## GOVERNMENT OF INDIA MINISTRY OF RAILWAYS

# LOK SABHA STARRED QUESTION NO.305 TO BE ANSWERED ON 08.08.2018

## **ELECTRIFICATION OF BROAD GAUGE LINES**

## \*305. SHRIMATI RAKSHATAI KHADSE:

Will the Minister of RAILWAYS be pleased to state:

- (a) whether lowering the fuel cost burden has been the key focus area of the Railways and if so, the details thereof;
- (b) whether the Government proposes gauge conversion and 100 per cent electrification of broad gauge railway lines by 2021-22 and if so, the details thereof;
- (c) the details of the electrification works carried out during the last three years, zone-wise; and
- (d) the length of broad gauge lines yet to be electrified and the time frame fixed for the completion of the said work?

#### ANSWER

## **MINISTER OF RAILWAYS, COAL, FINANCE AND CORPORATE AFFAIRS**

## (SHRI PIYUSH GOYAL)

(a) to (d): A Statement is laid on the Table of the House.

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# STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (d) OF STARRED QUESTION NO. 305 BY SHRIMATI RAKSHATAI KHADSE TO BE ANSWERED IN LOK SABHA ON 08.08.2018 REGARDING ELECTRIFICATION OF BROAD GAUGE LINES

(a) Yes, Madam. Lowering the fuel cost for Indian Railways is one of the key focus areas as it constitutes a significant portion of Indian Railways' ordinary working expenses. The annual fuel bill (diesel + electric) in the year 2014-15 was ₹30,901.80 crore, which has come down to ₹29,507.58 crore in the year 2017-18, resulting in savings of ₹1,394.22 crore. This is despite increase in originating loading in freight traffic by 64.10 Million Tons (MT) and increase in numbers of passengers booked on originating basis by 53 Million in the same time period i.e. 2014-15 to 2017-18.

Various measures are being taken to reduce the fuel costs, both for electric and diesel traction, the details of which are appended. The details are as follows:

- (i) The total electricity bill has come down from ₹12,315.80 crore in the year 2014-15 to ₹11,893.58 crore in the year 2017-18, a reduction of 3.43%. This is despite increase in electric traction due to increase in electrification of additional sections of 8411 route kilometers (RKM) and increase in gross ton kilometers (GTKM) hauled by electric traction, in the same period.
- (ii) The total diesel bill has come down from ₹18,586 crore in the year 2014-15 to ₹17,614 crore in the year 2017-18, a reduction of 5.23%. Oil consumption which has grown by 23% from 2009 to 2014 has now decreased by 3.5% from 2014 to 2018.

(iii) The above reduction in fuel cost is in spite of increase in traffic hauled (Gross Ton Kilometer or GTKM) which is reflected by improvement in energy efficiency indicators of Specific Energy Consumption (SEC), Specific Fuel Consumption (SFC):

|                           | 2014-15 | 2016-17 | % Improvement |
|---------------------------|---------|---------|---------------|
| SEC(kWh/1000 GTKM) -Goods | 6.86    | 6.46    | 5.83%         |
| SEC(kWh/1000 GTKM)-       | 18.9    | 18.2    | 3.7%          |
| Passenger                 |         |         |               |
| SFC (litres/1000 GTKM) –  | 2.1     | 1.98    | 5.71%         |
| Goods                     |         |         |               |
| SFC (litres/1000 GTKM) –  | 3.78    | 3.75    | 0.79%         |
| Passenger                 |         |         |               |

Reduction in SEC, SFC is an indicator of fuel efficiency achieved.

(b) 5182 kilometer (km) of Meter Gauge (MG) / Narrow Gauge (NG) exist on Indian Railways and the work has been taken up on 2901 km of MG/NG line for gauge conversion. The completion of Gauge conversion projects require land acquisition and shifting of utilities etc. In view of the above, work of gauge conversion usually takes few years to complete. Therefore, Railway is also exploring option of starting trains of better speed and comfort on these Meter Gauge and Narrow gauge lines as well.

