GOVERNMENT OF INDIA
MINISTRY OF RURAL DEVELOPMENT
DEPARTMENT OF RURAL DEVELOPMENT

LOK SABHA
UNSTARRED QUESTION NO. 3302
ANSWERED ON 21/03/2023

CLIMATE EFFECTIVE TECHNOLOGY UNDER PMGSY

3302. SHRI VISHNU DAYAL RAM:

Will the Minister of RURAL DEVELOPMENT be pleased to state:

(a) the details of all ongoing projects/road constructions having been completed or to be completed under Pradhan Mantri Gram Sadak Yojana (PMGSY) in Jharkhand especially in Palamu and Garhwa districts;
(b) whether the Government is looking at collaborating with the other ministries to include climate-effective technology and development mechanism in the construction of roads;
(c) whether it is true that technology such as plastic in roads can be viable used to mitigate environmental implications of road construction under PMGSY;
(d) the monitoring mechanism for ensuring longevity of constructed roads; and
(e) whether the Government has carried out any post-construction reviews and if so, the details of its findings?

ANSWER
MINISTER OF STATE IN THE MINISTRY OF RURAL DEVELOPMENT
(SADHVI NIRANJAN JYOTI)

(a) The intervention/vertical-wise details of works sanctioned, completed and balance as on 15th March, 2023 in Palamu district, Garhwa district and in the State of Jharkhand under Pradhan Mantri Gram Sadak Yojana (PMGSY) are given below:-

(i) **Palamu district**:

Road length in Km

Vertical	Sanctioned			Completed			Balance@		
	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges
PMGSY-I	441	1,580	92	433	1,522	91	8	25	1
PMGSY-II	9	93	0	9	93	0	0	0	0
RCPLWEA	14	111	10	1	36	2	13	74	8
PMGSY-III	24	216	13	0	0	0	24	216	13
Total	**488**	**2000**	**115**	**443**	**1651**	**93**	**45**	**315**	**22**

@Balance road length is less than the difference of sanctioned and completed length due to reduction in curve length, change in alignment, construction of part length by other agencies, etc.

(ii) **Garhwa district**:

Road length in Km

Vertical	Sanctioned			Completed			Balance@		
	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges
PMGSY-I	298	1,165	40	298	1,149	40	0	0	0
PMGSY-II	7	75	1	7	75	1	0	0	0

RCPLWEA	14	137	23	2	21	3	12	116	20
PMGSY-III	35	279	25	0	3	0	35	276	25
Total	**354**	**1656**	**89**	**307**	**1248**	**44**	**47**	**392**	**45**

@Balance road length is less than the difference of sanctioned and completed length due to reduction in curve length, change in alignment, construction of part length by other agencies, etc.

(iii) **Jharkhand**:

Road length in Km

Vertical	Sanctioned			Completed			Balance@		
	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges	No. of Roads	Road Length	No. of Bridges
PMGSY-I	7,237	25,547	499	7,176	24,770	471	61	159	28
PMGSY-II	165	1,642	6	165	1,633	5	0	0	1
RCPLWEA	303	2,408	207	87	1,397	66	216	1,009	141
PMGSY-III	444	4,085	143	0	303	0	444	3,783	143
Total	**8,149**	**33,682**	**855**	**7,428**	**28,103**	**542**	**721**	**4,951**	**313**

@Balance road length is less than the difference of sanctioned and completed length due to reduction in curve length, change in alignment, construction of part length by other agencies, etc.

(b) The Government in the year 2013 issued guidelines for construction of minimum 15% road length using new technologies and locally available materials. In order to implement the research outcomes on new and green technology in construction of rural roads under the scheme, the Ministry in the month of May, 2022 released Vision Document on New Technology Initiatives & Guidelines, 2022, which emphasizes increased use of new technologies/materials. The technology intervention introduced by the Ministry has helped in introduction of more than 40 technologies including waste plastics, cold mix technology, cell filled concrete, stabilization using cement and lime, nano technology and Full Depth Reclamation (FDR). Adoption of these technologies has helped deliver savings in fuel and natural resources and reduced the roads' carbon footprint.

Since inception till 15th March, 2023, under PMGSY 1,30,170 km road length has been sanctioned under new and green technologies, out of which 83,874 Km road length has been constructed. The Ministry collaborates with other Ministries and scientific bodies in this respect.

(c) Using waste plastic for bituminous course work improves the quality and durability of bituminous mix. This also brings down the cost of maintenance of roads built under PMGSY.

(d) Rural roads under PMGSY are constructed with a design life of 10 years. In order to ensure the durability of the roads, thrust is given on their proper maintenance. All road works are covered by initial five-year maintenance contracts to be entered into along with the construction contract, with the same contractor, as per the standard bidding document. Further, as a measure of enhancing the focus on maintenance of roads during the defect liability period (five years from the date of completion of road) and streamlining the delivery of routine maintenance of PMGSY roads on the basis of performance-based maintenance contract, "Electronic Maintenance of PMGSY roads" (eMARG) - an e-governance solution has been implemented in all the States.

PMGSY has a three-tiered Quality Control mechanism for ensuring construction of quality road works and durability of road assets. Under the first tier, the Programme Implementation Units are required to ensure process control through mandatory tests on material and workmanship at the field laboratory. The second tier is a structured independent quality monitoring at the State level through State Quality Monitors to ensure that every work is inspected at initial stage, intermediate stage and final stage of the construction. Under the third tier, which is at the national level, independent National Quality Monitors are deployed for random inspection of ongoing, completed and maintenance stage road works to monitor

quality and also to provide guidance of senior professionals to the field functionaries. Based on the periodic monitoring of quality of roads under the 3-tier mechanism, corrective measures, wherever necessary, are taken by the State Governments.

(e) The performance assessment of rural roads constructed using Cold Mix Asphalt (CMA) in surface layer was conducted by five institutes under the overall supervision of Indian Institute of Technology (IIT), Madras. As per outcome of the study, the overall relative performance cost of creation and operation, productivity, safety and environmental aspects, the CMA could be preferred over Hot Mix Asphalt (HMA) technology for low volume PMGSY roads. The life cycle assessment showed that the PM10 emission was 33% lower with the use of CMA compared to HMA.

Further, the performance evaluation on rural roads constructed using waste plastic in pre-mix carpet was conducted by seven institutes under the supervision of IIT Madras. It was observed that roads constructed using waste plastic have performed well in most zones across the country.

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