Indian Railways Accelerates Renewable Energy for Traction With 812 MW Solar and 93 MW Wind Commissioned; 1,600 MW Round-the-Clock Hybrid Power Also Tied Up

Indian Railways Targets Net Zero Carbon by 2030, Progressively Meeting Power Needs Through Solar, Wind and Other Renewable Sources

99.2% of Broad Gauge Network Already Electrified; Route Electrification More Than Doubles Since 2014, Rising From 21,801 km in Six Decades to 46,900 km Between 2014-25

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Indian Railways is continuously upgrading its infrastructure and rolling stock by adopting the latest technologies to enhance safety, punctuality, reliability, and passenger comfort. These upgrades reflect a focused effort to modernize the system and meet growing passenger expectations.

With the adoption of modern technology and Electrification of rail network, there has been reduction in the use of coal based engines and Diesel engines.

Electrification of railway network on Indian Railways has been taken up in mission mode. So far, about 99.2% of Broad Gauge (BG) network has been electrified. The electrification in remaining network has been taken up. Electrification carried out during 2014-25 and before 2014 is as under:

Period	Route Km
Before 2014 (about 60 years)	21,801
2014-25	46,900

Indian Railways is now manufacturing and commissioning state of the art three-phase IGBT technology based locomotives. These locomotives have regenerative features and are therefore able to regenerate part of the energy consumed during braking and therefore more energy efficient.

The coal-fired steam engines are being utilised on UNESCO accredited mountain railways, seasonal steam hauled trains and in chartered trains in association with ICRTC. Their utilisation is on railway routes having heritage values.

Indian Railways has planned to progressively meet its electric power requirement for traction purpose through renewable energy sources with combination of solar, wind and other renewable sources based on strategic power procurement planning, thereby reducing its carbon emissions.

Till November 2025, about 812 Mega Watt (MW) of solar plants and about 93 MW of wind power plants have been commissioned, which are meeting traction requirement of IR. Further, 100 MW of renewable power under Round the Clock (RTC) mode tied up from solar Energy Corporation of India (SECI) has also started flowing for traction purpose.

In addition to this, 1,500 MW renewable capacity under RTC mode has been tied up to meet traction power requirement. This is hybrid solution consisting of solar, wind and storage component.

During year 2023-24, the expenditure on traction on Indian Railways was Rs 29,614 cr which included all type traction.

Indian Railways has also 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 a commitment of Indian Railways towards advancement in alternative energy powered train travel thereby ensuring a cleaner and greener future for the country's transportation sector.

As part of its strategy to achieve the target of Net Zero Carbon Emitter by 2030, Indian Railways has planned to progressively meets its electric power requirement through renewable energy sources with combination of solar, wind and other renewable sources based on strategic power procurement planning, thereby reducing its carbon emissions.

This information was provided by the Union Minister for Railways, Information & Broadcasting and Electronics & Information Technology, Shri Ashwini Vaishnaw, in a written reply to a question in Lok Sabha.

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