

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.5875
TO BE ANSWERED ON 29.04.2015

INDIGENOUS ATOMIC MATERIALS

5875. SHRI P.K. BIJU:
DR. A. SAMPATH:
SHRI ANTO ANTONY:

Will the PRIME MINISTER be pleased to state:

- (a) the details of quantity and quality of material for atomic energy which is indigenously available, area-wise and that imported from other countries;
- (b) the details of their use in power generation and in other fields for human welfare; and
- (c) the detailed plan of the Government to enhance production of Atomic Energy and the action taken in this regard?

ANSWER

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

- (a) As of March, 2015, Atomic Minerals Directorate for Exploration and Research (AMD), a constituent unit of Department of Atomic Energy (DAE) has established 2,19,140 tonne *in-situ* U₃O₈ (1,85,831 tonne Uranium) reserves and 11.93 million tonne of *in-situ* resources of Monazite containing about 1.07 million tonnes of Thorium Oxide (ThO₂), in the country.

Details of Uranium and Monazite reserves identified in different States are as under:

State	Uranium reserves		Monazite (Million tonne)
	U ₃ O ₈ (t)	U (t)	
Andhra Pradesh	96,462	81,799	3.72
Telangana	18,550	15,731	-
Jharkhand	63,093	53,503	0.22
Meghalaya	21,180	17,961	-
Rajasthan	9,163	7,770	-
Karnataka	4,682	3,970	-
Chhattisgarh	3,986	3,380	-
Uttar Pradesh	785	666	-
Uttarakhand	100	85	-
Himachal Pradesh	784	665	-
Maharashtra	355	301	-
Odisha	-	-	2.41
Tamil Nadu	-	-	2.46
Kerala	-	-	1.90
West Bengal	-	-	1.22
Grand Total	2,19,140	1,85,831	11.93

[1 tonne of U₃O₈ = 0.848 tonnes of U]

...2

The details of uranium in the form Uranium Ore Concentrate (UOC) and Uranium Di-oxide Pellets imported from various firms /countries are as under:

	Natural Uranium Ore concentrate	Natural Uranium Di-oxide Pellets	Enriched Uranium Di-oxide Pellets
M/s. AREVA, France	299.87 MT	-	-
M/s. TVEL Corporation, Russia	-	1514.69	58.29
M/s. NAC Kazatomprom, Kazakhstan	2095.9	-	-

- (b) The above material i.e., Uranium and Monazite is used for nuclear power generation and for conducting research. The related elements namely Beryllium and Boron that are required in the nuclear power reactors are developed in-house. The materials have both nuclear as well as non-nuclear applications as below:

i) Beryllium Metal/Components

Beryllium Metal/ Components have applications in the nuclear, defence and space programmes in the country. In nuclear industry, beryllium metal and beryllia ceramic are used in photo-neutron source and moderator and reflector material. Beryllium has been a strategic material and its production is monitored by Government.

ii) Boron Based Materials

Bhabha Atomic Research Centre (BARC), a constituent unit of DAE has indigenously developed technology for boron materials. These materials find extensive applications in nuclear industry in the following forms:

- (a) Natural Boron carbide Powder.
 - (b) Enriched Boron carbide Pellets
 - (c) Special Boron alloy pellets
 - (d) Natural boron carbide+ZrB₂ (Zirconium di-boride) composites
- (c) The electricity generation from nuclear power is proposed to be enhanced by installing more nuclear power capacity. Based on both indigenous technologies and with foreign cooperation, Department plans to start work on 16 new reactors during the XII Five Year Plan. The present installed nuclear power capacity of 5780 MW is expected to reach 10,080 MW on progressive completion of the projects under commissioning/construction. These reactors are expected to be operational in the XIII / XIV Five Year Plan, based on their actual date of start. The details are enclosed as **Annexure-1.**

Annexure-1

Status of projects to be launched by NPCIL/BHAVINI/Government during XII Five Year Plan

Project	Location	Capacity (MW)	Planned FPC*	Planned Completion	Status
Indigenous PHWRs					
GHAVP 1&2	Gorakhpur, Haryana	2 x 700	June 2015	Unit-1: Sep-20 Unit-2: Mar-21	Project was accorded financial sanction for Rs.20594 crore , Environmental clearance obtained. Procurement of Long delivery critical equipment initiated . Site infrastructure works in progress. Start of construction (First Pour Concrete) Scheduled in 2015.
CMAPP 1&2	Chutka, Madhya Pradesh	2 x 700	June 2015	Unit-1: Dec-20 Unit-2: Jun-21	Pre-project activities (Land acquisition, obtaining statutory clearances, site investigations) in progress. Public Hearing completed. Financial sanction not yet accorded.
MahiBanswara, 1&2	Mahi Banswara Rajasthan	2 x 700	June 2016	Unit-1: Dec-21 Unit-2: Jun-22	Pre-project activities (Land acquisition, obtaining statutory clearances, site investigations) in progress. ToRs for EIA studies for Env. Clearance approved. Financial sanction not yet accorded.
Kaiga 5&6	Kaiga, Karnataka	2 x 700	Dec 2016	Unit-5: Jun-22 Unit-6: Dec-22	Land available, other pre-project activities initiated. Financial sanction not yet accorded.
LWRs with International Cooperation					
KKNPP 3&4	Kudankulam, Tamil Nadu	2 x 1000	June 2014	Unit-3: Mar-20 Unit-4: Nov-20	Project was accorded financial sanction for Rs.39,849 crore , statutory clearances obtained. Site made ready. General Framework Agreement signed with Atomstroy export of Russia . Units expected for launch in 2016 after completion of various steps specified in GFA.
JNPP 1&2	Jaitapur, Maharashtra	2 x 1650	Oct 2015	Unit-1: Apr-21 Unit-2: Apr-22	Land acquired, Environmental and CRZ clearances obtained, Site infrastructure and investigation works in progress. Discussions with M/s Areva, France to arrive at project proposal in progress. Financial sanction not yet accorded.
Kovvada, 1&2	Kovvada, Andhra Pradesh	2 x 1500	June 2016	Unit-1: Oct-21 Unit-2: Oct-22	Pre-project activities (Land acquisition, obtaining statutory clearances, site investigations) in progress. Discussions with GE Hitachi Nuclear Energy (GEH) to arrive at project proposal are in progress. Financial sanction not yet accorded.
Chhaya Mithi Viridi 1&2	Chhaya Mithi Viridi, Gujarat	2 x 1100	June 2016	Unit-1: Dec-20 Unit-2: Dec-21	Public Hearing completed. Pre-project activities (Land acquisition, obtaining statutory clearances, site investigations) in progress. Preliminary contract for sharing technology details signed with Westinghouse Electric Company (WEC), discussions to arrive at project proposal are in progress. Financial sanction not yet accorded.
FBR 1&2	Kalpakkam, Tamil Nadu	2 x 500	Yet to be decided	Yet to be decided	Detailed Project Report under preparation.
AHWR	Yet to be decided	1 x 300	Yet to be decided	Yet to be decided	The detailed engineering of major structures/systems/components (SSCs) of AHWR is being carried out which includes preparation of technical documents and specifications for design, 3D CAD modeling, 2D layout drawings and stress & seismic analysis of SSCs. Standing Site Selection Committee is examining the issue associated with siting of AHWR at candidate site.

* FPC – First Pour of Concrete.

CRZ – Coastal Regulation Zone

EIA – Environmental Impact Assessment