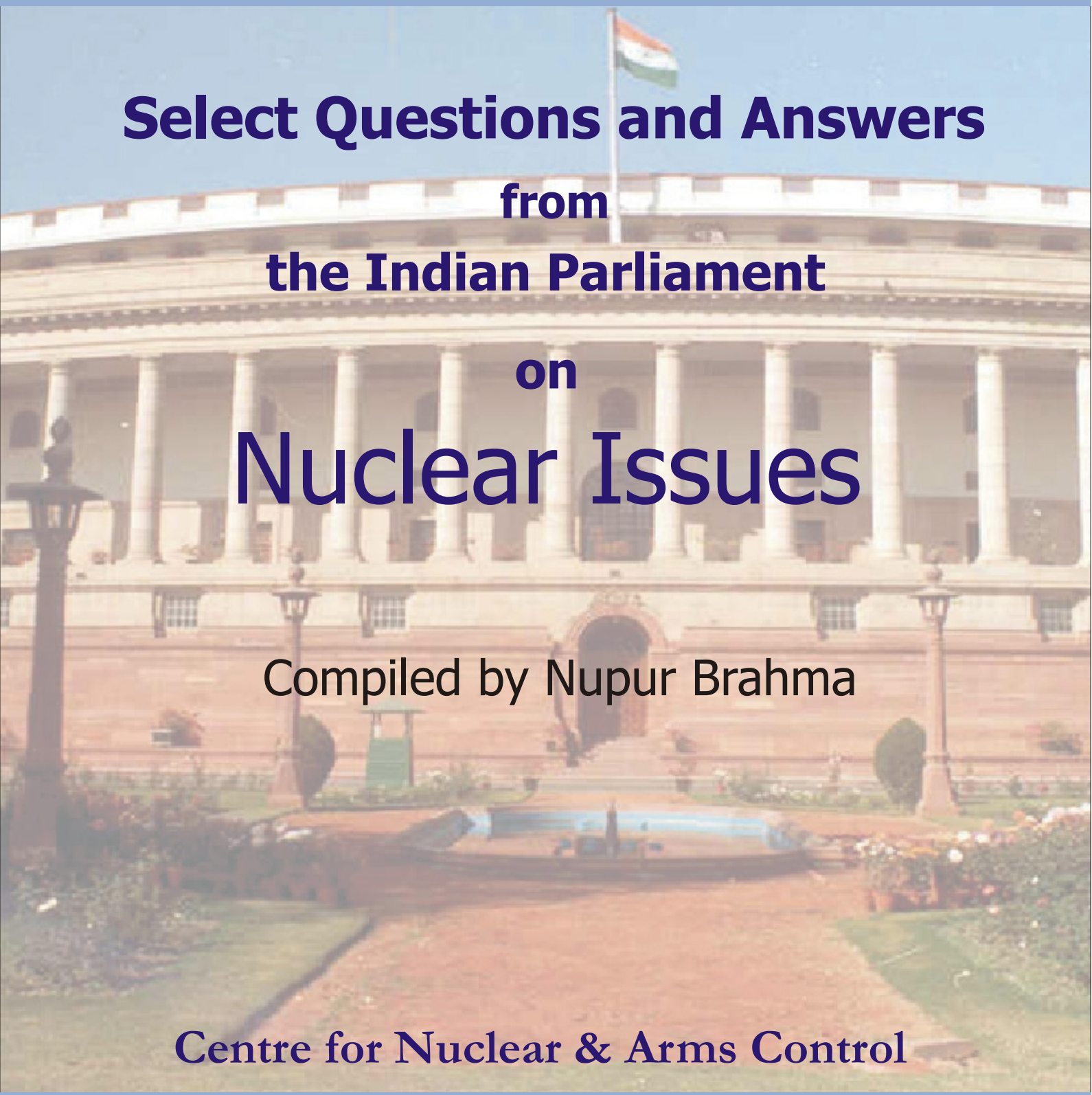
YEAR 2012



Select Questions and Answers from the Indian Parliament on

Nuclear Issues

Compiled by Nupur Brahma

Centre for Nuclear & Arms Control

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GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 587
TO BE ANSWERED ON 17.05.2012

SECURITY OF KUDANKULAM NUCLEAR PLANT

*587. SHRI T.M. SELVAGANAPATHI:
Will the PRIME MINISTER be pleased to state:
(a) whether the pacts for Kudankulam units No. III and IV are almost ready;
(b) if so, the details thereof;
(c) whether Russia has assured security for all the units in Kudankulam; and
(d) if so, the details thereof?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a)to(d) An Inter Governmental Agreement (IGA) was signed on December 5, 2008 between India and Russian Federation to extend the cooperation in peaceful use of nuclear energy, including the construction of additional nuclear power plant units at Kudankulam site. The IGA provides interalia for supply of fuel throughout the operational period of power units of the nuclear power plants at the Kudankulam site. The text of the Protocol for extending Russian State credit for implementation of KKNPP-Units 3&4 has been approved by the Central Government. The proposal for financial sanction of Kudankulam Units-3&4 is under consideration of the Central Government.

(http://www.dae.nic.in/writereaddata/rssq587.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 591
TO BE ANSWERED ON 17.05.2012

MANUFACTURING OF SPECIAL TUBES FOR NUCLEAR PLANTS

*591. SHRI A. ELAVARASAN:
Will the PRIME MINISTER be pleased to state:
(a) whether Nuclear Fuel Complex (NFC), Hyderabad has successfully completed manufacturing of special quality tubes, useful for stream generators in Nuclear Power Plants;
(b) if so, the details thereof;
(c) whether the development reflects successful indigenisation and India's manufacturing capability in this strategic sector; and
(d) if so, the details thereof?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) Yes, Sir.
(b) The Nuclear Fuel Complex (NFC) has successfully manufactured Steam Generator tubing in 9 Cr-1Mo (Mod) for Prototype Fast Breeder Reactors (PFBRs) and Incoloy-800 Steam Generator tubings for the forthcoming 700 MWe Pressurized Heavy Water Reactors (PHWRs).

(c) Yes, Sir.

(d) This is a successful indigenization effort, as these tubes were hitherto imported.

(http://www.dae.nic.in/writereaddata/rssq591.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4496
TO BE ANSWERED ON 17.05.2012

JAITAPUR NUCLEAR POWER PROJECT

4496. SHRI ISHWARLAL SHANKARLAL JAIN:
Will the PRIME MINISTER be pleased to state:
(a) whether Government has moved ahead with the nuclear power project at Jaitapur in Maharashtra;
(b) if so, the details thereof;
(c) whether Government is running or proposing to start nuclear power projects in other States as well besides Maharashtra; and
(d) if so, the place where the first project in phase one is being started?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a)&(b) It is proposed to set up six nuclear power reactors, each of 1650 MW in phases of twin units at Jaitapur in Maharashtra. The reactors are planned to be set up in technical cooperation with AREVA, France. The work on the first phase of two units is planned to be started in the XII Five Year Plan.
(c) In addition to Maharashtra, nuclear power plants are in operation in Gujarat, Karnataka, Rajasthan, Tamil Nadu & Uttar Pradesh and under construction in Gujarat, Rajasthan and Tamil Nadu. The Central Government has accorded 'in principle' approval for sites in Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and West Bengal.
(d) The first new project in the XII Five Year Plan is planned to be started at Kudankulam in Tamil Nadu (KKNPP 3&4).
(http://www.dae.nic.in/writereaddata/rsus4496.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4497
TO BE ANSWERED ON 17.05.2012

