GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

LOK SABHA
UNSTARRED QUESTION NO. 5425
TO BE ANSWERED ON 25.03.2026

HYDROGEN-POWERED TRAIN

5425. SHRI JAI PRAKASH:
SHRI DHARAMBIR SINGH:

Will the Minister of RAILWAYS be pleased to state:

(a) whether the Government has assessed the ongoing trials of Country's first indigenously designed and manufactured "Hydrogen-powered train", a key initiative under the "Hydrogen for Heritage" project in order to meet net-zero carbon emission targets by the year 2030 and if so, the details thereof;

(b) the timeline by when the Hydrogen-powered train is likely to be started;

(c) the progress made on introduction of Vande Bharat Sleeper trains;

(d) the details of the steps taken to improve passenger amenities and reduce travel time on major corridors;

(e) the details of the number of new railway lines and doubling projects sanctioned during the last three years; and

(f) whether the Government proposes to strengthen railway connectivity or introduce new railway projects benefiting Bhiwani–Mahendergarh region of Haryana and if so, the details thereof?

ANSWER

MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND ELECTRONICS & INFORMATION TECHNOLOGY

(SHRI ASHWINI VAISHNAW)

(a) & (b) Indian Railways (IR) has taken up a state-of-the-art project for running of its first hydrogen train, on pilot basis, as per specifications framed by the Research, Design & Standards Organization (RDSO) to demonstrate the use of hydrogen powered train technology in Railways. The project establishes the commitment of IR towards advancements in

alternative energy-powered train travel thereby ensuring a cleaner and greener future for the country's transportation sector in order to meet net-zero carbon emission targets of IR.

This project involved designing from first stages, prototype manufacturing and first-time development of hydrogen traction technology in Indian Railways. Manufacturing of Hydrogen Train-set has been completed. Prominent features of Hydrogen Train-set are as below:

- **Designed and Developed in India demonstrating IR's commitment to Atmanirbhar Bharat.**
- **Presently, it is the world's longest (10 coaches) and most powerful (2400 kW) Hydrogen Train-set on Broad Gauge platform.**
- **The train-set comprises of two Driving Power Cars (DPCs) of 1200 kW each, totalling 2400 kW along with eight passenger cars.**
- **Zero CO_2 emissions; only emission is water vapour.**
- **Major step in development of next generation fuel technology in Railways.**

(c) IR is focussed on providing affordable and good quality services to all sections of society. With a view to improve travel experience of the passengers, IR have introduced indigenously designed and manufactured Vande Bharat Sleeper train services with modern coaches, advanced safety features and passenger amenities. Presently, 02 Vande Bharat Sleeper services are in operation on the Indian Railway network.

Broad technological advancements and Safety features, provided in Vande Bharat Sleeper Trains are as below:

1. **Jerk Free Semi permanent couplers and Anti Climbers.**
2. **Fitted with KAVACH.**
3. **Higher acceleration with design/operating speed of 180/160 KMPH.**
4. **Crashworthy Design of Car body complying with EN standards.**

5. Fire barrier doors at the end of each coach for compliance of fire safety standards.

6. Aerosol based fire detection and suppression system in electrical cabinets and lavatories.

7. Regenerative braking system for energy efficiency.

8. Air conditioning units provided with indigenously developed UV-C lamp-based disinfection system for deactivating 99% harmful bacteria from conditioned air to improve the hygiene standards inside the passenger area.

9. Centrally controlled Automatic Plug Doors and Fully sealed wider gangways.

10. CCTVs in all coaches.

11. Emergency talk-back unit for communication between Passenger and Train Manager/Loco Pilot in case of emergency.

12. For Divyangjan passengers, special lavatory in the driving coaches on each end

13. Centralized Coach Monitoring System for better condition monitoring of passenger amenities such as Air conditioning, Saloon Lighting etc.

