCTC managed on-board catering services on 430 special trains during 2020-21 out of which 272 trains having pantry cars and 158 having provision of TSV services.

E-catering services are expanding and available at 358 stations. On an average 21,571 meals per day were booked through e-catering in 2019-20.

E-catering services are expanding and available at 200+ stations and more stations are being added depending upon Central/State Govt. guidelines.

Highest meals booked on 17th July, 2021 was 20,000+ which was equivalent to pre Covid-19 level. 20 B2C partners such as Make my Trip,

Paytm, Phonepe, Google Pay, Ixigo, Goibibo, Railyatri etc. have been roped in to expand the reach of e-Catering services. The revenue IRCTC from Catering in 2020-21 was clocked at ₹223.41 crore.

Travel and Tourism

IRCTC is one of the leading travel and tourism companies in the market. The various tourism products of IRCTC includes Luxury Train Tours like Maharajas' Express, Buddhist Circuit Special Train, Bharat Darshan Special Tourist Trains, Rail Tour Packages, International and Domestic Air packages, Land Tour Packages, Hotel booking, Car Rental, Customized and LTC tours and Event Management etc.

IRCTC have its exclusive tourism portal, www.irctctourism.com for showcasing and booking of various tourism products in a single space. The revenue from Tourism segment in 2020-21was registered at ₹53.85 crore (approx.)

Due to COVID-19 pandemic spread across World, the tourism and hospitality industry has been hampered badly. But still with hard work, marketing activities and planning along with support of Indian Railways, IRCTC was able to launch and operate the Golden Chariot Luxury Train, Pilgrim Special Tourist Trains and also integrated online bus booking in its travel and tourism portal.

Due to the severe impact of the pandemic on the tourism business of IRCTC, the income from Travel and Tourism Business of the company has observed drastic decrease of 86.79% from ₹392.14 crore in 2019- 20 (including state special trains) to ₹51.81 crore in 2020-21.

Achievements/Highlights of Tourism Department

1. **Standard Operation procedure during COVID-19:** Issuance and implementation of Standard Operating Procedure (SOP) based on the guidelines issued by MHA & MHFW on preventive measures for Tourist Trains / Tours to contain spread of COVID-19 & dealing with emergencies.
2. **Bharat Darshan Tourist Trains:** IRCTC has operated total 21 Bharat Darshan/ Aastha Circuit Tourist Trains in the year 2020-21 and catered to 13,312 tourists.
3. **Domestic Air Packages:** IRCTC has operated total 70 Domestic Air packages with 1,419 passengers in the year 2020-21.
4. **Event Management:** IRCTC operated one day cruise event tour at Hooghly for M/s Braithwaite with lunch and live music band on 30th

January' 2021 catering to 88 guests.

5. **Saloon Cars:** During the year 2020-21, IRCTC has operated 29 Saloon Cars across India and 1st Saloon Car was operated ex- Mumbai to Patna on 13.06.2020.

Internet Ticketing

Online E-ticketing accounts for 79.63% of reserved tickets in 2020-21 on Indian Railways. On an average, more than 4.77 lakh tickets were sold daily through IRCTC's website and Mobile App during the year 2020-21. The site offers round the clock ticket booking services except for 35 minutes from 23:45 hrs to 00:20 hrs.

Year	2018-19	2019-20	**2020-21**
No. of E-Tickets Booked (in Lakh)	2,842	3,019	**1,740**
No. of Passengers Booked E-tickets (in Lakh)	4,950	5,230	**3,053**
E-ticketing Revenue Collection (in crore)	32,070	34,055	**17,762**

Packaged Drinking Water (Rail Neer) :

As on 31.03.2021, IRCTC has fourteen operational Rail Neer Package Drinking water plants set up in Delhi, Patna, Palur, Ambernath, Amethi, Parassala, Bilaspur, Sanand, Hapur, Mandideep, Nagpur, Jagiroad, Jabalpur and Sankrail of which the plant at Amethi, Parassala, Sanand, Hapur, Mandideep, Nagpur, Jagiroad, Jabalpur and Sankrail are under Public Private Partnership mode. The total Production capacity of above fourteen plants is 14.08 lakh litres per day.

A New Rail Neer Plant with production capacity of 72,000 litres per day has been set up at Mehatpur, Distt. Una (Himachal Pradesh).

The revenue from Rail Neer segment in 2020-21 was registered at ₹57.24 crore (approx.).

Pipavav Railway Corporation Limited (PRCL)

Pipavav Railway Corporation Limited (PRCL), the flagship Joint Venture Company of Ministry of Railways and Gujarat Pipavav Port Limited (GPPL) was formed to execute the Surendranagar – Rajula – Pipavav Port (APM Terminals, Pipavav) gauge conversion & new line project. This is the first railway infrastructure project executed through private sector participation. PRCL has concessionaire rights to construct, operate and maintain this project line for 33 years. PRCL has been given the status of a non-Government Railway Administration enumerated in The Railways Act, 1989.

PRCL has permission to run container trains on rail corridors serving the Ports of Pipavav, Mundra, Chennai, Ennore, Vizag and Kochi and their hinterlands (in its capacity as a Container Train Operator– Category – III).

The comparative figures of 2019 -20 and 2020 -21 are: -

	2019-20	**2020-21**
Number of single stack Container trains	2,109	**2,443**
Number of Double Stack containers trains	2,073	**1,764**
Total container	4,182	**4,207**
Number of Bulk trains	618	**906**
Number of empty trains run	536	**754**
Total number of trains run	5,336	**5,867**
Traffic volume (in Million Tonnes)	8.14	**7.72**
TEU's loading	3,26,812	**2,79,158**
Gross Apportioned freight earnings (₹ in crore)	229.65	**219.79**
Net Profit (₹in crore)	82.15	**26.05**
Net Worth as per audited financial statements (₹in crore)	641.12	**657.77**
Number of passenger trains	**19 pairs	****19 pairs**

***includes 9 mail / express trains, which are running weekly and 9 mail / express / passenger trains run daily and 1 mail / express train run Monday-Saturday*

Rail Vikas Nigam Limited (RVNL)

Rail Vikas Nigam Limited (BSE|NSE: RVNL) is a Category-I Mini-ratna CPSE under the Ministry of Railways. It was incorporated in 2003 to meet the infrastructure deficit in the country and for implementation of projects on a fast-track basis. RVNL works as the executing arm of the Ministry of Railways for construction and transportation infrastructure development.

The organization undertakes project execution from concept to commissioning and creates project specific SPVs for raising EBRs. RVNL's mandate also includes mobilization of extra budgetary resources (EBRs) through a mix of equity and debts from banks, financial institutions, and multilateral agencies like Asian Development Bank (ADB).

