

GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 1730**  
**ANSWERED ON 13.02.2026**

**MEASURES TO REDUCE ENERGY CONSUMPTION AND OPERATING COSTS IN  
RAILWAYS**

1730 DR. AJEET MADHAVRAO GOPCHADE:

Will the Minister of RAILWAYS be pleased to state:

- (a) the steps taken by Railways to minimize energy consumption with a view to reduce the cost of operations, including adoption of energy-efficient technologies;
- (b) whether any action has been taken or is under consideration to shift towards gas- fuelled or alternative fuel locomotives;
- (c) whether the Railways is monitoring energy consumption and undertaking regular overhauling and energy audits of each electric and diesel locomotive; and
- (d) the manner in which energy consumption is being minimized at railway stations, factories and maintenance depots and whether any centralized or real-time monitoring system exists for tracking energy usage at each such unit?

**ANSWER**

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

(SHRI ASHWINI VAISHNAW)

(a) to (d): Electric traction is more environment friendly and energy efficient than Diesel traction. Accordingly, Electrification of railway network on Indian Railways has been taken up in mission mode. So far, 99.4 % 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 Kilometer
Before 2014 (about 60 years)	21,801
2014-25	46,900

With electrification, there has been reduction in the consumption of diesel on Indian Railways. Indian Railways have been able to save 178 crore litre in Diesel consumption in the year 2024-25 with respect to 2016-17, which is a saving of 62%, thus reducing the import dependency of crude oil.

In addition, IR has undertaken several initiatives to promote energy conservation and reduce energy consumption as part of its efforts to improve energy efficiency and lower costs. Some of the key measures undertaken in this regard are as follows:

- i). Introduction of Insulated-Gate Bipolar Transistor (IGBT) based 3-phase propulsion system with regenerative braking in Electrical Multiple Unit (EMU) trains, Mainline Electrical Multiple Unit (MEMU) trains, Kolkata Metro rakes and Namu Bharat Rapid Rail (Vande Metro) to conserve energy during the operations.

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- ii). All new passenger electric locomotives are being manufactured with Hotel Load converter to feed Hotel load supply to LHB coaches leading to saving in diesel besides being energy efficient. Also, conversion of existing End on Generation (EOG) trains into Head On Generation (HOG) trains to reduce noise and air pollution at stations and in trains.
- iii). Energy saving mode on three-phase locomotives has been provided on three- phase electric locomotives to reduce power consumption during stationary conditions.
- iv). Loco Pilots are trained during their initial training as well as during promotional training and refresher courses for saving of energy/fuel to achieve better energy/fuel efficiency by good driving technique, good road learning and simulator training. Loco Pilots are being regularly counselled to use of coasting, regenerative braking feature and switch off blowers in case detention is more than 15 minutes to save energy.
- v). Trailing locomotives of Multi Units (MU) hauling light loads are switched off to save energy.
- vi). Provision of external 750V power supply at washing/sick lines for maintenance and testing of LHB coaches.
- vii). Provision of energy efficient Light Emitting Diode (LED) lighting in Railway installations including Railway stations, service buildings, coaches, EMUs/MEMUs for reduction in electricity consumption.
- viii). Use of automatic platform lighting management system at stations as per train services/passenger requirement.
- ix). Use of timer on high mast tower lightings/street lighting/circulating area of Railway stations.
- x). Increasing use of renewable energy sources, such as solar and wind power, across railway operations to improve overall energy efficiency and sustainability. Till January 2026, about 1092 Mega Watt (MW) of solar power plant (both rooftop and land) and around 103 Mega Watt (MW) of wind power plants have been commissioned over Indian Railways. In addition, 100 MW of renewable power under Round the Clock (RTC) mode has also started flowing.
- xi). Use of energy efficient Brushless Direct Current (BLDC) motor fans in coaches and buildings.
- xii). Use of capacitor banks in traction sub-stations to maintain near unity power factor for energy saving.
- xiii). Procurement of BEE 5-Star rated appliances, Variable Frequency Drives (VFDs), energy efficient motors and pumps.

Indian Railways has taken up a state-of-the-art project for running of its first hydrogen train, on pilot basis to demonstrate the use of hydrogen powered train technology in Railways. While tests on bio-diesel have also been done, however, electric traction is far more beneficial than bio-diesel.

Indian Railway is conducting Investment Grade Energy Audit (IGEA) of buildings by Bureau of Energy Efficiency (BEE) empanelled energy auditors for identification of further energy efficiency measures and its implementation.

For capacity building and to promote implementation at field level, periodic training of staff on sustainability, energy efficiency and renewable technologies is conducted.

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