(B) Electricity consumption during the last three years

Year	Consumption (in Billion Units)
2013-14	824
2014-15	874
2015-16	949

Hydro power projects in Tamil Nadu

2158. SHRIMATI SASIKALA PUSHPA: Will the Minister of POWER be pleased to state:

(a) the details of number of hydro power projects which are operational in Tamil Nadu;

(b) the details of total installed capacity of these projects;

(c) the details of duration for which they were shut down during the last two years for one or other reasons; and

(d) the details of alternative measures taken by Government to ensure continuous supply of power during their shut down?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI PIYUSH GOYAL): (a) and (b) As on 30.11.2016, 27 Hydro Power Stations (having an installed capacity above 25 MW) with total installed capacity of 2182.20 MW are under operation in Tamil Nadu. The details are given in Statement-I (*See* below).

(c) The details of the units under forced outage (for more than 15 days) are given in Statement-II (*See* below).

(d) Electricity is a concurrent subject under the Constitution of India. The management of power supply within the State and maintaining demand-supply balance is the responsibility of concerned State Government. The Central Government only supplements their efforts in managing power supply position by way of establishing generation capacity in Central Sector and allocating power from these stations to them. The Central Government also establishes bulk high voltage transmission system in Central Sector to enable the States/UTs to purchase the required quantum of power from sources outside their territory e.g. Surplus States, Independent Power Producers (IPPs), Power Exchange etc.

Statement-I

Details of number of hydro power projects with total installed capacity which are operational in Tamil Nadu

Sl. No.	Name of the Station	Installed Capacity (MW)
1.	Aliyar	60.00
2.	Bhavani Kat. Barrage	30.00
3.	Bhavani Kat. Barrage II	30.00
4.	Bhavani Kat. Barrage III	30.00
5.	Kodayar -I	60.00
6.	Kodayar -II	40.00
7.	Kundah -I	60.00
8.	Kundah -II	175.00
9.	Kundah -III	180.00
10.	Kundah -IV	100.00
11.	Kundah - V	40.00
12.	Lower Mettur -I	30.00
13.	Lower Mettur -II	30.00
14.	Lower Mettur -III	30.00
15.	Lower Mettur -IV	30.00
16.	Mettur Dam	50.00
17.	Mettur Tunnel	200.00
18.	Moyar	36.00
19.	Papanasam	32.00
20.	Parson's Valley	30.00
21.	Periyar	140.00
22.	Pykara	59.20

Sl. No.	Name of the Station	Installed Capacity (MW)
23.	Pykara Ultmate	150.00
24.	Sarkarpathy	30.00
25.	Sholayar I&II	95.00
26.	Suruliyar	35.00
27.	Kadamparai	400.00
	TOTAL	2182.20

Statement-II

Details of the units under forced outage during the last two years

(A) Forced Outage from 01.04.2015 to 31.03.2016 in respect of TANGEDCO (More than 15 days only)

Sl. No.	Name of the Station	Capacity in MW	Unit No	Forced Outage From	Forced Outage To	No of Days	Details of maintenance
1	2	3	4	5	6	7	8
1.	Kadamparai						
	Unit I	100	1	10.10.2015	22.11.2015	43	Stator earth fault
				08.02.2016	29.02.2016	22	
	Unit III	100	3	12.11.2015	29.02.2016	113	Stator earth fault
	Unit IV	100	4	01.04.2015	22.11.2015	236	Stator & rotor Rectification
2.	Kundah V	20	2	15.04.15	21.05.15	36	MIV control mechanism box water leakage rectification work.
3.	PUSHEPH	50	2	29.03.15	26.05.15	58	Unit.2 nozzel pilot valve I problem.
			2	18.06.15	6.08.15	49	Damaged MIV, service seal replacement work.

1	2	3	4	5	6	7	8
4.	Moyar	12	3	16.06.15	7.07.15	21	For runner break down.
5.	Lower Mettur Barrage Power House1/ Chekkanur	15	1	11.08.2015	20.10.2015	71	Stator Earth Fault failed 6 Nos stator coils replaced by new.
6.	Periyar	42	1	16.01.2016	31.01.2016	15	OPU temperature very high due to MOOg valve problem

(B) Forced Outage from 01.04.2016 to 30.11.2016 in respect of TANGEDCO (More than 15 days only)

Sl. No.	Name of the House	Capacity in MW	Unit No	Forced Outage		No of Days	Details of maintenance
				From	To		
1	2	3	4	5	6	7	8
1.	Kadamparai Power House						
	Unit I	100	1	15.07.2016	31.07.2016	17	Stator earth fault
				09.11.2016	30.11.2016	22	Runner Bolt dislocation
	Unit III	100	3	14.06.2016	24.08.2016	72	MIV servo motor problem
				22.10.2016	30.11.2016	40	MIV Struck up problem
2.	Moyar PH	12	3	26.03.16	15.04.16	20	For runner break down.
			2	17.05.16	27.06.16	42	Fault tripped due to stator coil "B" phase earth fault.

1	2	3	4	5	6	7	8
			1	28.07.16	10.08.16	14	Runner break down work.
3.	Bhavani Kattalai Barrage Power House 1/ Samayas-angili	15	2	09.05.2016	31.05.2016	23	Failed shaft seal replaced by new

New technology for conversion of fuel into electricity

2159. SHRI ANIL DESAI: Will the Minister of POWER be pleased to state:

(a) whether an Indian firm, has created electricity in an easy and non-polluting manner;

(b) whether the Solid Oxide Fuel Cell that converts fuel into electricity through a clean electrochemical process generates clean power for over 100 of the Fortune 500 companies;

(c) whether India could shift from the existing infrastructure that is capital intensive, inflexible and requires long planning horizons to highly flexible, modular, upgradable and rapidly deployable servers; and

(d) if so, by when and if not, the reasons therefor?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI PIYUSH GOYAL): (a) and (b) Bloom Energy, a United States based firm tweaked the technology of Solid Oxide Fuel Cell to generate electricity with flexi fuels like - natural gas, purified biogas through a electrochemical process with better efficiency of electricity generation and lesser emissions of green-house gas and pollutants like - NOx, CO and Volatile Organic Compounds. Bloom Energy lists the name of about 70 customers on its website.

(c) and (d) The Ministry of New and Renewable Energy (MNRE) is implementing various programmes on new and renewable energy, under which the country has already an infrastructure consisting of 49.2 lakh Family Biogas Plants, and a few plants for Power Generation from waste through production of biogas route. This infrastructure is widening