Business Performance

Projects Completed upto March, 2021

S.No.	Plan Heads	Completed (Km)	No. of Projects
1	New Line (NL)	455.55	4
2	Gauge Conversion (GC)	2,040.20	8
3	Doubling (DL)	4,264.11	44
4	Railway Electrification (RE)	6,309.93	25
5	Metropolitan Transport Project (MTP)	46.14	
	Total	**13,145.93**	**81**
6	RE as part of Doubling/GC/NL (KM)	3,033.11	
7	Workshop Projects (Nos.)		10
8.	Cable-Stayed Bridge (Nos.)		1
9	Others		9
Total projects fully completed			**101**

Financial Performance

		(₹ in crore)
	2019-20	**2020-21**
Total Turnover	14,530.58	**15,403.65**
Gross Profit (PBT)	990.83	**1,155.67**
Profit After Tax (PAT)	789.85	**940.55**
Dividend	237.69	***329.43**

**Includes final dividend amounting to ₹91.74 crore (@0.44 per fully paid equity share) recommended by the Board of Directors.*

Rail Land Development Authority (RLDA)

Rail Land Development Authority (RLDA) is a statutory Authority under the Ministry of Railways, set-up by an Amendment to the Railways Act, 1989, for development of Railway Land as entrusted by the Central Government for commercial use for the purpose of generating revenue by non-tariff measures. RLDA has been constituted in terms of Extraordinary Gazette Notification dated 31.10.2006, as amended on 05.01.2007.

Business of the Authority

1.1 Commercial Development of Vacant Railway Land

Sites for commercial development are entrusted to RLDA by the Ministry of Railways. During the year 2020-21, total earning of ₹352.83 crore has been realized by RLDA.

In the beginning of 2020-21, RLDA had been entrusted with 75 sites. RLDA had identified 17 new sites for commercial development. During 2020-21, Letter of Acceptance (LOA) for development of 4 commercial sites has been issued.

1.2 Construction of Multi Functional Complexes (MFCs)

Land for MFCs is leased to PSUs on 30 to 45 years lease on revenue sharing model. However, RLDA adopted combination model (upfront Lease Premium and fixed Annual Lease Rent model) for development through private developers for which bidders are selected through open competitive and transparent bidding process. In all 40 MFCs were assigned to PSU for development [IRCON (24), RITES (14), RVNL (2)]. Out of these 40 MFCs, 24 MFCs have been commissioned by IRCON. However, as per the directions of the Railway Board, 14 MFC Buildings completed by RITES have been handed over back to Railways without any cost. RVNL has also handed over 2 nos. MFC to concerned Zonal Railway. RLDA has been entrusted 123 MFCs for development through private developers. Out of these, 58 MFCs have been awarded and on account of poor viability in Technical & financial context Railway Board have been requested vide letter dated 11.03.21 to withdraw 39 MFC sites from RLDA.

LOAs for 4 MFC sites namely Sasaram, Durgapur, Kanchrapara and Nadiad issued during 2020-21. However, due to payment default Sasaram has been cancelled.

1.3 Re-development of Railway Colony 2020-21

Most of the colonies of Railways are very old and quarters are in dilapidated conditions. RLDA has been given responsibility of Re-development of Railway Colonies along with earning of noñ-tariff revenue by leveraging land uses and FSI. Upto March 2021, Railways has entrusted 84 colonies to RLDA for re-development.

1.4 Development of Railway Stations by RLDA in 2020-21

Total 63 stations have been entrusted to RLDA for redevelopment.

These stations are as below:-

Gomti Nagar, Charbagh (Lucknow), Tirupati, Nellore, Puducherry, Thane (New), Delhi Sarai Rohilla, Kota, Enakulam, Delhi Safdarjung, Ajni IMS (Nagpur), Dehradun, Jammu Tawi, Kozhikode, Tilak Bridge, Panipat, Gaya, Hatia, Rajendra Nagar (Patna), Puri, Tambaram, Vijayawada, Vishakapatnam, Renigunta, Rameshwaram, Khandwa, Faridabad, Bhuj, DakaniaTalav, Ahmedabad, Delhi Cantt., Enakulam Town, Howrah, Miraj, Mumbai Central, New Delhi, Shalimar (Howrah), Thiruvananthapuram, Alipurduar Jn., Jabalpur, Jaisalmer, Kathgodam, Mangalore Jn., Muzaffarpur, Nasik Road, New Jalpaiguri, Singrauli, Bhadrak, Brahmapur, Cuttack, Jajpur Keonjhar Road, Khurda Road, Rayagada, Sambalpur, Balasore, Jhasuguda, Rourkela, Bhagalpur, Begusarai.

The work of DPR consultancy at 38 stations is in progress. Construction work at Gomtinagar and Safdarjung is in progress (in EPC mode). RFQ were invited for Ernakulam junction, New Delhi, Tirupati, Nellore, Dehradun and Puducherry Railway station.

Dedicated Freight Corridor Corporation of India Limited (DFCCIL)

About DFCCIL

DFCCIL is a wholly owned Public Sector Undertaking of the Ministry of Railways incorporated under Companies Act 1956 on 30th October 2006. The company has been mandated to undertake planning, construction, maintenance and operation of Dedicated Freight lines. In the first phase, the Government of India has approved construction of two corridors - the Eastern DFC (1,875 route km) and the Western DFC (1,506 route km), spanning a total length of about 3,381 route km. The Eastern Corridor, starting from Sahnewal near Ludhiana (Punjab), will pass through the states of Haryana, Uttar Pradesh, Bihar and Jharkhand to terminate at Dankuni in West Bengal. The Western Corridor connecting Dadri in Uttar Pradesh to JNPT in Mumbai will traverse through the states of Uttar Pradesh, Haryana, Rajasthan, Gujarat and Maharashtra.

Advantages of DFCCIL

- The unit cost of transport is also expected to reduce by 40%.
- DFC routes are constructed with the double lines and are also provided with automatic signalling thereby more than 120 trains can be run in each direction. Initially, it is planned to divert 70% of the freight traffic running on the parallel routes of Indian Railways and during the course of time, the road traffic will also get diverted to rail as DFCs will provide very efficient, economical, safe and faster mode of transport.

- Industrial corridors are also coming up along the Eastern DFC and Western DFC.
- Savings of 457 million tonnes of CO_2 emission over a 30-year period.

With the Dedicated Freight Corridors, the Indian Railways aim to bring about a paradigm shift in freight operation with the prime objective of reduction in unit cost of transportation with higher speed of freight trains, better turn round of wagons and thereby much improved wagon productivity in terms of improved NTKM (Net Ton Kilometre), increased payload to tare ratio by introduction of higher axle load wagons on the rail network, improved locomotive utilization and improved specific fuel consumption. The ultimate objective is to reduce the Operation and Maintenance Cost (O&M Cost) significantly and pass on the benefit to the customer in the form of lower transport Logistics Cost.

There have been significant achievements by Dedicated Freight Corridor Corporation (DFCCIL) during the year 2020-21 despite the all-round disruption due to Covid-19 pandemic. DFC has been a driving force in contributing towards the ease of doing business and realising the goal of an "Aatmanirbhar Bharat."

Significant Achievements of the year 2020-21

- 657 km of the project in both the Eastern and Western DFC corridors were dedicated to the nation in this financial year.
- DFC has considerably reduced the transit time of freight trains. The average speed for Goods trains achieved in the 351 km New Bhaupur – New Khurja section of the Eastern Dedicated Freight Corridor is 61.55 kmph thus covering the distance in less than 3 1/2 hours. The maximum speed touched by a freight train over DFC has been 99.3 kmph. This is a big achievement since the corresponding Indian Railways section falls on the highly saturated Delhi - Howrah route where average speed of freight trains is much lower.
- An additional 453 km of track was completed in the year. Current routes to and from Kandla, Mundra & Pipavav ports of western India will shortly be connected through DFC with the National Capital Region providing fast and cost-effective access between the western ports and the northern Indian hinterland. This will decongest the existing passenger traffic routes on the heavily saturated sections in Uttar Pradesh and Bihar.
- First freight train trial run was conducted on the Western dedicated Freight Corridor's newly built 353 km New Palanpur (Gujarat) - Madar

(Rajasthan) section on 31.03.2021. 50 wagons loaded with High Speed Diesel weighing 3900 tons drawn by Multi DSC loco moved on DFC tracks to its destination in Bawal, Haryana.

