

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.742
TO BE ANSWERED ON 20.12.2017

NUCLEAR POWER GENERATION AND URANIUM CONSUMPTION

742. SHRI ALOK SANJAR:
SHRI M.I. SHANAVAS:
SHRI INNOCENT:

Will the PRIME MINISTER be pleased to state:

- (a) the present nuclear power generation capacity in the country and the actual output thereof, reactor-wise along with the share of nuclear energy in total energy mix of the country;
- (b) the target set for nuclear power generation during the current year along with the reason for failure, if any, in meeting the said target;
- (c) the details of Nuclear Power Plants (NPP) operating and under construction in the country;
- (d) whether the Government proposes to take help from other countries in this regard and if so, the details thereof including the names of the countries which have agreed to cooperate in this regard;
- (e) the quantity of Uranium consumed by the existing NPPs during each of the last three years and the current year, NPP-wise along with the names of the countries from where the Uranium was imported during the said period, country-wise; and
- (f) the quantity of uranium mined and extracted within the country during the said period, State/UT-wise along with the measures taken by the Government to explore the new reserves of Uranium in the country?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH):

- (a) The details of the present capacity and generation from the nuclear power plants in the country for the year 2017-18 up to November, 2017 given in Annexure -1. The share of nuclear power in the total electricity generation in the country in the current year 2016-2017 was 3.05%.
- (b) The generation target for the current financial year 2017-18 is 39,000 Million Units (MU) under 'Very Good' category of MoU, 2017-18. The generation (April to November 2017) was 23785 MU and the annual target is expected to be met.
- (c) The details are enclosed as Annexure-2.

- (d) The Government is sourcing fuel for reactors placed under IAEA Safeguards from countries like Russian Federation, Kazakhstan and Canada. In respect of reactors under construction, Kudankulam Units 3&4 (KKNPP 3&4) are being set up in technical cooperation with the Russian Federation. Discussions have also been initiated with the USA and France for setting up large capacity nuclear power reactors in the country.
- (e) The approximate requirements of atomic fuel/uranium for Pressurised Heavy Water Reactors (PHWRs) are as follows:

Unit Capacity (MW)	Annual requirement at 85% Capacity Factor (tons UO ₂)
220	45
540	100
700	125

The approximate requirements of atomic fuel/uranium for Light Water Reactors (LWRs) currently in operation are as given below:

Unit Capacity(MW)	Annual Fuel Requirement (tons, low enriched uranium)
160	6 (at 85% CF)
1000	25 (at 90% CF)

As regards the quantity of Uranium imported, the details are tabulated below:

	M/s JSC NAC Kazatomprom, Kazakhstan (Uranium Ore Concentrate)	M/s Cameco Canada (Uranium Ore Concentrate)	M/s PJSC TVEL Corporation, Russia (Natural Uranium Oxide Pellets)
Year	Quantity (MT)	Quantity (MT)	Quantity (MT)
2014	743.419	Nil	296.548
2015	Nil	250.743	303.787
			42.150*
2016	999.807	1233.681	187.334
2017 (up to 13-12-17)	923.856	989.452	Nil

* One-time import of Enriched Uranium Oxide Pellets.

- (f) It is not in the public interest to disclose the quantity of production of uranium from the mines operated by Uranium Corporation of India Limited, a public sector undertaking of the Department of Atomic Energy. Atomic Minerals Directorate for Exploration and Research (AMD), a constituent unit of Department of Atomic Energy (DAE), which has a mandate to identify and evaluate mineral resources of uranium and thorium has so far established 2,73,956 tonne *in situ* U₃O₈ (2,32,315 tonne U) as on November, 2017.

Annexure -1

Location & State/UT	Unit	Capacity (MW)	Generation (April to November 2017), Million Units (MUs)*
Tarapur Maharashtra	TAPS-1	160	174
	TAPS-2	160	900
	TAPS-3	540	2099
	TAPS-4	540	556
Rawatbhata, Rajasthan	RAPS-1 [@]	100	-
	RAPS-2	200	978
	RAPS-3	220	1247
	RAPS-4	220	1286
	RAPS-5	220	1342
	RAPS-6	220	1169
Kalpakkam, Tamilnadu	MAPS-1	220	955
	MAPS-2	220	1129
Kudankulam, Tamilnadu	KKNPP-1	1000	2074
	KKNPP-2	1000	2384
Narora, Uttar Pradesh	NAPS-1	220	1189
	NAPS-2	220	1160
Kakrapar, Gujarat	KAPS-1 [§]	220	-
	KAPS-2 [§]	220	-
Kaiga, Karnataka	KGS-1	220	1284
	KGS-2	220	1243
	KGS-3	220	1267
	KGS-4	220	1348

* The generation figures are rounded off to the nearest digit.

[@] RAPS-1 is under extended shutdown for techno-economic assessment.

[§] KAPS-1&2 are under long shutdown for Enmasse Coolant Channel Replacement (EMCCR) and Enmasse Feeder Replacement (EMFR).

a) Operational Nuclear Power Reactors in the Country

State	Location	Unit	Capacity (MW)
Maharashtra	Tarapur	TAPS-1	160
		TAPS-2	160
		TAPS-3	540
		TAPS-4	540
Rajasthan	Rawatbhata	RAPS-1 [@]	100
		RAPS-2	200
		RAPS-3	220
		RAPS-4	220
		RAPS-5	220
		RAPS-6	220
Tamilnadu	Kalpakkam	MAPS-1	220
		MAPS-2	220
	Kudankulam	KKNPP-1	1000
		KKNPP-2	1000
Uttar Pradesh	Narora	NAPS-1	220
		NAPS-2	220
Gujarat	Kakrapar	KAPS-1 [§]	220
		KAPS-2 [§]	220
Karnataka	Kaiga	KGS-1	220
		KGS-2	220
		KGS-3	220
		KGS-4	220

[@] RAPS-1 is under extended shutdown for techno-economic assessment

[§] KAPS-1&2 are under long shutdown for Enmasse Coolant Channel Replacement (EMCCR) and Enmasse Feeder Replacement (EMFR)

b) Nuclear Power Reactors Under Construction in the Country **

State	Location	Unit	Capacity (MW)
Gujarat	Kakrapar	KAPP-3&4	2 X 700
Rajasthan	Rawatbhata	RAPP-7&8	2 X 700
Haryana	Gorakhpur	GHAVP - 1&2	2 X 700
Tamilnadu	Kudankulam	KKNPP- 3&4	2 X 1000
	Kalpakkam	PFBR*	500

* being implemented by BHAVINI

** Government approval obtained for 10 additional FHRs and KK 5&6