

climate variability are also addressed at the Centre for Climate Change Research, Indian Institute of Tropical Meteorology, Pune.

(c) An expenditure of around ₹ 45 crores is likely to be incurred during the next 3 years (2017-20).

(d) Yes, Sir. NCAOR, Goa, an autonomous institute of MoES has entered into a MOU with the Norwegian Polar Institute (NPI) for scientific and logistic cooperation in the Arctic.

(e) A wide range of scientific activities concerning climate response of the Polar and Himalayan Cryosphere are being carried out at NCAOR, Goa.

## WRITTEN ANSWERS TO UNSTARRED QUESTIONS

### Estimation of atomic mineral reserves

2397. SHRI SAMBHAJI CHHATRAPATI: Will the PRIME MINISTER be pleased to state:

(a) whether Government has made any estimate about the atomic mineral reserves in the country;

(b) if so, the details thereof; and

(c) the measures being taken to undertake exploration by locating the new reserves?

THE MINISTER OF STATE IN THE DEPARTMENT OF ATOMIC ENERGY (DR. JITENDRA SINGH): (a) Yes, Sir.

(b) 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 resources of atomic minerals of uranium, thorium, niobium, tantalum, beryllium, lithium, zirconium, titanium and rare earths containing uranium and thorium has established adequate quantity of atomic mineral resources as given below:—

Uranium	2,48,786 tonne Uranium Oxide ( $U_3O_8$ )
Beach Sand Minerals (BSM) (monazite, ilmenite, leucoxene, rutile, Zircon, garnet and sillimanite)	1,173.07 million tonne
Thorium (as monazite)	12.47 million tonne (1.12 million tonne $ThO_2$ )
Titanium (as ilmenite+leucoxene+rutile)	682.30 million tonne

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Zirconium (as zircon)	35.75 million tonne
Garnet	187.46 million tonne
Sillimanite	255.09 million tonne

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(c) In order to speedily augment the resources of atomic minerals from existing deposits as well as identify new deposits, AMD is presently carrying out integrated, multi-disciplinary exploration in several potential thrust areas of the country by utilising state-of-the-art technology in remote-sensing, geological, radiometric, geochemical and heliborne/ground geophysical surveys and drilling. Besides, various laboratories equipped with modern and high-tech instruments are providing timely and accurate analytical support to the on-going exploration programme.

#### **Commissioning of nuclear reactors**

2398. SHRI P. BHATTACHARYA:

SHRI DARSHAN SINGH YADAV:

Will the PRIME MINISTER be pleased to state:

- (a) the number of nuclear reactors currently commissioned in the country, State-wise;
- (b) the years in which different reactors were commissioned and the individual energy generation capacity thereof; and
- (c) whether the total energy generated through nuclear reactors is less than ten per cent of energy generated using fossil fuels and if so, the details thereof?

THE MINISTER OF STATE IN THE DEPARTMENT OF ATOMIC ENERGY (DR. JITENDRA SINGH): (a) and (b) The current installed nuclear power capacity in the country comprises of 21 reactors with a total capacity of 5780 MW. One more reactor, KKNPP-2 (1000 MW) is presently generating infirm (non-commercial) power and commencement of its commercial operation will take the nuclear installed capacity to 6780 MW. The details of their location, date of start of commercial operation and capacity are given in the Statement (*See below*).

(c) Yes, Sir. In the current financial year 2016-17 (upto February, 2017), the electricity generation from nuclear power on commercial basis was 34136 Million Units. In addition, Kudankulam Nuclear Power Project (KKNPP), Unit-2 has generated 2086 Million Units of infirm power (non-commercial) during this period. Thus, 36223 Million Units of electricity has been generated from nuclear power as against 903694 Million Units from fossil fuel sources (source:CEA), which is about 4% of the energy generated from fossil fuel in the current financial year 2016-17 (up to Feb-2017).