- DFC has also been a conduit for non-conventional traffic. This opens up new revenue streams and also contribute towards helping Indian Railways increase its modal share of the freight carried.
- The cumulative carried kms touched around 2 Billion Gross Ton Kilometre (GTKM) with EDFC accounting for 1.167 GTKM and WDFC 0.325 GTKM respectively consisting of conventional and non-conventional goods.
- On 07.01.2021, 306 Km Rewari - Madar electrified double line section of WDFC was dedicated to the nation and also double stack long haul container trains from New Ateli and New Kishangarh stations was flagged off.
- 351 Km New Bhaupur - New Khurja double line section of EDFC and state of the art Operation Control Centre (OCC) in Prayagraj was dedicated to the nation on 29.12.2020 and long haul trains from New Khurja and New Bhaupur stations were flagged off. DFCCIL has set up a state-of-the-art Operation Control Centre (OCC) at Prayagraj (Allahabad) which acts as the command centre for the entire Eastern Dedicated Freight Corridor (EDFC), controlling and monitoring the system including train operation and power supply system. The OCC is a shining example of "Make-in-India".
- In the 2021 Union Budget, three new DFCs were proposed. One is from Kharagpur to Vijayawada covering 1,100 km, called the East Coast Corridor. The second one is from Kharagpur to Bhusawal with an approximate length of 2,000 km and is called East-West DFC. The third is the North-South DFC which will start from Vijayawada to Itarsi covering 975 km. overall, around 4,000 km of DFC is being planned at an approximate cost of over ₹2 lakh crore.
- Successful trial run of Electric Locomotive in Ganjkhwaja-Chirailpathu section (100 km) of EDFC on 31.03.2021.
- Modalities for movement of Roll-on/Roll-off (RORO) service between New Rewari – New Palanpur was finalised. This initiative will be a win-win situation for all stakeholders concerned. Customers will be assured a faster and assured transit time of approx. 10 hours vis-à-vis 24 hours through road, a saving of around 14 hours.

Land Acquisition

The total award u/s 20F declared so far is 11,653 Ha of land (WDFC: 5991 Ha out of 6000 Ha and EDFC: 5662 Ha out of 5,813 Ha) which is approx 98.5% overall (99.9% excluding Sonnagar-Dankuni) with compensation amounting to ₹15,542 crore till March, 2021.

Business Development, Operations & Safety

With the commencement of operations in the already commissioned sections, the role of Operations Business Development has assumed great importance.

- Approval obtained for disconnection from IR and connection with DFC for 5 Private sidings (JK Lakshmi, Shree, Binani Cement, BPCL, Nabha) on WDFC/EDFC and inclusion of cost of disconnection/connection in the estimate of work for 4 Private sidings (Ultratech Cement, Mejia TPP, SAIL Dankuni, Dankuni Coal Complex) in Sonnagar - Dankuni (PPP) section.
- Development of Logistic Parks/Freight Terminals/Parcel Terminals and their connectivity with DFC stations through private investment is being pursued which has the potential to bring more traffic and spur economic development.
- Land acquisition of 61 Hectares is under process at Kanpur for development of a multi modal logistics park at Kanpur. The logistic park will be developed under BOT model.
- Asset monetization of optical fibre over DFC is being pursued which will open up a new revenue stream for DFC.
- Commercial notification has been issued for opening good sheds at 4 locations to facilitate loading and unloading.
- Bids were received for 14 locations spread over EDF and WDFC for development of private freight terminals (PFTs). LOA has been issued to 3 such successful bidders in the financial year 2020-21.

Mumbai Railway Vikas Corporation Ltd. (MRVC)

1.1 Mumbai Railway Vikas Corporation Ltd (MRVC Ltd), a PSU of Govt. of India under Ministry of Railways (MOR) executing the Rail Component of the MUTP.

1.2 Mumbai Urban Transport Project - I

MUTP I was sanctioned in Rail Budget 2003-04. It was successfully completed in 2012 and its completion cost was ₹4,452 crore.

Major Infrastructural Inputs in MUTP Phase - I (Rail Component)

- Addition of 93 track Kms. (5th & 6th line Kurla-Thane, 3rd & 4th line Borivali-Virar)
- Induction of 101 new 9-car rakes (909 coaches)
- Resettlement & Rehabilitation of 15,857 Project affected households.
- Running of 12-car rakes on all lines (excluding Harbour Line) by extending the length of all platforms
- 1500 V DC to 25k V AC conversion on Central & Western Railway – Traction conversion work on entire Western Railway.

1.3 Mumbai Urban Transport Project - II

MUTP-II was sanctioned in Railway Budget 2008-09. The present cost of the project is ₹8,087 crore. The project is bifurcated into MUTP 2A and 2B as follows :

1.3.1 MUTP-2A – Completed : Cost ₹4,803 crore. (Loan from World Bank ₹1,727 crore).

S. No.	Name of Work	Agency of Execution	Status
1	EMU Procurement/Manufacture (ICF)	MRVC/RDSO/ICF	Completed
2	1500v DC to 25kV AC Conversion	CR, MRVC	Completed
3	EMU Maintenance Facilities & Stabling Lines	CR, WR, MRVC	Completed
4	Trespass Control measures	MRVC	Completed

1.3.2 MUTP-2B – In progress : (funded by GoM and MoR on 50:50 basis)

S. No.	Name of Work	Agency of Execution	Completion Target
1	5th & 6th line between CSTM-Kurla	CR	March, 2024
2	5th & 6th line between Thane-Diva	MRVC	January, 2022
3	Extension of Harbour Line between Andheri-Goregaon	MRVC	Completed in December, 2017
4	6th Line between BCT-Borivali	WR	March, 2023
6	Resettlement and Rehabilitation	MMRDA	Along with project

1.4 Overall Amenities at various Stations by MRVC under MUTP II works

Under various MUTP-II works, following amenities were provided in Mumbai suburban stations

New FoBs	30	New platforms	12
Booking offices	27	New home platforms	02
Elevated Decks	06	Escalators	44
Platform extensions	31	Elevators	25
New Station (Ram Mandir Rd)	01	Skywalk/Highwalk	06

1.5 MUTP 2C - Running of 12 car on Harbour line - Completed : Cost ₹714 crore.

All infrastructure works were completed in March, 2016. 13/12 car EMU rakes under the project were received by Feb., 2018. The project has led to increase in capacity by 33% on harbour line.

1.6 MUTP 3 - Sanction in Dec. 2016 – Cost of ₹10,947 crore.

S. No.	Name of the work	Cost (₹in crore.)
1	New Suburban Railway Corridor Panvel-Karjat (double line) (28 Kms)	2,782
2	New Suburban corridor link between Airoli-Kalwa (elevated)on Central Railway (4 Kms)	476
3	Quadrupling of the Virar-Dahanu Road on Western Railway (31.5 Kms)	3,578
4	Procurement of Rolling Stock (565 coaches)	3,491
5	Trespass Control on mid-section	551

1.6.1 Land Acquisition for all corridors is in progress and tenders have been awarded for a number of major works. A Loan Agreement has been signed by Govt. of India and AIIB on 24.08.2020 of ₹3,500 crore (USD 500 million) for MUTP III.