ENVIRONMENTAL CONCERNS ON JAITAPUR NUCLEAR PLANT

4497. SHRI HUSAIN DALWAI:
Will the PRIME MINISTER be pleased to state:
(a) whether the environmental concerns expressed against Jaitapur nuclear power project are misconceived;
(b) if so, the details thereof;
(c) whether certain international groups are misguiding the locals regarding the plant; and
(d) if so, the details thereof?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.
(b) Apprehensions about environmental degradation and loss of bio-diversity on setting up of the project have been expressed by groups ideologically opposed to nuclear power. Nuclear power is a clean source of energy as it does not emit greenhouse gases. The nuclear power plants do not adversely impact the environment. The exclusion zones of nuclear power plants have flourishing flora and fauna, including some critically endangered species thriving there. A detailed Environmental Impact Assessment (EIA) study has been carried out and the environmental clearance for the project has been accorded by Ministry of Environment and Forests following the due process.
(c)&(d) There have been reports to the effect in sections of the media.
(http://www.dae.nic.in/writereaddata/rsus4497.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4498
TO BE ANSWERED ON 17.05.2012

ATOMIC ENERGY PLANTS IN RAJASTHAN

4498. SHRI ASHK ALI TAK:
Will the PRIME MINISTER be pleased to state:
(a) the number of atomic power stations proposed to be built in Rajasthan along with their locations;
(b) whether the proposal to increase the capacity of atomic power station at Rawatbhata in Kota is under consideration of Government; and
(c) if so, the details of progress made in this regard so far?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY):
(a)&(b) There are six nuclear power reactors in operation with an aggregate capacity of 1180 MW at Rawatbhata in Rajasthan. In addition, two reactors , Rajasthan Atomic Power Plant Unit 7&8 (RAPP 7&8 – 2 x 700 MW) are under construction. With the proposed completion of these reactors by the year 2017, the capacity in operation at Rawatbhata will reach to 2480 MW. In addition, the Central Government has accorded 'in principle' approval of an additional site in July 2011 at Mahi Banswara in Rajasthan for locating four nuclear power reactors each of 700 MW. Currently, this site is under initial pre-project activities.
(c) RAPP 7&8 project has achieved a cumulative physical progress of 13.8% as of April 2012.
(http://www.dae.nic.in/writereaddata/rsus4498.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4499
TO BE ANSWERED ON 17.05.2012

NUCLEAR STATION IN COUNTRY

4499. SHRI FAGGAN SINGH KULASTE:
Will the PRIME MINISTER be pleased to state:
(a) the number of nuclear stations constructed in the country so far and the number of nuclear stations proposed to be constructed in the country now;
(b) the details thereof, State-wise;
(c) whether Government's approval has been received to start the proposed projects; and
(d) if so, names of States and the places which have been selected?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a)&(b) Twenty nuclear power reactors have been constructed so far in the country and nineteen are in operation. One reactor at Rajasthan Atomic Power Station-1 (100 MW) is under long term shutdown. In addition, there are seven nuclear power reactors under construction. In the XII Five Year Plan, start of work on 19 new nuclear power reactors is proposed. Pre-project activities have also been planned at two green field sites during the XII Five Year Plan. The state-wise details in respect of nuclear power plants in operation, construction and proposed are given below:-

State	Site	Capacity (MW)		
		In operation	**Under construction**	**XII Plan new starts proposed**
Maharashtra	Tarapur	(2X160)+ (2X540)		
	Jaitapur			2X 1650
Rajasthan	Rawatbhata	100+200+(4X220)	2X 700	
	Mahi,Banswara*			2X 700
Tami Nadu	Kalpakkam	2X220	1X500	2X500
	Kudankulam		2X1000	2X1000
Uttar Pradesh	Narora	2X220		
Gujarat	Kakrapar	2X220	2X 700	
	ChhayaMithi Virdi *			2X1100 *
Karnataka	Kaiga	4X220		2X700
Haryana	Gorakhpur *			2X700
Madhya Pradesh	Chutka *			2X 700
	Bhimpur *			Pre-project activities
Andhra Pradesh	Kovvada *			2X 1500 *
West Bengal	Haripur *			Pre-project activities

(*New Sites)

In addition, work on an Advanced Heavy Water Reactor (300 MW) is proposed to be started in the XII Five Year Plan, for which the site is yet to be decided.
(c)&(d) The Central Government has accorded 'in principle' approval of the sites for the projects proposed to be set up in the XII Five Year Plan period. The proposals for financial sanction of the proposed new projects are at various stages of preparation/approval.
(http://www.dae.nic.in/writereaddata/rsus4499.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4500
TO BE ANSWERED ON 17.05.2012

ELECTRICITY GENERATING NUCLEAR PLANTS

4500. SHRI PRAKASH JAVADEKAR:
Will the PRIME MINISTER be pleased to state:
(a) the status of various nuclear power projects generating electricity and others which are being installed;
(b) the cost of production per unit (kwh) of each unit; and
(c) the details thereof, project-wise?

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

(a) There are 20 nuclear power reactors with an installed capacity of 4780 MW in the country. Of these one reactor Rajasthan Atomic Power Station (RAPS1 - 100MW) is under long term shutdown and 19 nuclear power reactors with a capacity of 4680 MW are presently generating electricity. There are 7 reactors with a capacity of 5300 MW under construction. With the progressive completion of these reactors the nuclear power capacity will reach 10,080 MW by the year 2017.
(b) &(c) The notified tariffs (per kWh) of the units currently in operation are as under:-

Stations	**Tariff in Paise/kWh**
Tarapur Atomic Power Station 1&2	94
Tarapur Atomic Power Station 3&4	280
Rajasthan Atomic Power Station 2,3 & 4	274
Rajasthan Atomic Power Station 5&6	341
Madras Atomic Power Station 1&2	200
Narora Atomic Power Station 1&2	239
Kakrapar Atomic Power Station 1&2	228
Kaiga Generating Station	298

(http://www.dae.nic.in/writereaddata/rsus4500.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.4537
TO BE ANSWERED ON 17.05.2012

NUCLEAR WAPON PROGRAMMES BY NEIGHBOURING COUNTRIES

4537. SHRI BHUPENDER YADAV:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether Government is aware about the development and strengthening of nuclear weapon programmes by our neighbouring countries;

(b) if so, the details thereof;

(c) whether such development would be in consonance with peace keeping measures in this region;

(d) if so, the details thereof; and

(e) the steps taken or proposed to be taken to counter such developments?

ANSWER
THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS
(SHRI E. AHAMED)

(a) to (e) Government has seen reports about the nuclear weapons programmes in our neighbouring countries. Government continuously monitors all developments having a bearing on India's national security and takes all necessary steps to safeguard it.