Indian Railways has planned to optimally electrify balance Broad Gauge (BG) routes of Indian Railways. Balance unsanctioned work of nonelectrified routes of 13675 route kilometer has been included in Budget 2018-19 and their electrification will be taken up, for optimal lengths, after requisite sanctions are obtained. (c) During last three years (i.e. 2015-16 to 2017-18) Zone-wise, route kilometers (RKM) electrified are as under:-

| S. No. | Zonal Railway      | Route kilometers electrified |  |
|--------|--------------------|------------------------------|--|
| 1      | Central            | 399                          |  |
| 2      | Eastern            | 194                          |  |
| 3      | East Central       | 729                          |  |
| 4      | East Coast         | 727                          |  |
| 5      | Northern           | 750                          |  |
| 6      | North Central      | 394                          |  |
| 7      | North Eastern      | 348                          |  |
| 8      | Northeast Frontier | 123                          |  |
| 9      | North Western      | 1180                         |  |
| 10     | Southern           | 323                          |  |
| 11     | South Central      | 1033                         |  |
| 12     | South Eastern      | 118                          |  |
| 13     | South East Central | 482                          |  |
| 14     | South Western      | 146                          |  |
| 15     | Western            | 329                          |  |
| 16     | West Central       | 555                          |  |
|        | TOTAL              | 7830                         |  |

(d) Indian Railways plans to electrify balance approximately thirty four thousand Broad Gauge (BG) Route kilometer (RKM) network, optimally, by 2021-22 for achieving seamless train operations on electric traction over entire BG network subject to requisite approvals. APPENDIX REFERRED TO IN REPLY TO PART (a) OF STARRED QUESTION NO. 305 BY SHRIMATI RAKSHATAI KHADSE TO BE ANSWERED IN LOK SABHA ON 08.08.2018 REGARDING ELECTRIFICATION OF BROAD GAUGE LINES

(a) Some of the measures taken for energy conservation and reduction in Electric and Diesel fuel bill are as per the details below:

- (i) Energy Conservation Measures:
- Chittranjan Locomotive Works (CLW) has completely switched over to production of energy efficient three-phase electric locos with regenerative features. Similar action is being taken for Electrical Multiple Units (EMU), Main line Electrical Multiple Units (MEMU).
- Loco pilots are being regularly counseled to maximize coasting and use of regenerative braking feature. Loco pilots are counseled to switch off blower of electric locos in case yard detention is more than 15 minutes. Similarly, diesel locos are also shut down if expected detention is more than 30 minutes.
- Trailing locomotive of multi units (MU) hauling empty freight trains are switched off to save energy.
- Energy consumption on electric locomotives is regularly monitored through microprocessor based energy meters provided in all the electric locomotives and benchmarking is done based on average energy consumption.
- Monitoring the fuel consumption with respect to trip ration of diesel locomotive drivers.
- Reducing inventory of diesel in all major Railway Consumer Depots (RCD) from 15 days to 5 days.
- Auxiliary Power Unit (APU) has been provided in 762 diesel locomotives to reduce fuel consumption when locomotive is idle.
- Monitoring of idling of diesel locomotives is being done through remote monitoring (REMMLOT).

- There is huge saving in diesel fuel consumption of power cars with introduction of Head On Generation (HOG) system. As on date, 80 trains have been converted to HOG system. There is saving to the tune of ₹136 crore per annum. On account of saving in diesel fuel consumption during 2018-19, it is planned to convert all End On Generation (EOG) rakes into HOG system.
- Energy audits to improve energy efficiency of railway offices, stations, buildings and workshops.
- (ii) Power Procurement through Open Access as Deemed Licensee for reducing unit cost of electricity:

Indian Railways has started procuring power, as Deemed Licensee, through open access, as per provisions of The Electricity Act, 2003. This initiative has been started from November, 2015 and progressively different states which have been added for supply of open access power to Indian Railways are Maharashtra, Madhya Pradesh, Gujarat, Jharkhand, Rajasthan, Haryana, Karnataka, Delhi, Bihar, Damodar Valley Corporation (DVC) area and lastly Uttar Pradesh. Presently, 1100 Mega Watt (MW), out of total requirement of 2000 MW is on open access, which has led to average per unit cost of power on Indian Railways coming down from ₹6.73 per unit (2014-15) to ₹6.06 per unit (2017-18), an improvement of 10% approximately.

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