1.7 MUTP 3A approved by Union Cabinet in March 2019 at the cost of ₹33,690 crore is as under:

S. No.	MUTP 3A corridors	Route km	Completion Cost in crore	Executing Agency
1	Extension of Harbour Line between Goregaon-Borivali	7	826	WR
2	5th & 6th line between Borivali-Virar	26	2,184	MRVC
3	4th line between Kalyan-Asangaon	32	1,759	CR
4	3rd & 4th line between Kalyan-Badlapur	14	1,510	MRVC

5	Kalyan Yard - Segregation of Long distance and Suburban Traffic		866	CR
6	a) CBTC on CSMT-Panvel on Harbour Line	49	1,391	MRVC
	b) CBTC on CSMT-Kalyan on Central Railway	53	2,166	MRVC
	c) CBTC on CCG-VR on Western Railway	60	2,371	MRVC
7	Station Improvement		947	MRVC
8	Procurement of Rolling Stock – 191/12 car AC EMU rakes		15,802	MRVC/ICF/ MCF
9	Maintenance facilities for Rolling Stock		2,353	MRVC
10	Stabling Lines		557	CR & WR
11	Augmentation of Power Supply Arrangement		708	CR & WR
12	Technical Assistance		250	MRVC

Preliminary works are in progress.

1.8 Construction of FoBs on Central and Western Railway

Railway Board has entrusted MRVC with the work of execution of 13 FoBs on Central Railway and 16 on Western Railway Suburban Section in November, 2017. Out of these, 8 FoBs are completed on CR and 13 FoBs completed on WR.

Braithwaite & Co. Limited

Braithwaite & Co. Limited (BCL) is a leading Heavy Engineering Company in India under Ministry of Railways, having two manufacturing units located in West Bengal. BCL has been a dominant player in Wagon Manufacturing Industry since decades. Its major products include manufacturing of newly built wagons, repairing of wagons, structural steel work, Bridges including civil construction, manufacture and maintenance service for cranes and steel castings (Bogie, Coupler etc) and wagon sub assemblies.

In-spite of having core competency in developing and manufacturing of various types of wagon, BCL has gradually forayed into Service Sector and also entered into various other business verticals viz. Container Manufacturing, POH of Railway Workshops, Ship repairing & material handling equipments for Shipyard, renovation and rebuilding of Rail and Foot Over bridge (ROB / FOB). The Company is accredited with ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and EN ISO 3834-2:2005 and EN 15085-2 : 2007.

Highlights of its performance in the year 2020-21, vis-à-vis the year 2019-20 are tabulated below:

Particulars	2019-20	2020-21
Revenue from Operations	579.17	609.60
Profit (PBT)	23.97	31.60
Net Worth	83.45	108.17

Major Achievements during 2020-21, as regards the performance of BCL:

- Achieved highest ever Sales, PBT & Net worth, in spite of all the adversities during 2020-21 with the onset of the still raging Covid-19 pandemic.
- BCL added 5 new sites and achieved highest ever repair wagon execution of 10,150 nos.
- Brickwork Ratings upgraded the ratings for BCL from BBB to BBB+ with a stable outlook which is the highest ever credit rating achieved.
- After development of Meter Gauge Bogie prototype and its approval, BCL successfully completed the Export order of 368 Bogies to Myanmar Railways.

Pamban Vertiacal Lift Bridge an Engineering Marvel through an Iconic Bridge

Self – Sufficiency

Stores imported by IR constitute 0.90% of the total stores purchased. The cost of stores imported in the last three years are as under:

(₹ in crore)

Item	2018-19	2019-20	2020-21
Diesel loco parts and fittings	426.93	225.18	**71.93**
Electric loco parts and fittings	180.47	207.61	**147.10**
Carriage, Wagon and EMU parts and fittings	286.05	141.81	**190.93**
Electrical stores	2.31	25.45	**0.47**
Engineering stores	17.72	54.40	**0.48**
Ball and Roller Bearings	0.24	0.37	**-**
General stores covering acids, chemicals, drugs, etc.	30.71	41.41	**30.12**
Other items including metal ferrous, complete units of rolling stock i.e. bogies, wheel -sets, couplers, etc.	111.45	93.90	**11.70**
Grand Total	1,055.88	790.13	**452.73**

Strategy for Self-Sufficiency:

Steps have been taken by Indian Railways in developing indigenous sources in the country for the items presently being imported. Simultaneously, adequate capacity has been developed for manufacturing a range of components in workshops owned by IR as well as in public/private sector units with indigenous designs and competency.

The import content of raw material/components, in terms of percentage of total production cost (excluding Performa charges) for different types of rolling stock manufactured in Indian Railway Production Units for the year 2020-21 is furnished below:

	LOCOMOTIVES/COACHES	2019-20	2020-21
BLW	WAP-7	1.08	**1.08**
	WAG-9H	-	**1.63**
	WDG-3A	9.12	**4.5**
	WDS-6	4.5	**4.5**
	WDP-4D	9.36	**-**

	WAG-9	1.63	-
	Sri Lanka Loco	0.74	-
RCF	LGS	1.41	**0.87**
	LSLRD(LC)	1.33	**0.82**
	EOG/LHB/FAC	1.14	**0.72**
	SCZAC/EOG/LHB	1.18	**0.74**
	VPHX	1.91	**1.17**
	LWSCZ	1.43	**0.92**
	LWSCN	1.46	**0.91**
	LFCWAC	1.13	**0.72**
	ACCB/EOG/LHB	1.13	**0.72**
	WLRRM/EOG/LHB	0.86	**0.51**
	ACCW/EOG/LHB	1.09	**0.69**
	RA AC	1.45	-
	EOG/LHB/ACCN (HUMSAFAR)	1.01	-
	LGS (ANTYODYA)	1.44	-
	DD UDAY	0.81	-
	LACCNX	1.11	**0.70**
	3PH MEMU TC	-	**1.11**
	LWSCN (COIL SPRING)	-	**0.89**
	LWACCN (GARIB RATH)	-	**0.71**
	LWLRRM (LOW NOISE)	-	**0.71**
CLW	WAG-9	2.84	**1.20**
	WAP-7	2.37	**1.34**
	WAP-5	8.25	**3.20**
MCF	LWFAC	2.27	**1.78**
	LWLRRM	0.46	**0.01**
	TRAIN 18 DTC	0.52	-
	TRAIN 18 MC	0.25	-
	TRAIN 18 MC EC	0.54	-
	TRAIN 18 TC	0.53	-
	TRAIN 18 NDT	0.54	-
	TRAIN 18 NDTC EC	0.53	-

Locomotives:

Locomotives are manufactured by Chittaranjan Locomotive Works (CLW), Chittaranjan, Banaras Locomotive Works (BLW), Varanasi and Diesel Loco Modernisation Works (DMW), Patiala. During 2020-21, CLW manufactured 390 state-of-the-art HHP BG electric locomotives. BLW

manufactured 285 BG locomotives including 10 Diesel Locomotives for NRC/Export. DMW manufactures 56 nos. HHP BG Electric locomotives.

