

**GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT AND HIGHWAYS**

**LOK SABHA
UNSTARRED QUESTION NO. 3994
ANSWERED ON 19th December, 2024**

GREEN NATIONAL HIGHWAYS CORRIDOR PROJECT

**3994. SHRI ARVIND GANPAT SAWANT:
SMT. BHARTI PARDHI:
SHRI SHRIRANG APPA CHANDU BARNE:**

**Will the Minister of ROAD TRANSPORT AND HIGHWAYS
सड़क परिवहन और राजमार्ग मंत्री**

be pleased to state:

- (a) whether the Union Government and World Bank have signed a MoU for implementation of the Green National Highways Corridor Project, if so, the details along with the objectives of the MoU thereof;**
- (b) the details of the highways covered till October, 2024 under the Green Highway Mission, State-wise particularly in Maharashtra and Madhya Pradesh;**
- (c) whether the Union Government has undertaken any research to monitor environmental footprint of the greenhouse gases on national highways, if so, the details thereof;**
- (d) whether the Union Government have taken any steps to replace the use of diesel in road construction with CNG or LNG; and**
- (e) if so, the details thereof and the time by which replacement work is targeted to be completed?**

ANSWER

THE MINISTER OF ROAD TRANSPORT AND HIGHWAYS (SHRI NITIN JAIRAM GADKARI)

(a) Yes, Sir. The Government of India and the World Bank have signed an agreement for the construction of Green National Highways Corridor Project (GNHCP) in an aggregate length of 781 km in the states of Himachal Pradesh, Rajasthan, Uttar Pradesh and Andhra Pradesh, with loan assistance of US \$ 500 million against total project cost of US \$ 1288 million (Rs. 7,662 crore). The objective of the GNHCP is to demonstrate safe and green highway keeping in view climate resilience and use of green technologies by incorporating the provisions of conservation of natural resources using cement treated sub base/reclaimed asphalt pavement, use of local/ marginal material such as lime, fly ash, waste plastic, bio-engineering measures for slope protection such as hydroseeding, coco/jute fibre etc., to bring Green technologies into the mainstream.

(b) The guidelines of Indian Roads Congress on Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy, 2015 stipulates planting the plants/trees on National Highways as per the availability of space in Right of Way. Since promulgation of Green Highways Policy, 465.42 lakh plants have been planted on the National Highways in the country. In Maharashtra, 40.17 lakh plants and in Madhya Pradesh, 43.53 lakh plants have been planted from 2015-16 to 2024-25 (till 15 November, 2024). The State-wise information is attached as Annexure-I.

(c) Yes Sir. The Government has published a study 'An assessment of avoided CO2 emissions during construction, maintenance and operation of National Highways' in 2023 based on the data from 20 NH stretches extending to a length of 2191.5 kms, to estimate the potential CO2 that can be avoided by the NH. The summary of the report is attached at Annexure-II.

(d) to (e) Yes Sir. In order to facilitate the development of motor vehicles running on non-fossil fuels, the Government has notified emission norms of agricultural tractors, power tillers, construction equipment vehicles and combine harvesters driven by dual fuel diesel with Compressed Natural Gas or Bio-Compressed Natural Gas or Liquefied Natural Gas engines.

ANNEXURE REFERRED IN REPLY TO PART (b) OF LOK SABHA UNSTARRED QUESTION NO. 3994 FOR 19-12-2024 ASKED BY SHRI ARVIND GANPAT SAWANT, SMT. BHARTI PARDHI and SHRI SHRIRANG APPA CHANDU BARNE REGARDING GREEN NATIONAL HIGHWAYS CORRIDOR PROJECT

Details of Plantation carried out on National Highways from 2015-16 to 2024-25 (till 15th November 2024)