(http://meaindia.nic.in/mystart.php?id=100519444)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.6585
TO BE ANSWERED ON 16.05.2012

RESEARCH BY BARC IN AGRICULTURE SECTOR

6585. SHRI RAMSINH RATHWA:
Will the PRIME MINISTER be pleased to state:
(a) whether the Bhabha Atomic Research Centre (BARC) has received any representation to work in Gujarat by using atomic energy in agriculture seed and agriculture sector;
(b) if so, the details thereof and the time by which the work is likely to be started and completed; and
(c) the details of the research work being done in this direction in Gujarat?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a)to(c) Yes, Sir. A representation from Hon'ble Member of Parliament, Shri Parshottam Rupala, was received in this regard and a reply has already been furnished to the Hon'ble MP on 18.2.2011.
BARC has active collaboration with Directorate of Groundnut Research (DRG), Indian Council of Agricultural Research (ICAR), Junagadh and Junagadh Agricultural University. Five groundnut varieties namely TAG-24, somnath, TG-26, TG-37a and TPG-41 have been released for cultivation in Gujarat through such collaboration. Besides, recently released varieties like TG-38, TLG-45 and TG-51 are also popular among Gujarat farmers.
New groundnut breeding lines of Bhabha Atomic Research Centre (BARC) having resistance to disease are being evaluated by Agricultural Research Station, Talod, Gujarat. The Board of Research in Nuclear Sciences (BRNS) under DAE is funding new research projects for induced mutagenesis in groundnut to develop stem rot resistance and aflatoxin resistance in which BARC is actively collaborating with agriculture universities at Junagadh, Anand and Talod.
BARC is also supplying breeder seed of Trombay groundnut varieties every year to agriculture universities, Krishi Vigyan Kendras, Gujarat State Seed Corporation, National Seed Corporation, private companies and some farmers. They in turn carry out further seed multiplication and are distributing seeds of BARC varieties to Gujarat farmers. Feedback from farmers of Kutch-Bhuj, Jamnagar, Junagadh, Amreli, Rajkot, Surendranagar, Surat, Bama, Bhavnagar, Vadodara and near Gandhinagar is highly encouraging. Farmers are reaping yields upto 5000 kg/ha using these varieties as compared to the state average of 2000 kg/ha.

(http://www.dae.nic.in/writereaddata/lsus6585.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.6550
TO BE ANSWERED ON 16.05.2012

SUPPLY OF URANIUM

6550. PROF. Sk. SAIDUL HAQUE:
SHRI E.G. SUGAVANAM:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government has placed order to various countries for supply of Uranium for reactors during the last three years and the current year;
(b) if so, the details thereof;
(c) the details of total amount paid or payable to other countries for the purpose during the above period;
(d) the quantity of uranium received by the Government during the above period, year-wise, quantity-wise and company-wise;
(e) whether the shortage of Uranium leads to declining profit of Nuclear Power Corporation of India Limited (NPCIL); and
(f) if so, the details thereof for the last three years?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.
(b) The details of the orders placed to various countries for supply of Uranium are furnished below :

S.No.	Firm/Country	Year of Order
1.	M/s. AREVA, France	2008
2.	M/s. JSC TVEL Corporation, Russia	2009
3.	M/s. NAC Kazatomprom, Kazakhstan	2009

(c) The details of the total amount paid so far to the countries towards import of Uranium are furnished below:

in crore

Country	Year				
	2008-09	2009-10	2010-11	2011-12	2012-13
M/s. AREVA, France	120.54*	145.54*	0.00	0.00	0.00
M/s. JSC TVEL, Corporation, Russia	57.92**	273.78**	312.50**	425.55**	98.98**
	127.77@	352.70@	0.00	0.00	0.00
M/s. NAC Kazatomprom, Kazakhstan	0.00	0.00	379.84*	328.28*	0.00

* Payment towards import of Uranium in the form of Natural Uranium Ore Concentrate.
** Payment towards import of Uranium in the form of Natural Uranium Di-oxide Pellets.
@ Payment towards import of Uranium in the form of Enriched Uranium Di-oxide Pellets.

(d) The details of quantity of uranium imported so far from the above companies/ countries during the last four years are given below :

(in Metric Tonnes)

Firm/Country	Total Quantity ordered	Quantity received so far				
		2008-09	2009-10	2010-11	2011-12	2012-13
M/s. AREVA, France	300*	60.49*	239.38*	Nil	Nil	Nil
M/s.TVEL Corporation, Russia	2000**	Nil	150.33	179.79	296.08	59.43
	58@	Nil	58.29	Nil	Nil	Nil
M/s. NAC Kazatomprom, Kazakhstan	2100*	Nil	Nil	600	350	Nil

* In the form of Natural Uranium Ore Concentrate..
** In the form of Natural Uranium Di-oxide Pellets.
@ In the form of Enriched Uranium Di-oxide Pellets

(e) Yes Sir. The shortage of the Uranium had resulted in lowering electricity generation and profits thereof.
f) The details of capacity utilization and profit of NPCIL during the last three years is as under:

(Year	2009-10	2010-11	2011-12
Capacity Utilization(%)	61	71	79
Profit after Tax (in Crores)	416	1376	1945*

** provisional*

(http://www.dae.nic.in/writereaddata/lsus6550.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.6538
TO BE ANSWERED ON 16.05.2012

NUCLEAR PROGRAMME

6538. DR. SANJAY JAISWAL:
Will the PRIME MINISTER be pleased to state:
(a) whether the country's nuclear programme envisages a three-state development;
(b) if so, the details thereof;
(c) whether the country is still languishing at the first stage itself since when the programme was originally mooted in 1962, as the State-II Fast Breeder technology is still being experimented;
(d) if so, the reasons therefor;
(e) whether such failure is partly due to lack of mobilization by the Government of a high talent pool in the sector; and
(f) if so, the steps being taken by the Government to attract the best technical talent for the civil nuclear programme of the country?

ANSWER

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

(a)&(b) Yes, sir. The Indian nuclear power programme, right from the inception, has been envisaged as a three stage programme, in order to provide long term energy security to the country, based on indigenous nuclear fuel resources.

The first stage makes use of available Uranium resources most optimally in Pressurised Heavy Water Reactors to produce energy as well as Plutonium.

In the second stage, this Plutonium is used as fuel in Fast Breeder Reactors to generate power and also to produce additional Plutonium from Uranium. This helps in multiplying the fissile resources as well as the installed nuclear electricity generation capacity. When the required capacity addition has been achieved, at an optimal time, Thorium needs to be introduced in these Fast Breeder Reactors to produce Uranium-233.

In the third stage of the Indian nuclear power programme, Thorium and Uranum-233 based reactor systems will be deployed on a large scale, providing several centuries of energy independence to the country.

(c)&(d) It is not true that the country is still languishing at the first stage itself. In fact, the second stage programme has made significant progress, and steps for the third stage have also been initiated.

In the first stage of programme, India has attained commercial maturity in the design and development of Pressurised Heavy Water Reactors.
The second stage envisages setting up of Fast Breeder Reactors coupled with reprocessing plants and plutonium based fabrication plants. Indira Gandhi Centre for Atomic Research

(IGCAR) is engaged in the design, construction and commissioning of liquid sodium cooled fast breeder reactors and associated technologies upto closing the fuel cycle. An experimental Fast Breeder Test Reactor is in operation at IGCAR since October 1985, with excellent performance of the indigenously developed Uranium-Plutonium Carbide fuel and the sodium systems. The construction and operation experience of FBTR has been utilized in the design of 500 MWe Prototype Fast Breeder Reactor (PFBR). The construction activities of PFBR are in advanced stage of completion by a separate organisation (BHAVINI) and activities towards commissioning the reactor by next year are in progress.

As regards the fuel cycle for fast reactors in the second stage, the process for reprocessing of short cooled Plutonium rich mixed carbide fuel of FBTR with high burn-up has been established for the first time in the world after reprocessing of FBTR mixed carbide fuel pins with 155 GWd/t burn-up.

The third stage of the programme will be launched after sufficient base capacity of the second stage FBRs are put in operation. All efforts towards technology development and demonstration are being made now, so that a mature technology is available in time.

