GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA

UNSTARRED QUESTION NO:2987
ANSWERED ON:29.08.2012
NUCLEAR POWER PLANTS
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Will the Minister of ATOMIC ENERGY be pleased to state:

(a) the details of the nuclear power plants in the country with installed capacity and funds spent in installation of these plants, State-wise and Plant-wise and the names of the companies, Indian and foreign, who have assisted in construction or otherwise of these plants;

(b) whether some of the State Governments have requested to set up nuclear power plants in their States;

(c) if so, the details thereof, State-wise and the reaction of the Government thereto; .

(d) whether the Government proposes to open new nuclear power plants in the country in the years to come;

(e) if so, the details thereof, location wise, estimated cost and capacity of these plants and names of companies, Indian and foreign, helping in installation and other works of these plants;

(f) the steps taken/proposed to be taken by the Government for timely completion of the said plants; and

(g) whether the Government proposes to additional safety arrangements for Nuclear power plants in view of Fukushima incident and if so, the details thereof?

Answer

MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER`S OFFICE (SHRI V. NARAYANASAMY) :

(a) There are 20 nuclear power reactors with a capacity of 4780 MW at six sites. The details are as under:

State	Location	Units	Capacity (MW)	Year of Commercial Operation	Cost in Rs crore	Completion Companies & Countries involved
Maharashtra	Tsrapur	TAPS-1&2	2X160	1969	92.99	GE, USA
		TAPS-3&4	2X540	2005 / 2006	5667.84	Indigenous
		RAPS 1&2	100 + 200	1973/1981	175.81	AECL, Canada`
Rajasthan	Rawatbhata	RAPS 3&4	2X220	2000	2511	Indigenous
		RAPS 5&6	2X220	2010	2362	
Gujarat	Kakrapar	KAPS 1&2	2X220	1993/1995	1366.68	
Uttar Pradesh	Narora	NAPS 1&2	2X220	1991 /1992	723.62	

Karnataka Kaiga Kaiga 1&2 2X220 2000 2896
Kaiqa 3&4 2X220 2007/2011 2877

Tamil Nadu Kalpakkam MAPS 1&2 2X220 1984/1986 245.87

Provisional, final cost is under certification
RAPS-2 was set up partly in cooperation with AECL, Canada till 1974, when cooperation was abruptly withdrawn. The unit was completed with indigenous effort.

Legend: TAPS (Tarapur Atomic Power Station) RAPS {Rajasthan Atomic Power Station) KAPS (Kakrapar Atomic Power Station) NAPS (Narora Atomic Power Station). MAPS (Madras Atomic Power Station)

In addition, there are seven nuclear power reactors under construction at four sites. The details are as under:

State Location Project Capacity Expected Approved Companies &
(MW) Start of Cost(Rs Countries
Generation Crore) involved

Tamil Nadu Kudankulam, KKNPP 1&2 2X1000 October 2012 13171 ASE. Russian Federation
& June 2013
Kalpakkam, PFBR 500 2015-16 5677 Indigenous

Gujarat Kakrapar, KAPP 3&4 2X700 2015-16 11459

Rajasthan Rawatbhata RAPP 7&3 2X700 2016-17 12320

Cost is under revision to ? 17270 crore

Legend: KKNPP (Kudankulam Nuclear Power Project) PFBR(Prototype Fast Breeder Reactor) KAPP (Kakrapar Atomic Power Project) RAPP (Rajasthan Atomic Power Project)

The indigenous reactors have been designed by Department of Atomic Energy (DAE) / Nuclear Power Corporation of India Limited (NPCIL). Several Indian companies both in the public and private sector have supplied various components/ equipment and executed works in setting up of these units. Some of the major companies (not an exhaustive list) are BHEL, ECIL, MIDHANI, DLW, BPCL, L&T, HCC, WIL, Godrej, MTAR, KBL, KSB, Dodsal and Gammon India.

(b) Yes, Sir.

(c) Many states had offered sites for setting up of nuclear power plants. These include Andhra Pradesh, Bihar, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttarakhand and West Bengal. The sites offered by respective State Governments were evaluated by the Site Selection Committee (SSC) of the Government, in accordance with the criteria laid down in the code of siting by Atomic Energy Regulatory Board (AERB). Those sites which met the criteria and found suitable were recommended by the SSC, and were accorded in-principle approval by the Government in October 2009 and July 2011. The details in this regard are as under:

State Site Capacity (MW)

Andhra Pradesh Kovvada 6X1000

Gujarat Chhaya Mithi Virdi 6X1000

Haryana Gorakhpur 4X700

Karnataka Kaiga (Kaiga 5&6) 2X700

Madhya Pradesh Chutka 2X700
Bhimpur 4X700

Maharashtra Jaitapur 6X1650

Rajasthan Mahi Banswara 4X700

Tamil Nadu Kudankulam (KK3to6) 4X1000

West Bengal Haripur 6X1000

(Nominal Capacity)

In the recent past, Haryana has offered additional new sites for setting up of nuclear power plants, which are being evaluated by the SSC.

(d) Yes, Sir.

(e) The XII Five Year Plan proposals envisage start of work on 19 new nuclear power reactors in the XII Five Year Plan. The details are:

Project Location & State Capacity (MW) Companies Assisting in setting up

Indigenous Reactors

Gorakhpur 1&2 Gorakhpur, Haryana 2x700 Designed by NPCIL, Indian Companies
Chutka, 1&2 Chutka, Madhya Pradesh 2x700

Mahi Banswara, 1&2 Mahi Banswara, Rajasthan 2x700

Kaiga, 5&6 Kaiga, Kamataka 2x700

FBR1&2 Kalpakkam, Tamil Nadu 2x500 BHAVINI, Indian Companies

AHWR Location to be decided 300 BARC, Indian Companies

Reactors with International Cooperation

Kudankulam, 3&4 Kudankulam, Tamil Nadu 2x1000 ASE, Russia

Jaitapur, 1&2 Jaitapur, Maharashtra 2x1650 Areva, France

Kovvada, 1&2 Kovvada, Andhra Pradesh 2x1500 GEH, USA

ChhayaMithiVirdi, 1&2 Chhaya Mithi Virdi, Gujarat 2x1100 WEC, USA

Several Indian Companies participate in the setting up of Indigenous reactors as well as reactors planned to be set up with international cooperation. The cost estimates of these reactors will emerge on finalisation of the project proposals,

(f) Pre-project activities like land acquisition, Environmental Impact Assessment (EIA) for obtaining environmental clearance and other studies for site evaluation, public outreach activities etc. have been taken up at these sites. Multi-tier monitoring mechanisms at NPCIL and Government level,with periodic reviews, are in place to ensure effective monitoring of schedules.

(g) The post Fukushima safety reviews of Indian nuclear power plants by the task forces of NPCIL and a committee of AERB have found that the Indian nuclear power plants have sufficient margins and features in design to withstand extreme natural events like earthquakes and Tsunamis. Recommendations of these reviews have been made to enhance the safety in Indian nuclear power plants to a higher level. The recommendations include augmentation of cooling water inventories and provisions for additional hook up arrangements through external sources, increasing the duration of the passive power sources/battery operated devices for monitoring important parameters for a longer duration, automatic reactor shutdown, sensing seismic activity, inerting (filling up of the containment with nitrogen) of the TAPS-1&2 containment and revision of Emergency Operating Procedures (EOPs) and structured training programs to plant personnel on modified EOPs.