DMW, Patiala also manufactures 77 nos. DETC Tower cars along with diesel loco spares parts for Zonal Railways.

Passenger Service Vehicles:

During 2020-21, Integral Coach Factory (ICF), Chennai manufactured 1,954 coaches, 272 three phase MEMUs, 36 EMUs, 24 high speed Self Propelled Accident Relief Trains (SPART), 32 coaches for Kolkata Metro, 1,466 LHB coaches, 34 nos. (DETC) /inspection cars and 77 coaches for Sri Lankan Railways. Rail Coach Factory (RCF), Kapurthala manufactured 1,500 coaches (1497 LHB coaches, 03 MEMU coaches). Modern Coach Factory (MCF), Raebareli manufactured 1,360 LHB coaches.

Wheels and Axles:

RWF, Bangalore manufactured 1,23,678 wheel, 71,065 (units) axles and 50,605 wheel-sets and Rail Wheel Plant (RWP), Bela manufactured 23,250 wheels during 2020-21.

Wagons:

Indian Railways' bulk requirement of wagons is met by wagon manufacturing units in private sectors as well as PSUs/Workshops under the administrative control of Ministry of Railways.

During the year 2020-21, 12,521 wagons were inducted in Indian Railway System. Out of these, 1,316 wagons (including 160 BLC wagons) were manufactured by Railway Workshops and the remaining 11,205 wagons (including 418 BLC wagons) were manufactured by wagon industry.

Signalling:

Railway signalling installations use a number of specialized equipment for smooth & safe running of trains. With upgradation in technology and shift towards electrical/electronic system of signalling, the demand for these equipments has gone up. To attain self-sufficiency in meeting this increased demand, IR's Signal Workshops at Podanur on Southern Railway, Mettuguda on South Central Railway, Gorakhpur on North Eastern Railway, Howrah on Eastern Railway, Byculla on Central Railway, Sabarmati on Western Railway, Ajmer on North Western Railway, Kharagpur on South Eastern Railway and Ghaziabad on Northern Railway have been manufacturing items like Electric Point Machines, Token less Block Instrument, Double Line Block Instruments, Axle Counters, various types of Relays, etc. The out-turn achieved by these S&T workshops during last three years are as under:

Year wise Out-Turn of Signal and Telecommunication Workshop:-

Year	Out Turn in Lakhs
2018-19	29,669.70
2019-20	32,385.90
2020-21	**25,041.89**

Traction Motor Shops:

IR has in-house facility for rewinding, repairing and re-shafting of traction motors of conventional electric locomotives and EMU/MEMU at its workshops at Nasik Road, Kanpur, Tatanagar and Kancharapara. Work of rewinding, repairing and re-shafting of traction motors of 'state-of-the-art' three phase electric locomotives is being carried out in Traction Motor Shop, Nasik Road.

The quantum of important jobs carried out by these shops is as under:

Item	No. of jobs under taken	
	2019-20	**2020-21**
Rewinding		
TAO 659 TM armature	118	***88**
HS15250A TM armature	622	**520**
EMU TM armature	619	**491**
3-Phase TM stator	76	**90**
3-Phase TM rotor	301	**300**
Re-shafting		
TAO 659/HS15250A TM armature	429	**675**
3-Phase TM rotor repairs	194	**141**
EMU TM armature	126	**223**

*Due to reduction in arisings.

Materials Management

Materials Management Department deals with planning, organising, communicating, directing and controlling of all the activities concerned with the flow of materials into an organization and its further movement to various users. Indian Railways is one of the largest organizations in the country dealing with public procurement.

Expenditure on Purchases

Expenditure by Indian Railways on procurement of goods to meet the requirements of operation, maintenance and production of assets (excluding track related items and goods supplied as part of works) during 2020-21 was ₹50,092.45 crore.

A broad classification of procurement of such goods is given below:-

		(₹ in crore)
	2019-20	**2020-21**
Stores for operation, repairs and maintenance	18,497.38	**11,542.48**
Stores for construction	2,210.58	**2,374.81**
Fuel	14,049.91	**7,284.86**
Stores for manufacture of Rolling Stock and purchase of Complete units	29,085.71	**28,890.30**
Total	63,843.58	**50,092.45**

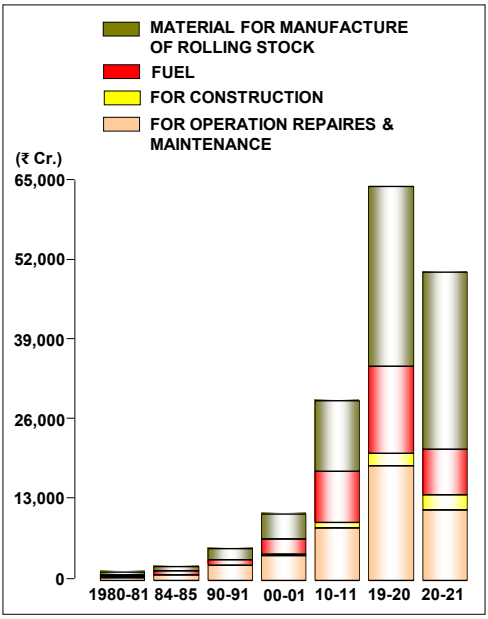
Procurement of Iron and Steel Material

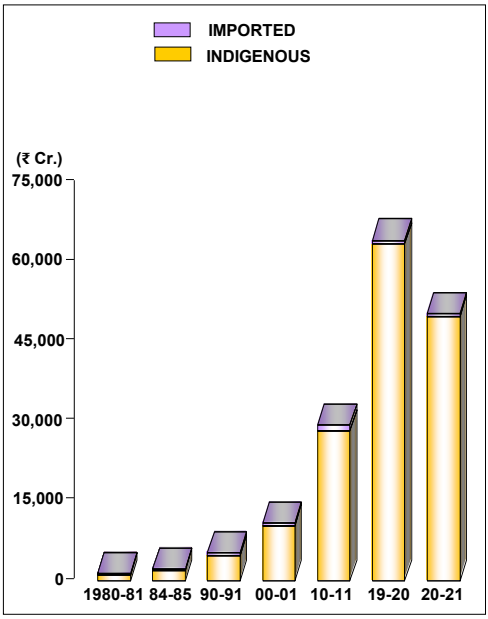
Warehouse management is an important aspect of materials management. Indian Railways has extensive warehouse network dedicated to provide the required material as close to the point of consumption as efficiently possible. To meet this requirement Zonal Railways and Production Units have 306 stocking depots spread all over the Railway Network. These depots stock over 2.42 lakh items consisting of raw materials, components, spares, consumables etc.