To accelerate thorium utilisation, BARC has designed an Advanced Heavy Water Reactor (AHWR). The 300 MWe Advanced Heavy Water Reactor is specially meant for large scale commercial utilization of thorium, generating most of its power from insitu burnup of thorium. The design of all nuclear systems of the reactor has been completed and associated confirmatory R&D is in a very advanced stage. Detailed engineering is being carried out in Consultancy mode.

(e) The Nuclear Power Programme suffered a small setback due to the embargo following the nuclear tests in 1974. This resulted in some slowdown in both Pressurised Heavy Water Reactor (PHWR) and Fast reactor programmes. However, the department could overcome the hurdles and launched into the phase of complete indigenization. The self-sufficiency achieved by the country was possible due to the high talent pool available in the department. A separate organization (BHAVINI) has been formed by the Government for construction and operation of commercial fast reactors, and BHAVINI is already executing the project with adequate pool of human resources.

(f) Availability of talent pool in the department depends on the ability to attract talented scientists and engineers. Department of Atomic Energy is taking many steps to do exactly that.

Human Resources Development Division, BARC has the mandate of implementing two mainstreams of recruitment (OCES) and (DGFS)

OCES is a One-Year Orientation Course for Engineering Graduates & Science Post-Graduates at BARC Training Schools at BARC, Mumbai; RRCAT, Indore; NFC, Hyderabad; IGCAR, Kalpakkam& AMD, Hyderabad

DGFS (DAE Graduate Fellowship Scheme) has been devised to further strengthen research-education linkage in areas of interest to DAE programmes. The scheme provides excellent career opportunity to students qualifying for admission to the MTech Course at different IITs viz. Bombay, Kanpur, Delhi, Kharagpur, Roorkee, Madras, NIT Rourkela, IT-BHU Varanasi and Institute of Chemical Technology Mumbai.

BARC also offers Dr. K.S. Krishnan Research Associateship (KSKRA). Research Associates selected under the prestigious KSKRA programme are given an opportunity to work on R&D programmes of national importance relevant to the DAE mandate.

Anytime during the 2nd year of associateship, subject to satisfactory performance, the KSKRAs are absorbed in service in one of the DAE R&D units.

The Department of Atomic Energy (DAE) supports extramural research and development activities in nuclear and allied sciences, engineering and technology through its nodal funding agency - the Board of Research in Nuclear Sciences (BRNS). BRNS continuously thrives to encourage, enthuse and support scientists and engineers in pursuing excellence in R & D programmes of interest and relevance to DAE. The main activities of BRNS include:
(a) Identify and fund R & D programmes and projects.

(b) Award fellowships to pursue doctoral programmes.
(c) Award research grants to young scientists.

(http://www.dae.nic.in/writereaddata/lsus6538.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.6585
TO BE ANSWERED ON 16.05.2012

RESEARCH BY BARC IN AGRICULTURE SECTOR

6585. SHRI RAMSINH RATHWA:
Will the PRIME MINISTER be pleased to state:
(a) whether the Bhabha Atomic Research Centre (BARC) has received any representation to work in Gujarat by using atomic energy in agriculture seed and agriculture sector;
(b) if so, the details thereof and the time by which the work is likely to be started and completed; and
(c) the details of the research work being done in this direction in Gujarat?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a)to(c) Yes, Sir. A representation from Hon'ble Member of Parliament, Shri Parshottam Rupala, was received in this regard and a reply has already been furnished to the Hon'ble MP on 18.2.2011.
BARC has active collaboration with Directorate of Groundnut Research (DRG), Indian Council of Agricultural Research (ICAR), Junagadh and Junagadh Agricultural University. Five groundnut varieties namely TAG-24, somnath, TG-26, TG-37a and TPG-41 have been released for cultivation in Gujarat through such collaboration. Besides, recently released varieties like TG-38, TLG-45 and TG-51 are also popular among Gujarat farmers.
New groundnut breeding lines of Bhabha Atomic Research Centre (BARC) having resistance to disease are being evaluated by Agricultural Research Station, Talod, Gujarat. The Board of Research in Nuclear Sciences (BRNS) under DAE is funding new research projects for induced mutagenesis in groundnut to develop stem rot resistance and aflatoxin resistance in which BARC is actively collaborating with agriculture universities at Junagadh, Anand and Talod.
BARC is also supplying breeder seed of Trombay groundnut varieties every year to agriculture universities, Krishi Vigyan Kendras, Gujarat State Seed Corporation, National Seed Corporation, private companies and some farmers. They in turn carry out further seed multiplication and are distributing seeds of BARC varieties to Gujarat farmers. Feedback from farmers of Kutch-Bhuj, Jamnagar, Junagadh, Amreli, Rajkot, Surendranagar, Surat, Bama, Bhavnagar, Vadodara and near Gandhinagar is highly encouraging. Farmers are reaping yields upto 5000 kg/ha using these varieties as compared to the state average of 2000 kg/ha.

(http://www.dae.nic.in/writereaddata/lsus6585.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 484
TO BE ANSWERED ON 10.05.2012

NUCLEAR REACTORS AT JAITAPUR

*484. SHRI P. RAJEEVE:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the nuclear reactors planned to be set up at Jaitapur are based on Evolutionary Pressurised Water Reactors (EPRs) technology provided by French firm Areva; and
(b) the estimated cost of per Mega Watt of electricity produced using Areva reactors vis-a-vis the cost of electricity using Indian Pressurised Heavy Water Reactors?

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

(a) Yes, Sir.

(b) The detailed project proposals including costs and business models envisaging the share of work between the Indian side and French side to arrive at an optimal cost are under finalization. The business models are planned to be devised so as to maximize the indigenous content, scope of work and responsibilities to reduce the costs. The tariff of electricity from the EPRs planned at Jaitapur is expected to be comparable to those of contemporary Indian Pressurised Heavy Water Reactors.

(http://www.dae.nic.in/writereaddata/rssq484.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 485
TO BE ANSWERED ON 10.05.2012

SUPPLY OF NUCLEAR EQUIPMENT BY RUSSIA

*485. SHRI D. BANDYOPADHYAY:
Will the PRIME MINISTER be pleased to state:
(a) whether the Russian supplier of the reactor at Kudankulam nuclear power plant has given their latest VVER model;
(b) if so, whether Government is aware that a similar model of reactors supplied to Bulgaria's Kozluday nuclear plant developed malfunction of circulation motor pump in unit no. 4 resulting in displacement of three control rods creating a disaster like situation; and
(c) whether Government is satisfied with the measures so far taken to prevent any disaster arising out of any mechanical failure?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (c) A statement is laid on the Table of the House.

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STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO.485 FOR ANSWER ON 10.05.2012 BY SHRI D. BANDYOPADHYAY REGARDING SUPPLY OF NUCLEAR EQUIPMENT BY RUSSIA.

(a) Yes, Sir. The reactors at Kudankulam have safety features at par with the latest VVER model, VVER 1200 (AES 2006) evolved in the year 2006 after the start of construction of Kudankulam project in 2002.

(b)&(c) The models of VVER reactors at Kozloduy nuclear power plant in Bulgaria are different from those set up at Kudankulam. The incidence of malfunctioning of control rod occurred in Unit-5, which has a 1000 MWe reactor of VVER-320 model operational since 1987. The reactor was promptly shutdown by the inbuilt redundant safety systems that are employed in all the nuclear power reactors. The incidence has been rated at level 2 (malfunctioning of system/ equipment with no radiological consequences) on International Nuclear Event Scale (INES).

The VVER-412 model nuclear power reactors set up at Kudankulam are of Generation III + design, with further advanced safety features. These reactors already incorporate the lessons learned from all past safety significant incidences.

