GOVERNMENT OF INDIA MINISTRY OF RURAL DEVELOPMENT DEPARTMENT OF RURAL DEVELOPMENT

LOK SABHA UNSTARRED QUESTION NO. 965 ANSWERED ON 13/12/2022

CLIMATE EFFECTIVE TECHNOLOGY IN CONSTRUCTION OF ROADS

965. SHRI VISHNU DAYAL RAM:

Will the Minister of RURAL DEVELOPMENT be pleased to state:

- the details of all ongoing projects/road construction have been completed or to be completed under Pradhan Mantri Gram Sadak Yojana (PMGSY) in Palamu, Jharkhand;
- (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, if so, the details thereof?

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 8th December, 2022 in Palamu district in the State of Jharkhand under Pradhan Mantri Gram SadakYojana (PMGSY) are given below:-

							R	oad leng	th in Km
	Sanctioned			Completed			Balance@		
Vertical	No. of	Road	No. of	No. of	Road	No. of	No. of	Road	No. of
	Roads	Length	Bridges	Roads	Length	Bridges	Roads	Length	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	33	2	13	77	8
PMGSY-III	-	-	-	-	-	-	-	-	-
Total	464	1784	102	443	1648	93	21	102	9

@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 8th December, 2022, under PMGSY 1,18,790 km road length has been sanctioned under new and green technologies, out of which 80,473 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.