Sl No.	State	Cumulative Plantation of 3 Years (2015-16 to 2017-18) (No. of Plants in Avenue & Median Plantation in Lakh)	Plantation in 2018-19 (No. of Plants in Avenue & Median Plantation in Lakh)	Plantation in 2019-20 (No. of Plants in Avenue & Median Plantation in Lakh)	Plantation in 2020-21 (No. of Plants in Avenue & Median Plantation in Lakh)			Plantation in 2021-22 (No. of Plants in Avenue & Median Plantation in Lakh)			Plantation in 2022-23 (No. of Plants in Avenue & Median Plantation in Lakh)			Plantation in 2023-24 (No. of Plants in Avenue & Median Plantation in Lakh)			Plantation in 2024-25 (till 15th November 2024) (No. of Plants in Avenue & Median Plantation in Lakh)			Total Plantation Progress (2015-16 to 2024-25 (till 15th Nov'2024)) (No. of Plants in Avenue & Median Plantation in Lakh)
					Avenue	Median	Total	Avenue	Median	Total	Avenue	Median	Total	Avenue	Median	Total	Avenue	Median	Total	
1	Andhra Pradesh	6.34	1.47	4.8	1.22	1.79	3.01	0.50	1.17	1.67	0.58	1.00	1.58	0.58	0.55	1.14	0.89	1.22	2.11	22.12
2	Assam	1.01	0.73	0.04	0.92	1.54	2.46	1.01	0.72	1.73	0.45	0.44	0.89	0.22	0.63	0.85	0.16	0.11	0.27	7.98
3	Bihar	1.62	0.64	0.93	0.68	0.04	0.72	1.07	0.96	2.03	0.65	1.47	2.12	1.15	1.23	2.38	1.72	1.57	3.29	13.73
4	Chhattisgarh	2.02	0.86	0.54	0.84	0.34	1.18	0.70	0.31	1.02	0.88	0.44	1.33	0.86	0.31	1.17	0.47	0.53	0.99	9.11
5	Delhi	0.5	5.5	0.02	1.33	0.80	2.13	2.80	6.71	9.50	2.18	1.26	3.44	2.47	1.13	3.60	7.45	1.50	8.95	33.65
6	Gujarat	4.96	0.65	1.06	1.20	1.58	2.78	0.58	1.80	2.38	2.41	2.10	4.51	1.61	2.08	3.69	1.92	2.94	4.86	24.88
7	Haryana	6.46	4.25	0.28	0.61	1.91	2.52	1.00	0.59	1.59	0.93	1.27	2.19	1.13	1.85	2.98	1.07	4.52	5.59	25.87
8	Himachal Pradesh	0.16	0.08	0.23	0.42	0.26	0.68	0.47	0.25	0.71	0.35	0.47	0.82	0.21	0.11	0.32	0.39	0.22	0.61	3.61
9	Jammu & Kashmir	0.41	0.38	0.06	0.01	0.12	0.13	0.11	0.31	0.42	0.20	0.66	0.86	0.41	0.36	0.76	0.70	0.11	0.80	3.82
10	Jharkhand	1.32	0.86	0.26	0.50	0.65	1.16	1.32	1.21	2.53	0.77	0.30	1.07	0.57	0.36	0.92	0.32	0.69	1.01	9.13
11	Karnataka	7.51	1.75	3.73	0.81	2.70	3.51	1.47	2.26	3.73	1.04	1.82	2.86	0.56	1.67	2.23	1.30	1.49	2.79	28.10
12	Kerala	0.9	0.24	0.15	0.08	0.25	0.33	0.04	0.20	0.24	0.02	0.13	0.16	0.01	0.18	0.18	0.00	0.04	0.04	2.24

13	Madhya Pradesh	0.49	2.31	5.3	1.78	2.16	3.94	2.25	3.52	5.77	5.05	5.13	10.18	3.11	3.93	7.04	4.19	4.30	8.49	43.53
14	Maharashtra	7.46	0.64	4.62	1.82	2.40	4.22	3.23	4.74	7.97	2.69	3.34	6.04	2.71	2.54	5.25	1.70	2.28	3.98	40.17
15	Odisha	2.91	2.04	1.73	1.84	1.06	2.90	2.43	1.35	3.78	1.88	1.52	3.40	1.23	1.45	2.68	0.68	1.82	2.51	21.95
16	Punjab	3.98	0	1.98	2.55	2.26	4.81	2.15	0.81	2.96	1.12	1.34	2.45	1.33	1.00	2.33	1.55	2.81	4.36	22.88
17	Rajasthan	8.1	1.52	2.07	3.16	1.63	4.79	4.17	5.28	9.45	7.29	5.16	12.46	2.81	5.29	8.10	2.05	2.14	4.19	50.67
18	Tamil Nadu	6.44	1.82	2.92	1.19	1.67	2.86	0.93	1.54	2.47	1.03	1.52	2.55	1.27	1.35	2.62	1.93	1.03	2.95	24.63
19	Telangana	3.09	0.18	0.59	1.76	1.51	3.27	0.64	1.54	2.18	0.65	2.09	2.74	0.36	0.39	0.74	0.22	0.41	0.63	13.43
20	Uttar Pradesh	6.74	3.8	3.56	1.76	4.55	6.31	1.67	3.75	5.41	3.25	3.02	6.27	2.80	2.02	4.81	1.97	1.34	3.31	40.22
21	Uttarakhand	0	0.52	0.15	0.64	1.46	2.10	1.40	0.73	2.12	0.70	0.53	1.23	0.38	0.18	0.56	0.27	0.10	0.37	7.06
22	West Bengal	3.85	1.03	1.2	1.46	1.59	3.04	1.64	0.74	2.38	1.87	0.51	2.37	1.20	0.53	1.72	0.50	0.54	1.04	16.64
	Grand Total	76.27	31.27	36.22	26.58	32.29	58.87	31.58	40.47	72.05	35.99	35.53	71.52	26.96	29.12	56.08	31.44	31.70	63.14	465.42