(http://www.dae.nic.in/writereaddata/rssq485.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.3721
TO BE ANSWERED ON 10.05.2012

DETAILS OF THORIUM RESERVES

3721. SHRI OM PRAKASH MATHUR:
Will the PRIME MINISTER be pleased to state:
(a) the details of the thorium reserves in the country, State-wise;
(b) the steps being taken by Government for extraction of thorium from these sites; and
(c) whether Government proposes to produce thorium based atomic energy?

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

a) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit of the Department of Atomic Energy (DAE) has established the presence of 10.70 million tonnes of Monazite in the country, which contains 9,63,000 tonnes of Thorium Oxide (ThO2). Indian Monazite contains about 9-10% of ThO2 and about 8,46,477 tonnes of Thorium Metal can be obtained from 9,63,000 tonnes of ThO2 which will be used for future programmes of DAE. The state-wise thorium reserves in the country are as given below:

(STATE	MONAZITE (Million Tonnes)
KERALA*	1.51
TAMIL NADU	2.16
ANDHRA PRADESH	3.74
ODISHA	1.85
WEST BENGAL	1.22
BIHAR	0.22
TOTAL	10.70

(http://www.dae.nic.in/writereaddata/rsus3721.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.3722
TO BE ANSWERED ON 10.05.2012

SHORTAGE OF FUEL FOR NUCLEAR POWER PLANTS

3722. SHRI N. BALAGANGA:
Will the PRIME MINISTER be pleased to state:
(a) whether there has been any shortage of fuel for nuclear power plants that is affecting the atomic power programme in the country;
(b) if so, the details thereof;
(c) whether there has been any import of uranium during the last two years;
(d) if so, the details thereof, year-wise and country-wise;
(e) whether Government proposes to make our country self-reliant with respect to atomic fuel; and
(f) if so, the details thereof?

ANSWER

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

(a)&(b) Out of 20 nuclear reactors with an installed capacity of 4780 MW, presently one reactor (Rajasthan Atomic Power Station-1 of capacity 100 MW) is under extended shut down. Remaining 19 reactors are currently in operation. Ten reactors with a capacity of 2840 MW comprising Kaiga Generation Station 1 to 4 (4x220 MW), Narora Atomic Power Station 1&2 (2x220 MW), Madras Atomic Power Station 1&2 (2x220MW) and Tarapur Atomic Power Station 3&4 (2x 540 MW) are fuelled by indigenous uranium, which is not available in the required quantity. These are accordingly being operated at lower power levels matching the fuel supply. The remaining 9 reactors which are under International Atomic energy Agency (IAEA) safeguards use imported fuel and are operating at rated capacity.

(c) Yes, Sir.

(d) In the last two years, the uranium has been imported from Russian Federation and Kazakhstan. The details are given below:

Firm / Country	Year (Qty. in MT)	
	2010-11	2011-12
Russian Federation	210	296
Kazakhstan.	600	350

(e) Yes, Sir.

(f) The strategy is to augment the supply of domestic uranium by opening of new mines and processing facilities and augmenting the capacity of existing mines and mills.

(http://www.dae.nic.in/writereaddata/rsus3722.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.3723
TO BE ANSWERED ON 10.05.2012

SHORTAGE OF URANIUM

3723. SHRI RAGHUNANDAN SHARMA:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that our nuclear plants are presently facing a shortage of Uranium due to its unavailability;
(b) if so, whether it is also a fact that huge unused reserves of Uranium amounting to approximately over one lakh ton are available in the States like Jharkhand, Meghalaya, Andhra Pradesh, Rajasthan and Tamil Nadu; and
(c) the reasons for not utilising these reserves as a result of which we are bound to depend on foreign resources?

ANSWER

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

(a) Out of 20 nuclear reactors with an installed capacity of 4780 MW, presently one reactor (Rajasthan Atomic Power Station-1 of capacity 100 MW) is under extended shut down. Remaining 19 reactors are currently in operation. Ten reactors with a capacity of 2840 MW comprising Kaiga Generation Station 1 to 4 (4x220 MW), Narora Atomic Power Station 1&2 (2x220 MW), Madras Atomic Power Station 1&2 (2x220MW) and Tarapur Atomic Power Station 3&4 (2x 540 MW) are fuelled by indigenous uranium, which is not available in the required quantity. These are accordingly being operated at lower power levels matching the fuel supply. The remaining 9 reactors which are under International Atomic energy Agency (IAEA) safeguards use imported fuel and are operating at rated capacity.

(b) Atomic Minerals Directorate for Exploration and Research (AMD), a constituent unit of Department of Atomic Energy is engaged in survey and exploration of uranium resources required for the successful implementation of atomic energy programme of the country. So far AMD has established 1,75,010 tonnes of uranium resources in different parts of the country. The details are as given below:

S.No.	State	Uranium resources established
1.	Andhra Pradesh	86876
2.	Jharkhand	50978
3.	Meghalaya	19738
4.	Rajasthan	6726
5.	Karnataka	4682
6.	Chhattisgarh	3986
7.	Uttar Pradesh	785
8.	Himachal Pradesh	784
9.	Maharashtra	355
10.	Uttarakhand	100
Total		1,75,010

(c) Mining technology and economics are the important criteria which decide the exploitation status of a deposit. Based on these criteria, many of the small deposits are not amenable to mining at present. In addition, constraints due to logistics, present status of technology, socio-economic considerations, environmental aspects, scarcity of water-resources etc. have slackened the process of initiation of mining of some of the deposits at Meghalaya, Rajasthan, Karnataka and Andhra Pradesh.

(http://www.dae.nic.in/writereaddata/rsus3723.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.3724
TO BE ANSWERED ON 10.05.2012

GLOBAL CENTRE FOR NUCLEAR ENERGY PARTNERSHIP

3724. SHRI NAND KUMAR SAI:
Will the PRIME MINISTER be pleased to state:
(a) whether Government proposes to set up a global centre for nuclear energy partnership in the country;
(b) if so, the details thereof along with the details of the status thereof;
(c) whether Government also proposes to set up energy parks in the country;
(d) if so, the details thereof and the status of each of such parks as on date;
(e) the details of the targets fixed by Government for generation of nuclear energy during the Eleventh Five Year Plan period and the extent to which the same has been achieved so far; and
(f) the steps taken by Government to expedite the completion of work at global centre and energy parks?

ANSWER

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

(a)&(b) Yes, Sir. In September 2010, Central Government approved the establishment of Global Centre for Nuclear Energy Partnership (GCNEP) at village Jasaur Kheri & Kheri Jasaur, Near Bahadurgarh, District Jhajjar, Haryana. Two plots of land measuring 130 acres for the Institute at village Kheri Jasaur and 105 acres for the Township at village Jasaur Kheri have been acquired at a cost of 78 Crore. The proposed centre (GCNEP) will provide facilities related to advanced education, research and training in the field of proliferation resistant nuclear system designing, nuclear security, radiological safety, nuclear material characterisation and applications of radiation technologies and radioisotopes.

(c)&(d) Yes, Sir. The Central Government has accorded in principle approval of coastal sites at Chhaya Mithi Virdi in Gujarat, Kovvada in Andhra Pradesh, Haripur in West Bengal, Jaitapur in Maharashtra and Kudankulam in Tamilnadu for setting up of nuclear power parks of 6000 to 10000 MW comprising large capacity Light Water Reactors (LWRs) based on foreign technical co-operation. Currently pre-project activities are in progress at these sites. The work at these sites is planned to be taken up in phases at each site starting with twin reactors in first phase followed by launch of next pair in second phase and third phase respectively, with a gap of about four years between the two phases.