14. Ergonomically designed ladder for ease of climbing on to upper berths.

(d) Upgradation of passenger amenities is a continuous process depending upon need, volume of the passenger traffic and inter-se priority of work, subject to availability of funds. IR has taken several measures for enhanced passenger amenities like modernization of stations under 'Amrit Bharat Station' scheme and upgradation of coaches with modern passenger facilities, deployment of digital platforms for grievance redressal/ monitoring, improvement in onboard services, infrastructure augmentation, advanced signalling systems and rationalisation of timetables.

(e) & (f) Capacity enhancement of railway network has been taken up by Indian Railways in a big way during last 11 years. The details of commissioning/laying of new track across Indian Railways is given below:-

Period	New track Commissioned	Average commissioning of new tracks
2009-14	7,599 Km	4.2 Km/day
2014-25	34,428 Km	8.6 Km/day (more than 2 times)

As on 01.04.2025, across Indian Railways, 431 Railway infrastructure projects including port-connectivity (154 New Line, 33 Gauge Conversion and 244 Doubling) of total length 35,966 Km, costing approx. Rs. 6.75 lakh crore are sanctioned. The summary is as under:-

Category	No of Projects	Total Length NL/GC/DL (km)	Length Commissioned till Mar'25 (Km)	Total Expupto Mar'25 (Rs. in Cr)
New Lines	154	16,142	3,036	1,45,318
Gauge Conversion	33	4,180	2,997	22,753
Doubling / Multitracking	244	15,644	6,736	1,22,858
Total	431	35,966	12,769	2,90,929

Zone-wise/year-wise details of all Railway projects are made available in public domain on Indian Railway's website.

During last 3 years (2022-23, 2023-24, 2024-25) and current Financial Year 2025-26, 300 projects (51 New Line, 17 Gauge Conversion and 232

Doubling) of a total length of 13,808 km have been sanctioned across Indian Railways.

Some of the major projects sanctioned are as follows:

SN	Project Name	Cost (₹ in Crore)
1	Chopan – Chunar doubling (102 Km)	1,553
2	Guntur – Bibinagar doubling (239 Km)	3,238
3	Mudkhed – Medchal& Mahbubnagar – Dhone doubling (418 Km)	5,655
4	Samakhiali – Gandhidham Quadrupling (53 Km)	1,571
5	Merta City – Ras& Bypass at Merta Road new line (56 Km)	1,038
6	Lumding – Furkating doubling (140 Km)	2,334
7	Ajmer – Chanderiya doubling (178 Km)	1,813
8	Motumari – Vishnupuram with RoR doubling (100 Km)	1,746
9	Bikramshila – Katareah new line with new bridge on river ganga (26 Km)	2,549
10	Gunupur – Therubali new line (74 Km)	1,326
11	Malkangiri – Pandurangapuram new line (174 Km)	4,109
12	Badampahar – Kendujhargarh new line (82 Km)	2,106
13	Junagarh – Nabarangpur new line (116 Km)	3,274
14	Buramara – Chakulia new line (60 Km)	1,639

SN	Project Name	Cost (₹ in Crore)
15	Ajanta Caves Rail Connectivity (174 Km)	7,105
16	Bangriposi – Gorumahisani new line (86 Km)	2,549
17	Chandil – Anara – Damodar 3rd line (121 Km)	2,170
18	Bargarh Road – Nawapara Road new line (138 Km)	2,926
19	Sardega – Bhalumuda new double line (37 Km)	1,360
20	Varanasi – Pt. DeenDayalUpadhyayaMultitracking with rail cum road bridge on river ganga (15 Km)	2,642
21	Jalgaon – Manmad 4th line (160 Km)	2,773
22	Bhusawal – Khandwa 3rd & 4th line (131 Km)	3,514
23	Sambalpur – Jarapada 3rd & 4th line (127 Km)	3,916
24	Jharsuguda – Sason 3rd & 4th line (35 Km)	1,181
25	Gondia – Ballarshah doubling (240 Km)	4,819
26	Kharsia – Naya Raipur – Parmalkasa 5th & 6th line (278 Km)	8,741
27	Wardha – Balharshah Quadrupling (135 Km)	2,381
28	Ballari – Chikjajur doubling (185 Km)	3,342
29	Koderma – Barkakana doubling (133 Km)	3,063
30	Itarsi – Nagpur 4th line (297 Km)	5,451
31	Dangoaposi – Jaroli 3rd & 4th line (43 Km)	1,752
32	Secunderabad – Wadi 3rd & 4th line (173 Km)	5,012

