(c) whether Government has undertaken measures to achieve the desired level of savings; and

(d) if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF FINANCE (SHRI RADHAKRISHNAN P.): (a) to (d) Rule 21 of General Financial Rules – 2017 enjoins upon "Every officer incurring or authorizing expenditure from public moneys should be guided by high standards of financial propriety. Every officer should also enforce financial order and strict economy and see that all relevant financial rules and regulations are observed, by his own office and by subordinate disbursing officers."

Ministry of Finance *vide* Office Memorandum dated 29th October, 2014 had issued orders on economy measures and rationalization of expenditure which was applicable for financial year 2014-15 only keeping in view the economic environment prevailing at that time.

Pollution caused by thermal power stations

854. DR. K.V.P. RAMACHANDRA RAO: Will the Minister of POWER be pleased to state:

(a) whether it is a fact that Thermal Power Stations are major contributors of pollution in the country, if so, the details thereof;

(b) whether it is a fact that several thermal power stations under Central and State Governments are unable to arrange pollution control equipment due to lack of funds; and

(c) the total number of thermal power stations in operation in the country, the number equipped with proper pollution control systems and the number to be equipped with pollution control systems and the estimated expenditure to upgrade them?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI RAJ KUMAR SINGH): (a) Thermal Power Stations (TPSs) contribute to the pollution in the country due to combustion of fossil fuel. However, the TPSs are required to meet the environmental pollution standard norms notified by Ministry of Environment, Forests and Climate Change /Central Pollution Control Board/ State Pollution Control Board from time to time. MoEF and CC have notified Environment (Protection) Amendment Rules, 2015 on 7th December 2015 and Environment (Protection) Amendment Rules,

2018 on 28.06.2018 as follows:

Emission parameter	TPPs (units) installed before 31st December, 2003	TPPs (units) installed after 31st December 2003 and upto 31st December 2016	TPPs (units) to be installed from 1st January 2017
Particulate Matter	100 mg/Nm^3	50 mg/Nm^3	30 mg/Nm^3
Sulphur Dioxide (SO_2)	600 mg/Nm^3 for units less than 500MW capacity 200 mg/Nm^3 for units 500MW and above capacity	600 rag/Nm^3 for units less than 500MW capacity 200 mg/Nm^3 for units 500MW and above capacity	100 mg/Nm^3
Oxides of Nitrogen NOx)	600 mg/Nm^3	300 mg/Nm^3	100 mg/Nm^3
Mercury	0.03 mg/Nm^3 (for unit size 500 MWand above)	0.03 mg/Nm^3	0.03 mg/Nm^3
Water norms*	a. All plants with Once Through Cooling (OTC) shall install Cooling Tower (CT) and achieve specific water consumption of 3.5 m3/MWh within 2 years of notification. b. All existing CT based plants shall reduce specific water consumption up-to maximum of 3.5 m3/MWh within a period of 2 years of notification. c. New plants to be installed after 1st January 2017 shall have to meet specific water consumption of 3.0 m3/MWh and achieve zero water discharge.		

*sea water based TPPs exempted.

(b) The funding for upgradation/installation of additional equipment is to be arranged by the thermal power plants from their own resources and through loans from

Financial Institutions. REC and PFC are already financing the State sector utilities for installation of Flue Gas desulphurisation (FGD) and they can finance Independent Power Producers (IPPs) on the similar lines since the cost is already allowed as pass-through in tariff. Representatives from banks have informed that they have no difficulty in financing performing assets of IPPs for installation of emission control equipment, at least in proportion to their existing exposures in these projects, provided the developers abide by their normal terms and conditions.

(c) As on 30.11.2018, total number of thermal power plants in operation in the country is 266 Thermal Power Plants (2,22,427.34 MW). CPCB notified SO_2 and NO_x emission norms for the first time in 2015 along with revision of existing Suspended Particular Matter (SPM) emission norms. Currently, CPCB notices to TPPs state that these norms have to be complied with progressively by 2022.

(i) Currently, all thermal power plants are equipped with Electro Static Precipitators (ESP) system to control PM level as earlier notified for control of SO2 in the flue gas, the thermal capacity already having FGD is 6130 MW (15 Units) to control SO_2 emission. The thermal Capacity with CFBC Boilers is 5824 MW (50 Units) is considered to be complying with to SO_2 emission norms.

(ii) Different thermal power stations are required to install pollution control equipment based on their requirement to meet the environmental norms. Some of the power stations would be already meeting one or the other norm and therefore all the power stations are not required to install all the pollution control equipment. Hence, the total estimated expenditure has not been worked out. However, estimated expenditure to upgrade/installation the individual pollution control equipments to implement the Environmental Norms are as under:-

Equipment	Capital Cost (₹ cr./MW)
Flue Gas Desulphurization (FGD)	0.40-0.45
Upgradation of Electro-Static Precipitator (ESP)	0.13
Combustion optimization/ modification measures to control NO_x	0.013
Combustion optimization/ modification + Selective Non-Catalyst Reduction (SNCR) measures to control NO_x	0.025
Selective Catalyst Reduction (SCR) to control NO_x	0.25