The details of the sites for nuclear power parks and their current status are as follows:

Site	State	Capacity (MW)	Present Status

Kudankulam	Tamilnadu	4 X 1000 #	Land available, Environmental Clearance from MoEF obtained, proposal for financial sanction of KK 3&4 under consideration of Government.
Jaitapur	Maharashtra	6 X 1650	Land title transferred to NPCIL, Environmental and CRZ clearances from MoEF obtained, discussions with M/s. Areva on project proposal for JNPP 1&2 in progress.
Kovvada	Andhra Pradesh	6 X 1000 *	Land acquisition proceedings in progress, ToRs for EIA studies approved by MoEF, EIA studies in progress.
Chhaya Mithi Virdi	Gujarat	6 X 1000 *	
Haripur	West Bengal	6 X 1000	Pre-project activities are initiated.

The first pair KK 1&2 (2X1000 MW) at advanced stage of commissioning
*Nominal Capacity

(e) The nuclear power generation target for the XI Five Year Plan was 163,395 million units which was revised to 124,608 million units at Mid Term Appraisal stage. The actual generation during the XI Plan was 109,642 million units.

(f) To expedite the completion of work of GCNEP, Government has sanctioned 147 Crore in September 2010. Land acquisition for the project has been completed and approval for award of contract for Architectural Consultancy to prepare the Master Plan has been accorded.

As regards energy parks, the Central Government has accorded in principle approval for setting up of nuclear energy parks based on large capacity Light Water Reactors (LWRs) at Kudankulam, Haripur, Jaitapur, Kovvada and Chhaya Mithi Virdi. Pre-project activities are in progress at these sites. The work at these sites is planned to be taken up in phases at each site starting with twin reactors in first phase followed by launch of next pair in second phase and third phase respectively, with a gap of about four years between the two phases. In the XII Five Year Plan, work is planned to be started on construction of one set of twin units at Kudankulam (KK 3&4), Jaitapur (JNPP 1&2), Kovvada (Kovvada 1&2) and Chhaya Mithi Virdi (Mithi Virdi 1&2). Pre-project activities are planned at Haripur.

(http://www.dae.nic.in/writereaddata/rsus3724.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.3725
TO BE ANSWERED ON 10.05.2012

ENVIRONMENTAL CLEARANCE FOR NUCLEAR PLANTS

3725. SHRI NAND KUMAR SAI:
Will the PRIME MINISTER be pleased to state:
(a) whether Nuclear Power Corporation of India Ltd. (NPCIL) had submitted any proposal for obtaining environmental clearance of Atomic Power Projects in the country;
(b) if so, the details in this regard;
(c) the details of the status of such projects, project-wise; and
(d) the time by which environmental clearance of each of such projects would be finalised?

ANSWER

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

(a)to(c) Nuclear Power Corporation of India Limited (NPCIL) has taken up the process of obtaining environmental clearance for its proposed projects at Gorakhpur, Haryana; Chutka, Madhya Pradesh; Kovvada, Andhra Pradesh and Chhaya Mithivirdi in Gujarat. The Terms of Reference (ToR) for Environmental Impact Assessment (EIA) studies have been approved by the Ministry of Environment and Forests (MoEF). The EIA studies in accordance with the approved ToR by specialized agencies are in progress.

(d) The Environmental clearance process involves approval of ToR, EIA studies and submission of EIA report, public hearing, submission of final EIA report and final review by the Expert Appraisal Committee (EAC) of the MoEF before grant of environment clearance. The process ordinarily takes about two years.

(http://www.dae.nic.in/writereaddata/rsus3725.pdf)

Ministry of External Affairs
LOK SABHA
UNSTARRED QUESTION NO.5437
TO BE ANSWERED ON 09.05.2012

IRAN'S NUCLEAR ISSUE

5437. SHRI M.K. RAGHAVAN:
SHRI CHANDRAKANT KHAIRE:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether the increased differences on the nuclear issue of Iran will affect India adversely;

(b) if so, the details thereof;

(c) whether any invitation has been received by India to mediate in the existing dispute between Iran and the Western countries; and

(d) if so, the details being worked out for a smooth settlement?

ANSWER

THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS
(SHRIMATI PRENEET KAUR)

(a) & (b) The differences on the nuclear issue of Iran has led to UN sanctions on Iran. In addition, the US and EU have also imposed unilateral sanctions. Government is studying the impact on India of sanctions against Iran. We continue to maintain that we are bound by UN sanctions and unilateral sanctions imposed by countries or group of countries should not impact on our legitimate trade relations with Iran. Indian companies have faced difficulties in making payments for crude oil and other imports from Iran through international banking channels. India is in discussions with Iran to ensure settlement of payments and uninterrupted supply of crude oil.

(c) & (d) India has not received any invitation to mediate in the existing dispute between Iran and the Western countries.
(http://meaindia.nic.in/mystart.php?id=100519373**)**

Ministry of External Affairs
LOK SABHA
UNSTARRED QUESTION NO.5318
TO BE ANSWERED ON 09.05.2012

NUCLEAR DOCTRING

5318. SHRI NAMA NAGESWARA RAO:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether it is a fact that India has a nuclear doctrine of 'no first use';

(b) if so, the details thereof;

(c) whether it is a fact that Pakistan does not have this doctrine; and

(d) if so, the initiatives taken/being taken by the Prime Minister to convince Pakistan to alter their nuclear policy?

ANSWER

THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS (SHRIMATI PRENEET KAUR)

(A) TO (D) INDIA'S NUCLEAR DOCTRINE INCLUDES A POSTURE OF 'NO FIRST USE' OF NUCLEAR WEAPONS. THE GOVERNMENT OF PAKISTAN HAS NOT ISSUED A COMPREHENSIVE NUCLEAR DOCTRINE.

(http://meaindia.nic.in/mystart.php?id=100519357)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 474
TO BE ANSWERED ON 09.05.2012

JAITAPUR NUCLEAR PLANT

*474. SHRI SAMEER BHUJBAL:
Will the PRIME MINISTER be pleased to state:
(a) the details of rehabilitation and compensation packages worked out and compensation paid to the people affected by the proposed Jaitapur Nuclear Power plant in Ratnagiri district of Maharashtra;
(b) whether any request has been received for enhancement of compensation package; and
(c) if so, the details thereof and the follow up action taken by the Government thereon?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (c) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO.474 FOR ANSWER ON 09.05.2012 BY SHRI SAMEER BHUJBAL REGARDING JAITAPUR NUCLEAR PLANT.

(a) An agreement has been signed between Maharashtra State Government and Nuclear Power Corporation of India Limited (NPCIL) on Rehabilitation Package of Project Affected Persons (PAPs) of Jaitapur Nuclear power project on 16.10.2010. The Rehabilitation package for the PAPs includes, apart from compensation, rehabilitation grant, minimum lifetime pension for vulnerable persons, deserted women, shelterless or destitute persons, providing for civic amenities & facilities and maintenance, provision of employment to one person from each Project Affected Family or a lump sum one time compensation in lieu of employment, training of locals to make them employable, provision of priority in contracts, scholarships to wards of PAPs, additional grant to Scheduled tribe PAPs etc. The rates of compensation for land range from

- ` 53,000 to ` 1,06,000 per Ha for Pot Kharaba (Barren) land,
- ` 1,03,000 to `4,23,000 per Ha for varkast (Grazing) land and
- ` 1,81,000 to ` 6,33,0000 per Ha for Kharip (Agricultural) land.