Disposal of Unserviceable Items

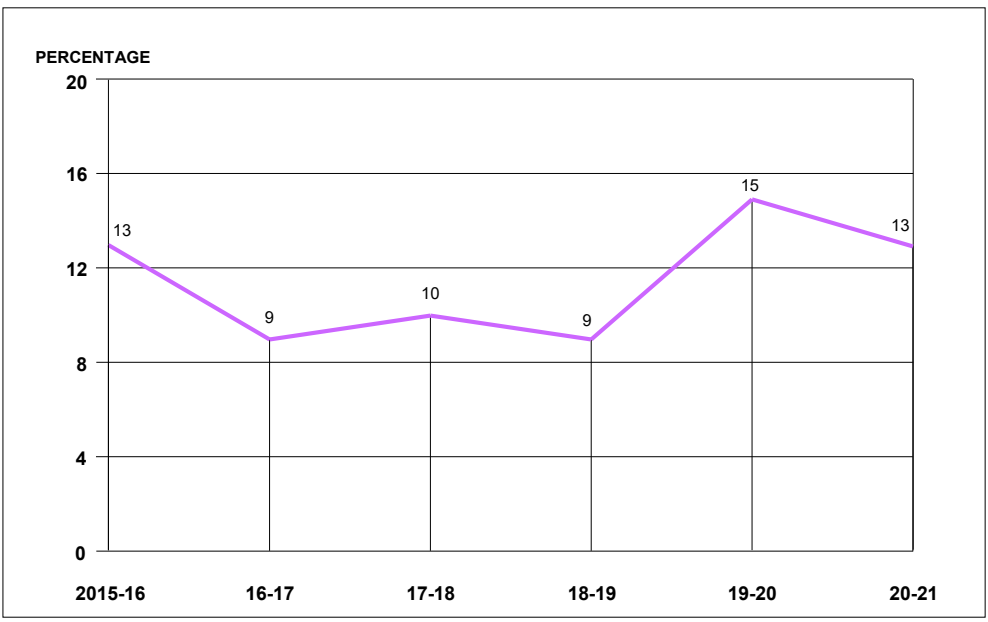
Efficient Materials Management also involves timely and efficient disposal of scarp generated during maintenance and production activities. Safe disposal of industrial waste and hazardous scrap is a legal obligation which is meticulously ensured by Indian Railways. Disposal of obsolete items is essential to free the locked up capital in such assets. Disposal of scrap

VALUE OF STORES PURCHASED





INVENTORY TURNOVER RATIO (EXCLUDING FUEL)



is an important source of revenue for Railways. Total revenue generated through disposal of scrap, during 2020-21 was ₹4,575.29 crore, as against ₹4,332.69 crore during 2019-20.

Digitisation

Indian Railway has accorded great importance to transparency and efficiency in its working and enhancing ease of doing business which is directly in line with 'Digital India' initiative of Government of India. Digital journey of Materials Management on Indian Railways that started with roll out of e-procurement system in the year 2011-12 with limited scope of e-tendering has now extended to encompass the complete Materials.

Management cycle which includes demand generation, tendering, purchase decision, contracting, inspection, materials receipt and payment. All types of tenders for Goods, Services, Works, Earning/Leasing and sale of scrap are issued on a single web-portal i.e. www.ireps.gov.in.

User Depot Module (UDM) of IMMS has been launched by Indian Railways in November' 2020. With the implementation of UDM, IR envisages to achieve digitization of entire supply chain up to last mile i.e. at material user end by computerizing the various material management activities at their end. This will further improve operational efficiency with better availability of materials and reduced inventory cost resulting into savings.

Agency of Procurement

Zonal Railways and Production Units mostly procure the materials required by them in a decentralised system, but for purchase of a few items which are centralised for procurement at Railway Board's level. Common use Goods and Services available on GeM are reserved for procurement through GeM portal. Out of ₹50,092.45 crore worth of stores procured in 2020-21, 73% was done by Zonal Railways and Production Units, 27% by Railway Board .

Stores worth ₹4,421.75 crore were bought from Small Scale Sector and Khadi and Village Industries in 2020-21.

Public Sector Undertakings contributed 17% and other industries contributed 83% towards supplies.

Indigenous Vendor Development

Indian Railways has fully implemented Public Procurement (Preference to Make in India) Order. The value of Indigenous stores at ₹49,639.26 crore during 2020-21 constituted almost 99% of the total purchases by Indian Railways. Indian Railway has to depend on imports for high technology components for its locomotives, coaches, signal & telecom equipments etc. which are not available in adequate quantity with required quality within

the country.

Inventories

Maintaining inventories at an optimum level is the key to successful materials management. Turn Over Ratio for the year 2020-21 was 13% (without fuel) and 12% (with fuel), as against 15% (without fuel) and 10% (with fuel) during 2019-20.

Wagons and Steel Procurement

During the year 2020-21, 12,521 wagons were inducted in Indian Railway System, out of these, 1316 wagons (including 160 BLC wagons) were manufactured by Railway Workshops. Procurement of iron and steel, during 2020-21, was 64,700 MT (₹340 crore) as against 55,842 MT (₹312 crore) during 2019-20.

Printing and Stationery:

Five General Printing Presses and attached 'Book and Forms Depots' on Indian Railways, meet the entire requirements of money value items, PRS, UTS Ticket Rolls for Passenger train including Shatabdi and Rajdhani trains.

Five General Printing Presses produced an out-turn of 8.0 crore A-2 standard size impressions in 2020-21. The availability of vital money value items like Parcel Way Bill, Railway Receipt, Excess Fare Tickets, Luggage Tickets etc. has been ensured throughout the year across all Zonal Railways.

The Book and Forms Depots stocked 1889 different items. Transactions of receipts and issues at these depots were worth of ₹26.48 and ₹25.07 crore respectively in 2020-21.

Security

The Railway Protection Force (RPF) has been constituted under the RPF Act, 1957 (as amended in the year 1985 and 2003) for better protection and security of railway property, passenger area, passengers and matters connected therewith. RPF is headed by an officer of the rank of Director General, who functions under the Ministry of Railways.

RPF is empowered under the 'Railway Property (Unlawful Possession) Act, 1966' to deal with cases of theft, dishonest misappropriation and unlawful possession of railway property. RPF is also empowered under the Railways Act, 1989 to deal with offences related to roof traveling, touting, unauthorized entry into coaches earmarked for ladies, unauthorized vending, trespassing, etc. Further ambit of powers of RPF has been enhanced by the Central Government to exercise the powers and perform the specified duties under sections 42 and 67 of "The Narcotic Drugs and Psychotropic Substances Act, 1985" and under section 25 of "The Cigarettes and other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003" within the areas of their respective jurisdiction respectively.

The administrative set-up of the Railway Protection Force is in sync with the administrative set-up of the Indian Railways. In addition, a special formation called Railway Protection Special Force (RPSF), which is organized on Battalion pattern, provides specialized service to assist the RPF in zonal railways. At present, there are 15 battalions of RPSF located in various parts of the country, including one Mahila Battalion and one Commando battalion (CORAS).

Separate specialized intelligence units, viz. Special Intelligence Branch (SIB) and Crime Intelligence Branch (CIB) also function at Divisional as well as Zonal Railways for collection of special and criminal intelligence respectively. Besides above, Stores, Dog Squad and Band are other specialized units of the Force and located at Divisional, Battalion and Zonal levels, as per requirements of the Force.

On 14.08.2019, Hon'ble Minister of Railways inducted the first Commando force for railways: CORAS (Commandos for Railway Security). Comprising RPF and RPSF personnel, the CORAS is armed with special uniforms with bullet-proof jackets, helmets and sophisticated weapons.