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The report presents a methodology for assessing the extent of CO₂ that can be avoided per km of operational highways. Data from 20 NH stretches together extending to a length of 2,191.5 kms and located in India's diverse climate zones and topography have been applied to estimate the potential CO₂ that can be avoided by the NH. Of the 20 NH stretches considered, 5 are Greenfield and 15 are brownfield. The result of this assessment indicates that:

- 1. Construction of all 20 stretches together have led to an emission of 5,716.66 thousand tonnes of CO₂ and maintenance has led to an emission of 1,164.68 thousand t CO₂.**
- 2. Felling of trees outside forests and removal of forests done to pave the way for construction of the highways has led to the emission of 652.60 thousand t CO₂.**
- 3. Fuel consumption by vehicles would have been 50.96 billion liters in a 20 year period if BAU conditions of highways persisted. In the BAU case, the share of petrol in the total fuel consumption would have been 17-19% and diesel share would have been 81-83%.**
- 4. In the Improvement case, when the new highways are operational, it is estimated that the total fuel consumption would be about 41.16 billion liters in a 20 year period. This amount of consumption is less by 19% or 9.77 billion liters of fuel is saved in the improvement case as compared to the BAU case.**
- 5. In the total fuel savings, share of petrol will be about 7% and rest will be share of diesel. The major savings will be 53% and 23% by MCVs and HCVs respectively.**

6. For the 20 NH stretches, the savings in petrol range from 2% to 21%, and diesel saving ranges from 1% to 42%. This variation is mainly due to variable conditions of the highways vis a vis their road characteristics (width, roughness etc.) and wide ranging traffic volumes and share of different vehicle types.

7. Therefore due to vehicles plying on the newly constructed and improved highways, it is estimated that in a 20 year period about 25.19 million tonnes of CO₂ will be avoided along the entire 2,191.54 kms of NH stretches, which is equivalent to an avoidance of 11,493 tonnes of CO₂ per km in 20 years.

(a). In case of Greenfield Highways improvements, the CO₂ avoidance in 20 years can be of the order of 10,167 tonnes per km whereas

(b). Improvements of Brownfield Highways can result in about 11,936 tonnes per km of CO₂ avoidance.

8. It is estimated that the avenue plantations and compensatory afforestation (CA) done post construction of the highways together potentially can sequester 584.27 thousand tonnes of CO₂ over a 20 year period.

9. Adding up the CO₂ emissions and sequestrations streams across all the stretches considered that together extend to a total of 2,191.54 kms, it is estimated that potentially 18,236.62 thousand tonnes of CO₂ over a 20 year period can be avoided. This is equivalent to a potential avoidance of 8321 tonnes CO₂ per km.

10. Based on standard assumptions, it is estimated that a total of 18,237.31 thousand tonnes of CO₂ emissions avoided across 2191.54 kms of NH in a 20-year period is equivalent to CO₂ sequestered by 45.14 million trees.

11. A total of 77,265 kms of national highway has been constructed till date since 2014 which can together potentially avoid 32.15 million tonnes of CO₂ annually and 642.95 million tons of CO₂ cumulatively in next 20 years. This is equivalent to CO₂ sequestration by 31,826 million trees.