NPCIL has deposited ` 14.77 crore with the Special land acquisition Officer, Ratnagiri towards land compensation.

(b) Yes, Sir.
(c) A committee chaired by the District Collector was constituted by the Maharashtra Government to arrive at additional compensation for the land acquired. The committee has submitted its report to the State Government. The additional compensation will be paid by NPCIL based on final decision of Maharashtra State Government in this regard.
(http://www.dae.nic.in/writereaddata/lssq474.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 479
TO BE ANSWERED ON 09.05.2012

SECURITY OF NUCLEAR MATERIALS

*479. SHRI JOSE K. MANI:
Will the PRIME MINISTER be pleased to state:
(a) whether a US based organisation has placed the country at rank 28 among the 32 countries in the world with respect to the security of nuclear materials;
(b) if so, the details thereof and the reasons for the low ranking of the country;
(c) the major India-specific issues raised by the organisation in its study;
(d) whether the Government has studied the issues and addressed the concerns in this regard; and
(e) if so, the details thereof and the steps taken/being taken by the Government in this regard?

ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (e) A statement is laid on the Table of the House.

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STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO.479 FOR ANSWER ON 09.05.2012 BY SHRI JOSE K. MANI REGARDING SECURITY OF NUCLEAR MATERIALS

(a)to(c) The Nuclear Threat Initiative (NTI), a US-based non-governmental organisation, released a report titled 'NTI Nuclear Materials Security Index: Building a Framework for Assurance, Accountability and Action', in January, 2012 showing a baseline assessment of nuclear security conditions in 176 countries. India was ranked 28th out of 32 countries assessed to have weapons-usable nuclear materials by NTI. Briefly, the NTI report stated in regard to India that providing greater transparency into nuclear materials security measures, establishing true independence for its nuclear regulator, and improving regulations about the physical security of materials in transit were all areas for urgent action, adding that as one of two states known to be still producing materials for nuclear-weapons purposes had an additional negative impact on India's score.

(d) Government does not share the conclusions of the NTI report as it is based on a faulty methodology, especially on the issues relating to India. The report uses somewhat unreliable information and tends to equate as a general principle security with transparency.

(e) All nuclear material in India is subject to strict oversight and controls. India is fully conscious of global concerns on nuclear terrorism and clandestine proliferation. At the Nuclear Security Summit in Seoul held in March 2012, it has been announced that India will contribute 1 million US dollars to the IAEA's Nuclear Security Fund for the year

2012-13. India is a party to the main international legal instruments on nuclear security - the Convention on Physical Protection and its 2005 amendment, as well as the International Convention for the Suppression of Acts of Nuclear Terrorism. India supports the extension of UN Security Council Resolution 1540 and the work of its Committee. India has contributed actively to the Nuclear Security Summit process, and participated in IAEA's Global Initiative to Combat Nuclear Terrorism. India has an unblemished record in the field of nuclear security, including in the implementation of IAEA safeguards applicable to our civilian nuclear facilities. India has established a law based export control regime and the Government is determined to further strengthen export control systems to keep them on par with the highest international standards.

(http://www.dae.nic.in/writereaddata/lssq479.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 5294
TO BE ANSWERED ON 09.05.2012

ATOMIC POWER TARIFF RATES

5294. SHRI SAJJAN VERMA:
SHRI RAVINDRA KUMAR PANDEY:
Will the PRIME MINISTER be pleased to state:
(a) whether with the use of atomic energy, electricity tariff rates are likely to come down in the country;
(b) if so, the details thereof;
(c) whether the Government has made any assessment in this regard; and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) The tariff of electricity from nuclear power plants are already competitive with an average tariff of ` 2.42/kWh over the last five years and individual station tariffs range from 94 paise/kWh in the oldest nuclear power reactors, to ` 3.40/kWh in the latest commissioned nuclear power plant. The tariffs of central power stations in March 2011 ranged from ` 1.06 to ` 4.18/kWh for coal powered station, ` 3.49 to `4.09/kWh in case of liquefied natural gas (LNG) stations, ` 6.15 to ` 9.38/kWh in case of diesel/naphtha fuelled stations. The levelised tariffs of renewables in 2011-12 were ` 3.55 to ` 5.33/kWh in case of wind and ` 15.39/kWh in case of solar Photo Voltaic (PV) stations.

(c) No reliable projections are available in this regard.

(d) Does not arise.

(http://www.dae.nic.in/writereaddata/lsus5294.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.5359
TO BE ANSWERED ON 09.05.2012

NUCLEAR FUEL COMPLEX

5359. SHRI S. SEMMALAI:
SHRI M. ANANDAN:
SHRI P. KUMAR:

Will the PRIME MINISTER be pleased to state:

(a) the details of the Nuclear Fuel Complex (NFC) in Hyderabad including its capacity to produce fuel bundles and other components for the reactors operating in the country;

(b) whether the organization has successfully completed manufacture of special quality tubes useful for stream generators in Nuclear Power Plants and if so, the details thereof;

(c) whether the development reflects successful indigenisation and India's manufacturing capability in this strategic sector and if so, the details thereof; and

(d) whether first tubing consignment has been handed over to companies and if so, the details thereof?

ANSWER

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

(a) The Nuclear Fuel Complex (NFC) a constituent unit of the Department of Atomic Energy was set-up at Hyderabad in the early 70s with an initial production capacity of 100 tonnes per year (tpy) and was augmented number of times. The present capacity of NFC is 850 tpy fuel bundles. The complex has facilities to manufacture structural components required for various Nuclear Power Reactors.

(b) Yes, Sir. NFC has successfully manufactured Steam Generator tubings in 9Cr-1Mo (Mod) for Prototype Fast Breeder Reactors (PFBRs) and successfully manufactured Incoloy-800 Steam Generator tubings for the forthcoming 700 MWe Pressurized Heavy Water Reactors (PHWRs).

(c) Yes, Sir. This is a successful indigenization effort, as these tubes were hitherto imported.

(d) Yes, Sir. 198 Nos. of tubings, forming part of the first tubing consignment, were handed over by NFC to M/s. Larsen & Toubro Ltd., Mumbai on March 26,2012.

(http://www.dae.nic.in/writereaddata/lsus5359.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.5384
TO BE ANSWERED ON 09.05.2012

KUDANKULAM NUCLEAR POWER PLANT

5384. SHRI BRIJBHUSHAN SHARAN SINGH:
SHRI R. THAMARAISELVAN:

Will the PRIME MINISTER be pleased to state:

(a) the total revenue loss incurred by the Government for not making Kudankulam Nuclear Power Plant (KKNPP) operational so far;

(b) whether Kudankulam Nuclear Power Project is waiting for the Atomic Energy Regulatory Board's clearance for the opening of the reactor pressure vessel for inspecting the internal components performance and subsequent loading of enriched uranium fuel roads;

(c) if so, the details thereof;

(d) whether KKNPP has submitted to AERB the test report on the hot run test conducted; and

(e) if so, the details thereof?

ANSWER

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

(a) The work at Kudankulam project was halted from September 2011 to March 19 ,2012 due to protests. The estimated revenue loss due to non generation is about ` 116.27 crore per month. This is excluding the additional financing cost of around ` 30 crore/month, establishment charges of around ` 8 crore/month, escalation payments in contracts, additional payments to Russian specialists and compensation to the contractors etc.

(b)&(c) Yes, Sir. The Atomic Energy Regulatory Board (AERB) is currently reviewing all the relevant reports.