CORAS commandos have undergone training programmes, including basic and advanced commando courses with specialization in handling landmines and improvised explosive devices, hostage rescue, sniping and breaching. The unit is being envisaged as a responder for any situation pertaining to damage, disturbance, disruption of train operations, attack/ hostage/hijack, and disaster situations in railway areas 'Police' and 'Police Order' are State subjects under the Seventh Schedule to the Constitution of India and, as such, State Government are responsible for prevention, detection, registration and investigation of crime and maintaining law and order etc. on Railways through their law enforcement agencies viz. Government Railway Police (GRP)/District Police. However, Railway Protection Force (RPF) supplements the efforts of GRP/District Police to provide better protection and security of passenger area and passengers and for matter connected therewith.

However, the administrative expenses incurred on GRP are shared by Central Government and State Government.

Round the clock security related assistance to passengers by RPF

- **Railway Help Line-** Railway helpline is functional (24x7) to provide security related assistance to passengers. From 01.04.2021, Security Helpline No.182 has been merged with centralized RailMadad/ Railway Helpline No.139 for providing security related assistance to passengers.
- **Twitter-** Complaints/suggestions, relating to Security, received through MR Twitter handle @RailMinIndia and @RailwaySeva, are swiftly attended and necessary follow-up action is initiated.

Details of complaints attended over Twitter and Helpline No. :

Year	No. of complaints attended on Twitter	No. of complaints attended on Help Line No.
2019	35,092	73,795
2020	6,293	1,15,531
2021 (Upto Oct.)	**8,781**	**48,639**

- **Rescue of children:** A Standard Operating Procedure (SOP), on care and protection of children on railways has been jointly prepared by the Ministry of Railways in collaboration with the Ministry of Women and Child Development (MoWCD). In this regard, Child Help Desk (CHDs)/ Kiosks have been set up at 132 important railway stations. Child Help Groups (CHGs) have been constituted at these stations which comprise of Station Superintendent/Station Master, Inspector/RPF, SHO/GRP

and Sr. Section Engineer. Ministry of Women and Child Development has nominated NGOs at these stations.

Details of children rescued by RPF in the year 2019, 2020 & 2021 (upto Oct.):

Year	No. of children rescued by RPF
2019	16,294
2020	5,193
2021 (Upto Oct.)	**10,332**

- **Surveillance through CCTV Cameras:** Indian Railways have decided to provide CCTV cameras at all stations (excluding halt stations) as well as in trains to enhance the safety of passengers. So far, CCTV cameras have been provided at 838 railway stations and in 4,934 coaches. As a pilot project "Face Recognition System" has been provided at Bengaluru Railway station.

Measures initiated by RPF for security of passengers and passenger area

- Escorting of trains on vulnerable and identified routes/sections by RPF/ GRP of different States daily.
- Integrated Security System (ISS) provided to improve surveillance mechanism over 189 railway stations.
- Provision of CCTV cameras in 4,934 coaches and at 838 railway stations for enhancing security of passengers.
- Implementation of Station Security Plan over identified railway stations.
- Railway Helpline No.139 operational (24x7) over Indian Railways for security related assistance to passengers.
- Prosecution of offenders for unauthorized vending/hawking, entry into ladies and reserved compartments, touting of tickets, trespassing, roof travelling, alarm chain pulling, etc. under relevant provisions of the Railways Act.
- Detection of passenger related crime, arrest of criminals and handing over to GRP for further legal action.
- RPF/RPSF personnel have been deployed in vulnerable sections, naxal affected areas and northeast region to ensure smooth transportation of goods & passengers and to secure Railways during bandh, dharna, agitation etc.
- State Level Security Committee of Railways (SLSCRs) have been

constituted for all States/Union Territories under the Chairmanship of respective Director General of Police/Commissioner of States/ Union Territories for regular monitoring and review of security arrangements of the Railways.

Women Security

The following operational measures are being taken for ensuring women security over railway system:

i) RPF has launched Pan India initiative "Meri Saheli" on 17.10.2020 with objective to provide enhance safety and security to lady passengers travelling by trains for their entire journey, i.e. from the originating station to destination station.

ii) Ladies Special trains running in Metropolitan cities are being escorted by lady RPF personnel.

iii) The Ladies' compartments in local trains are being escorted by RPF and GRP during peak/non-peak hours. Staff deployment is done during late night and early morning local trains to ensure proper security to lady passengers.

iv) Action is taken against offenders travelling in ladies' coaches by conducting intensive drives under section 162 of the Railways Act.

v) Seminars on gender sensitization/public awareness programmes are being organized with the assistance of NGOs for sensitization of RPF personnel, Railway staff and passengers.

vi) Mixed train escort parties (comprising of male and female staff/officers) are being put in place in a phased manner on vulnerable routes.

Protection and security of railway property

Since the year 1966, RPF is prosecuting offenders under relevant provisions of the 'Railway Property (Unlawful Possession) Act, 1966' for unlawful possession of the railway property. This Act was amended in the year 2012, with widening of the ambit of penal sections. Performance of the RPF under the RP (UP) Act 1966 for the years 2019, 2020 & 2021 (upto Oct.) is as under:

Year	No. cases detected under the RP(UP) Act	Value of property recovered (₹in crore)	No. of persons arrested
2019	3,501	3.86	6,782
2020	2,533	8.75	5,875
2021 (upto Oct.)	**3,435**	**5.23**	**7,412**

Action against touts

The online booking of railway tickets in present form through IRCTC website started in 2005. Over the years, the online booking became popular and today, out of approx 16 lakhs reserved berths/seats made available by IR daily, about 72% or 11,70,000 reserved berths/seats are booked online. Out of these reserved berths, very few of them are available under Tatkal Quota. Therefore, the demand of seats/berths in Tatkal Quota remains very high.

In course of intensive drives launched by RPF in the past, it was revealed that confirmed berths under Tatkal Quota as well as General Quota gets sold out within few seconds after opening. It was suspected that some unscrupulous elements use illegal softwares to jump the online queue and corner confirmed tickets in bulk. It was decided to extend query based access of PRS data to RPF to tackle this menace. RPF started using technological surveillance based on this access to PRS data called PRABAL to identify suspects since November, 2019.

The first success came on 02.12.2019 when RPF arrested developers of two illegal softwares "i-BALL" & "RED BULL" from UP thereby causing these softwares to crash. On the basis of information obtained from Field units collated with analysis of digital data, nationwide action was started. Due to effective action by RPF, several illegal softwares like ANMS, MAC, N-GET, Cycle, Star V2, Jaguar etc. stopped functioning and developers of such softwares have also been arrested and legal action taken against them.

Vigilance

Vigilance Organisation plays a very important role in the administration of the Railways. It investigates complaints, conducts sample checks in respect of managerial decisions, with a view to determine their conformity to objectivity, transparency and concordance with extant rules and procedures.

Vigilance working has four facets: (i) Preventive Vigilance (ii) Participative Vigilance (iii) Punitive Vigilance and (iv) Pro-active Vigilance.

Preventive Vigilance:

The aim here is to disseminate knowledge across a wide cross section of Railway officials, suggest system rationalization measures for imparting greater transparency and predictability catalyze use of technology in decision making and create greater awareness amongst the public on issues relating to corruption mitigation.

Some of the steps taken in this direction during the year 2020-21 were:

- A total of 9,990 preventive checks were conducted throughout the Railways.
- All major Railway Units released E-magazines/Bulletins for circulation. These bulletins contain case studies, dos & don't etc. related to various departments.
- Electronic media was extensively utilized by all Zonal Railways, Production Units and Public Sector for conducting extensive public campaigns during Vigilance Awareness Week, 2020.