SN	Project Name	Cost (₹ in Crore)
33	Furkating – New Tinsukia doubling (194 Km)	3,634
34	Bakhtiyarpur – Rajgir – Tilaiya doubling (104 Km)	2,192
35	Gondia – Dongargarh 4th line (84 Km)	2,223
36	Wardha – Bhusawal 3rd & 4th line (314 Km)	9,197
37	Hosapete – Bellary quadrupling (65 Km)	2,372
38	Kasara – Manmad 3rd & 4th line (131 Km)	10,154
39	Punarakh – Kiul 3rd & 4th line (50 Km)	2,668
40	Gamharia – Chandil 3rd & 4th line (55 Km)	1,168
41	Sainthia- Pakhur 4th Line (81 Km)	1,569
42	Santragachi- Kharagpur 4th line (111 Km)	2,905
43	Nergundi – Barang&Khurda Road – Vizianagaram 3rd line (385 Km)	5,618
44	Son Nagar – Andal Multi tracking (375 Km)	13,606
45	Gorakhpur Cantt – Valmiki Nagar doubling (96 Km)	1,270
46	Jaipur – SawaiMadhopur doubling (131 Km)	1,269
47	Luni – Samdari – Bhildi doubling (272 Km)	3,531
48	Narkatiaganj – Raxaul – Sitamarhi – Darbhanga&Sitamarhi – Muzaffarpur doubling (256 Km)	4,553
49	Prayagraj (Iradatganj) – Manikpur 3rd line (84 Km)	1,640
50	Tirupati – Pakala – Katpadi doubling (104 Km)	1,332

SN	Project Name	Cost (₹ in Crore)
51	Ratlam – Nagda 3rd and 4th line (41 Km)	1,018
52	Aluabari Road – New Jalpaiguri 3rd & 4th line (57 Km)	1,786
53	Aurangabad (ChhatrapatiSambhajinagar) – Parbhani (177 Km)	2,179
54	Bhagalpur – Dumka – Rampurhat doubling (177 Km)	3,169
55	Itarsi – Bina 4th line (237 Km)	4,329
56	Vadodara – Ratlam 3rd & 4th line (259 Km)	8,885
57	DevbhumiDwarka (Okha) – Kanalus doubling (141 Km)	1,457
58	Badlapur – Karjat 3rd and 4th line (32 Km)	1,324
59	Delhi – Ambala Cantt 3rd & 4th line (194 Km)	5,983
60	Gondia – Jabalpur doubling (231 Km)	5,236
61	Manmad – Indore new line (360 Km)	18,529
62	Errupelam – Amaravati – Nambur new line (57 Km)	2,245
63	Vadhavan Port and New Palghar station new double line (22 Km)	1,507
64	Deshalpar – Hajipir – Luna and Vayor – Lakhpat new line (145 Km)	2,526

Haryana

Railway Budget:

Budget allocation for Infrastructure projects and safety works, falling fully/partly in the State of Haryana is as under:

Period	Outlay
2009-14	₹315 crore/year
2025-26	₹ 3,416 Cr. (nearly 11 times)

Projects sanctioned:

As on 01.04.2025, 8 projects (01 New Lines and 07 Doubling), covering a total length of 491 km, costing ₹6775 crore, falling fully/partly in Haryana are sanctioned. The summary is as under:

Category	No. of projects	Total Length (in Km)	Length Commissioned (in Km)	Expenditure upto March 2025 (₹ in Cr)
New Lines	1	28	0	925
Doubling / Multitracking	7	463	0	646
Total	8	491	0	1571

Recently completed projects:

Details of some of the recently completed projects falling fully/partly in the State of Haryana are as under:

S. No.	Project	Cost (Rs. in Cr.)
1	Jind-Sonepat New Line (89 Km)	800
2	Suratpura-Hanumangarh-Sriganganagar Gauge Conversion (241 Km)	896
3	Jaipur-Ringus-Sikar-Churu& Sikar-Loharu Gauge Conversion (320 Km)	1105
4	Jakhal- Mansa Doubling (45 Km)	163
5	Khukhrana- Panipat Doubling (8 Km)	58
6	Ambala-Dhapper-chandigarh Doubling (45 Km)	339
7	Tughlakhabad-Palwal 4th line (34 Km)	366
8	Mathura – Palwal 4th Line (80 Km)	669
9	Palwal - New Prithala New Line (10 Km)	66

Ongoing projects:

Some of the projects falling fully/partly in the State of Haryana which have been taken up are as under:

SN.	Project	Cost (Rs. in Cr.)
1	Bhiwani-Dobh-Bahali Doubling (42 Km)	471
2	Rewari-Khatuwas Doubling (28 Km)	352
3	Manheru-BawaniKhera Doubling (32 Km)	413
4	Delhi-Panipat- Ambala 3rd& 4th line (194 Km)	5983

Bhiwani and Mahendragarh are existing railway stations on Indian Railway Network and connected via Rewari. To further imporve connectivity in this area, following works have been completed/ taken up :

S. No.	Project	Status
1	Rewari-Rohtak New Line (85 Km)	commissioned
2	Rohtak-Mehem-Hansi New Line (64 Km)	commissioned
3	Rewari-Manheru Doubling (69 Km)	commissioned
4	Khatuwas-Narnaul Doubling (24 km)	commissioned
5	Rewari-Khatuwas Doubling (28 km)	A. Kund-Kathuwas (5 km) commissioned. B. Rewari-Kori-Pali-Kund-Kori (23 km): The status is as under: • Land acquisition completed • Works taken up on all 2 major bridges • Works taken up on all 3 RUBs • Works completed on all 3 Station Buildings
6	Bhiwani-Dobh-Bhali doubling (42 km)	A. Dobh-Kalanur Kalan (13 km) commissioned. B. Kalanur Kalan-Bhiwani City-BhiwaniJn (29 km).The status is as under: • Land acquisition work taken up. • Work taken up on 1 Major Bridge. • Works completed on all 2 Station Buildings.

S. No.	Project	Status
7	Manheru-BhiwaniKhera Doubling (32 km)	A. Manheru-Bhiwani Jn.(14 km) commissioned. B. BhiwaniJn -BhiwaniKhera (18 km): The status is as under: • Land Acquisition work taken up. • Works taken up on all 4 RUBs • Works completed on all 03 Station Buildings.
8	Rewari - Sadulpur Doubling (141 km)	DPR prepared
9	Jhajjar-CharkhiDadri-Loharu New Line (94 km)	Survey sanctioned
10	Bhiwani-Hansi Doubling (37km)	Survey sanctioned

After preparation of Detailed Project Report (DPR), sanctioning of project requires consultation with various stake-holders including State Governments and necessary approvals viz. appraisal of NITI Aayog, Ministry of Finance etc. As sanctioning of projects is a continuous and dynamic process, exact timelines depend upon appraisals and approvals by various stakeholders.

Sanction of any railway project depends upon many parameters/factors which include the following:

- **Anticipated traffic projections and Remunerativeness of the proposed route**
- **First and last mile connectivity provided by the project**

- **Connection of missing links and providing additional route**
- **Augmentation of congested/saturated lines**
- **Demands raised by State Governments/Central Ministries/Public representatives,**
- **Railway's own operational requirements**
- **Socio-economic considerations**
- **Overall availability of funds**

Completion of Railway project/s depends on various factors which include the following:

- **Land acquisition by State Government**
- **Forest clearance**
- **Shifting of infringing utilities**
- **Statutory clearances from various authorities**
- **Geological and topographical conditions of area**
- **Law and order situation in the area of project site**
- **Number of working months in a year for particular project site etc.**

All these factors affect the completion time and cost of the project/s.

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