(c) the extent of transmission loss incurred by the power companies all over the country during the last three years and the current year; and

(d) the policy formulated by Government to reduce the transmission losses?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI RAJ KUMAR SINGH): (a) Transmission and Distribution (T&D) losses, to some extent, are inherent part of the system while supplying power from generating station to consumers. At all India level, energy loss in T&D for the year 2016-17 is 249197.48 Million units (21.42%). As per the estimates, reduction of 1% in T&D losses results in a saving of ₹ 4146.60 crore in terms of power purchase cost.

(b) The transmission system is used to transfer bulk power at higher voltages from source of generation to the Distribution end. Therefore, the losses involved in transmission system are purely technical losses and are dependent on the quantum of power transferred. As such, it cannot be linked to norms of power generation.

(c) Region-wise average 'metering inaccuracies plus transmission losses' for the Inter State Transmission System (ISTS) are monitored by the respective Regional Load Dispatch Centres (RLDC). The average percentage of inter-State transmission losses occurred during Jan., 2016 to Dec., 2018 is in the range of 2.02% to 4.16%.

(d) The transmission system forms a vital link between generation and distribution of electricity. While planning the transmission system, various technological options and voltage of transmission is studied to keep the transmission losses to a minimum.

Construction of fly ash based roads by NTPC

3030. SHRI T. RATHINAVEL: Will the Minister of POWER be pleased to state:

(a) whether it is a fact that NTPC invited expression of interest for construction of fly ash based geopolymer concrete roads at its plants to demonstrate use of this technology, if so, the details thereof; and

(b) whether it is also a fact that NTPC has successfully completed similar project at Dadri station as per Indian Roads Congress specifications and accreditation, if so, the details thereof?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI RAJ KUMAR SINGH): (a) Yes, Sir. NTPC has invited Expression of Interest for construction of fly ash based Geo-polymer concrete Road at its plants *vide* notification published in newspapers dated 14.11.18 and in NTPC tender website.

(b) Yes, Sir. NTPC has constructed Fly ash based Geo-polymer concrete road successfully at NTPC-Dadri as per Indian Roads Congress (IRC) specifications. Details of the road are given in the Statement.

Statement

Datails of the Fly ash based Geo-polymer concrete road

Construction Structure of road: The road has two layers of Geo-polymer concrete, DLC (Dry lean concrete) and PQC (Pavement quality concrete) layer. The M-10 strength DLC is 150 mm thick, M40 strength PQC is 280 mm thick. PQC is separated from DLC by 125-micron thick polythene separation sheet.

Dimensions of the road: 100 m x 7.5 m x 0.47 m

Cost of Road: The total cost of Geopolymeric Road for Dadri is ₹ 24.75 lakhs

Ingredients, amount of concrete and cost of concrete: The main ingredients utilized in road construction are fly ash, slag, caustic soda and sodium silicate apart from admixtures without any utilization of cement. The Geo Polymer road developed by NTPC Energy Technology Research Alliance (NETRA) was accredited by IRC. Around 0.5 T of fly ash was consumed per m of concrete road laid. The cost is around ₹ 9000/m of concrete poured. Total concrete poured was 275 m^3

The performance highlights of this Geo-polymer concrete road are:

- No Cement - Developed Fly ash based green concrete road without cement with M 40 strength
- Bulk utilisation of Fly Ash
- Negligible $C0^2$ emission in comparison to high $C0^2$ emission in cement production

- High early compressive strength -Strength is achieved in 7 days in comparison to 28 days for normal Concrete road.
- Negligible shrinkage - No cracks observed in GPC road
- Low permeability - Monolithic
- Good durability in aggressive environment compared to conventional concrete road

Huge demand-supply mismatch of electricity

†3031. SHRI NARAYAN RANE:
DR. SATYANARAYAN JATIYA:

Will the Minister of POWER be pleased to state:

(a) whether demand of electricity is continuously increasing, as a result of which there is huge shortage of electricity;

(b) if so, details of power generation, demand-supply of electricity and existing shortage during last three years, State-wise;

(c) the details of electricity generation from different sources during last three years and next three years as well, State-wise;

(d) details of infrastructural reforms and time-bound action plan made to improve production of electricity and success achieved as a result of it; and

(e) details of time-bound action plan chalked out towards achieving target of self reliant India in terms of power generation?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI RAJ KUMAR SINGH): (a) to (c) The demand of electricity has been continuously increasing. During the current year 2018-19 (upto November, 2018) the electricity demand has increased by 6.6% which has been met from the available sources. As on 30.11.2018, the installed generation capacity is about 346 Giga Watt (GW) which is more than sufficient to meet the peak power demand of the country of around 177 GW which occurred during the current year 2018-19 (upto November, 2018). However, there are some States in the

†Original notice of the question was received in Hindi.