Participative Vigilance:

- **24 Hours Vigilance Helpline:** 24 hour vigilance helpline (Helpline No.139) of the Railways. In addition to this, the email addresses of vigilance officers are posted on the website.
- **Vigilance Awareness Week:** is celebrated every year during the last week of October or first week of November to educate the general public regarding the facilities available in the department and also ways and means to lodge complaints. The same was observed between 27th October and 02nd November in the year 2020.

- **Counselling:** As many as 248 Workshops/Webinars/ Interactive sessions were conducted on topical issues by Vigilance in 2020-21 in which Officers, senior supervisors and other railway personnel representing various levels and disciplines participated; the primary focus was to inculcate greater awareness of rules, procedures and most importantly, the pitfalls that need to be steered clear of.

Training sessions of three days was conducted for IOs and POs through video conferencing from 19th to 21st January 2021 by Railway Board Vigilance. Further 09 sessions each consisting of 40 to 50 trainees of different disciplines were conducted on Advance Management Programme(AMP), Management Development Programme (MDP) by NAIR, Vadodara. Two special sessions on Preventive Vigilance in coordination with CBI one consisting of 70 officers and other consisting of more than 200 officials (dated 16th -18th Dec, 2020) of IRs were organized.

Punitive Vigilance:

A statement showing number of officials against whom disciplinary action in vigilance-investigated cases was initiated/finalized during April 2020 to March 2021 is given below:

Vigilance investigated cases	2020-21
Number of officials against whom disciplinary proceedings were initiated	**2,829**
Number of officials against whom disciplinary proceedings resulted in imposition of major penalty	**834**
Number of officials against whom disciplinary proceedings resulted in imposition of minor penalty	**2,479**

Proactive Vigilance:

- Conducting surprise checks in areas of mass contact (like reservation offices, ticket booking counters, luggage/parcel and goods booking offices, on-board passenger-carrying trains etc.) in the accountal/ disposal of scrap, loading of freight wagons and parcel vans (primarily with a view to detect/control incidences of overloading) etc. During the calendar year 2020, these measures resulted in realization of revenues to the tune of ₹89.57 crore.
- Scrutinizing of more than 539 Annual Property Returns filed by Officers during 2020.

Preserving Indian Railways Heritage

The Heritage Directorate in the Railway Board has the onus of framing policy related to the UNESCO World Heritage Sites of the Mountain Railways in Darjeeling, Shimla and the Nilgiris and other built heritage sites. The focus of heritage preservation has been balancing tourism with heritage and sustainable development. Efforts are centred around connecting railway staff & local communities nearby these linear routes, and ensuring their role as stakeholders in conservation. Heritage rolling stock assets, skills & their transmission are incorporated in an interconnected and dynamic continuity of heritage railways, over more than 150 years' of operation. Truly a blend of Heritage & Modernity.

The proliferation of online 'virtual museum' visits and initiatives on social media such as virtual tours, online quiz and events have kept railway heritage museums connected to the fan following in India & abroad even through pandemic lockdowns & closures. As museums and cultural centres slowly reopen for the public, renewed engagement brings life and vigour to rail museums and heritage sites.

The chronicled narrative of the industrial heritage of a nation is a historical record of its technological move to modernity. The 'intangible' heritage of the Indian Railways showcased in the National Rail Museum in Chanakyapuri, New Delhi is a constant source of delight to railway enthusiasts. The Regional Rail Museums in four major cities of Howrah, Chennai, Mysore & Nagpur are equally popular with visitors. Several prestigious and well-acclaimed Railway Heritage galleries across the national railway network stand testimony to the value attached to over 167 years of railway heritage.

Indian Railways' mesmerizing journeys are being retold through the "Google Arts & Culture" platform since 2019. Additions to the platform with Sportspersons of Indian Railways, World Engineering Day special exhibits, Railway Bridges in Panoramic views, all extend the link of railway transportation to the retelling of touching, human stories through the massive reach of this online platform. Rail Drishti Portal, other railway websites also showcase heritage content.

Indian Railways have inventoried heritage rolling stock assets and also preserved about 242 Steam Locomotives/engines, 224 vintage

coaches and wagons and 126 Diesel and Electric vintage locomotives at prominent places including museums, heritage park etc., for public display. Many of these rolling stocks are more than 100 years old and include 39 Steam locomotives as working heritage. The Rewari Heritage Steam Centre maintains six Broad Gauge and four Meter Gauge working steam locomotives, including the iconic "Fairy Queen" (1855), placed in the Guinness Book of Records as being the oldest working locomotive in the World. Another proud possession is "Akbar" that featured in memorable Bollywood movies like Sultan & Gadar etc. A recent acquisition at Rewari Steam Shed is the MG Steam Locomotive EIR-1644 used in Riga Sugar Company at Sitamarhi, Bihar.

The Darjeeling Himalayan Railway (DHR), Kalka Shimla Railway(KSR) and Nilgiri Mountain Railway (NMR), all UNESCO certified World Heritage Sites, have been studied by high level consultants for asset monetization to improve their revenues & tourist potential. With working steam locomotives that attract steam lovers from India and abroad, the sight and sound of these Locomotives recreate the romance of a bygone era. Asset Monetization will help in creating world class tourism destinations on the pattern of international heritage railway. UNESCO has released a stamp in the series of "World Heritage 2022" featuring the Darjeeling Himalayan Railway (DHR) in its offices in New York, Geneva and Vienna.

Indian Railways maintain a large repository of built heritage like buildings, bridges, via ducts etc. As of now, besides all bridges and tunnels on Kalka Shimla and Kangar Valley Section, about 45 bridges and tunnels, and 132 buildings and stations are designated as Heritage Assets by Indian Railways. Notable among them are Jubilee Bridge near Kolkata, Yamuna Bridge near Naini, Sonenagar Bridge, Pamban via duct, Bandra suburban station, Pratap Vilas Palace, Vadodara, Glenogle Bungalow, Mumbai, South Eastern Railway (erstwhile Bengal Nagpur Railway) Headquarter, Kolkata etc. The new "Chenab Bridge" is the latest in the series of iconic bridges, a part of the New Heritage connecting Jammu & Kashmir by rail. Indian Railways have been making special efforts to conserve these built heritages with inventories, documentation & policy initiatives. Association with Indian National Trust for Art & Cultural Heritage (INTACH), International Council on Momuments & Sites (ICOMOS), The International Committee for the Conservation of the Industrial Heritage (TICCIH) and International Centre for the Study of the Preservation & Restoration of Cultural Property (ICCROM) assist our endeavours. Training and capacity building in industrial heritage conservation is regularly arranged.

Preservation of Railway Heritage and unlocking its potential for

significant and meaningful contributions to India's knowledge society shall remain one of the prime social responsibilities of Indian Railways and its associated Public Sector Undertakings.

A slew of measures to institutionalize rail heritage preservation include compilation and digitization of heritage inventory, collaboration with institutions and stakeholders, capacity building of railway officers and introducing modules for training courses. An academic framework for Railway Industrial Heritage study & research is implemented with help from National Academy of Indian Railways (NAIR), Vadodara, Indian Railway Institute of Civil Engineering (IRICEN), Pune and National Rail and Transportation University (NRTU).

Nilgiri Mountain Rail, passing through forest

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