(d)&(e) Yes, Sir. The 'hot run' test was successfully conducted in July 2011 and all the results and reports of the test were submitted to AERB.

(http://www.dae.nic.in/writereaddata/lsus5384.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.5408
TO BE ANSWERED ON 09.05.2012

SUPPLY OF URANIUM

5408. DR. KIRODI LAL MEENA:
SHRI N. CHALUVARAYA SWAMY:
Will the PRIME MINISTER be pleased to state:
(a) whether several countries have supplied enriched uranium for nuclear power plants in the country recently;
(b) if so, the quantity and value of enriched uranium supplied during each of the last three years and the current year, year-wise and country-wise;
(c) the gap between the demand and supply of uranium for various reactors; and
(d) the manner in which the Government proposes to fill this gap?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir. In the recent past, Enriched Uranium has been supplied by Russia only.

(b) In the year 2009, M/s. TVEL Corporation, Russia supplied 58 Metric Tonnes of enriched uranium dioxide pellets worth 486.82 cr.

(c) Reactors using imported uranium are operating at high capacity factor and for such reactors there is no gap in supply and demand for uranium. However, ten reactors are fuelled by indigenous uranium, which is not available in the required quantity, hence, these reactors are being operated at lower power levels matching the fuel supply.

(d) Augmentation of supply of domestic uranium is being done by opening of new mines and processing facilities and also by augmenting the capacity of existing mines and mills. Recently a new mine and mill have been commissioned at Tummalapalle in Andhra Pradesh.

(http://www.dae.nic.in/writereaddata/lsus5408.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.5459
TO BE ANSWERED ON 09.05.2012

CAPACITY OF ATOMIC PLANTS

5459. SHRI FRANCISCO SARDINHA:
SHRI SOMEN MITRA:
SHRI RADHA MOHAN SINGH:

Will the PRIME MINISTER be pleased to state:

(a) the funds allocated for the security of nuclear plants and to remove the hurdles faced in their operation during the last three years and the current year, year-wise;
(b) the details of the steps being taken to improve the status of the nuclear plants in India and to bring the reactor technology at par with the international standards;
(c) the details of the measures taken/ being taken to modernize the nuclear plants in the country;
(d) whether the Government is contemplating any measures to streamline project management in the various constructed and under-construction nuclear power plants and if so, the details thereof; and
(e) the details of comparative cost of atomic energy generation vis-à-vis the thermal generation in India in comparison to other developed countries at present?

ANSWER

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

(a) Nuclear power plants are under security cover of the Central Industrial Security Force with additional manpower and equipment, as necessary. Integrated security systems and adequate security arrangements are in place at nuclear power plants in the country to protect them from possible threats. These are reviewed and updated periodically and necessary measures taken. The allocations made for security of nuclear power plants in the NPCIL budget in the last three years and the current year are as follows:

Year	2009-10	2010-11	2011-12	2012-13
Allocation in crore	33.46	55.72	65.00	71.10

(http://www.dae.nic.in/writereaddata/lsus5459.pdf)

Ministry of External Affairs
RAJYA SABHA
UNSTARRED QUESTION NO.2976
TO BE ANSWERED ON 03.05.2012

NUCLEAR DOCTRINE OF 'NO FIRST USE'

2976. SHRI SANJAY RAUT:
SHRI ANIL DESAI:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether it is a fact that India has a nuclear doctrine-no first use;

(b) whether it is also a fact that Pakistan does not have this doctrine; and

(c) will the Prime Minister convince Pakistan to alter their nuclear policy?

ANSWER
THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS
(SHRI E. AHAMED)

(a) to (c) India's nuclear doctrine includes a posture of 'No First Use' of nuclear weapons. The Government of Pakistan has not issued a comprehensive nuclear doctrine.

(http://meaindia.nic.in/mystart.php?id=100519288)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2946
TO BE ANSWERED ON 03.05.2012

CRITERIA FOR SELECTING ATOMIC ENERGY PLANTS

2946. SHRI V.P. SINGH BADNORE:
Will the PRIME MINISTER be pleased to state:
(a) the criteria for selection of new atomic energy plants;
(b) the number of sites that have been selected and the location thereof; and
(c) the progress of establishing a Nuclear Power Plant in those sites which are selected?

ANSWER

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

(a) The criteria for selection of a site for setting up of Atomic Power Plants are laid down in the Atomic Energy Regulatory Board's (AERB) Code of Practice on Safety in Nuclear Power Plant Siting. These inter-alia include seismicity, location of faults, geology, foundation conditions, meteorology, potential of flooding (from tsunami, storm surge, etc. at coastal sites and from rain, upstream dam break etc. at inland sites), proximity to airports, military installations, facilities for storing explosives and toxic substances, etc. In addition availability of land, water, demand of electricity in the region and availability of other energy option also form the basis for evaluation of potential sites.

(b) Presently, nuclear power plants are in operation/under construction at seven sites in the country. The Central Government has accorded 'in principle' approval for 8 new sites and additional units at some of the existing sites for locating future nuclear power plants. The details are as under :-

Site & Location	Capacity (MW)		
	In operation	Under Construction	Future Plan
Existing Sites			
Tarapur, Maharashtra	(2x 160) + (2x 540)		
Rawatbhata, Rajasthan	100+ 200+ (4x 220)	2x700	
Kalpakkam, Tamil Nadu	2x220	1x500	2x500
Narora, Uttar Pradesh	2x220		
Kakrapar, Gujarat	2x220	2x700	
Kaiga, Karnataka	4x220		2x700
Kudankulam, Tamil Nadu		2x1000	4x1000

New Sites			
Gorakhpur, Harayana			4x700
Chutka, Madhya Pradesh			2x700
Mahi Banswara, Rajasthan			4x700
Bhimpur, Madhya Pradesh			4x700
Jaitapur, Maharashtra			6x1650
Kovvada, Andhra Pradesh			6x1000*
Chhya Mithi Virdi, Gujarat			6x1000*
Haripur, West Bengal			6x1000

Nominal capacity

(c) Following the in-principle approval of the site by the Central Government, pre-project activities, which broadly include acquisition of land, obtaining statutory clearances from the Ministry of Environment & Forests and the Atomic Energy Regulatory Board, carrying out various investigations/studies and finalization of the detailed project proposals are taken up. The detailed project proposal is considered by the Central Government for according administrative and financial sanction, after which work on the project is commenced. Currently, pre-project activities are at various stages at sites where in-principle approval has been accorded. Start of work on new projects at the sites is proposed in the XII Five Year Plan, except at Haripur and Bhimpur sites, where the pre-project activities are planned to be completed in the XII Five Year Plan.

(http://www.dae.nic.in/writereaddata/parl/rsus2946.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2947
TO BE ANSWERED ON 03.05.2012

PMO'S VIEW OF NGOS

2947. SHRI SALIM ANSARI:
Will the PRIME MINISTER be pleased to state:
(a) whether Prime Minister's Office have charged that there are NGOs that are not appreciative of India's development requirement;
(b) whether it is also a fact that the charge is related to on-going protest and controversy over commissioning of Kudankulam Atomic Power Station in Tamil Nadu; and
(c) if so, the details in this regard?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) There were reports in the press to the effect.

(b)&(c) Preliminary reports have been received regarding foreign funding of the NGOs protesting against the nuclear power project at Kudankulam. CBI enquiry has been initiated against two NGOs and criminal cases have been referred in respect of two NGOs to Tamil Nadu Police.

(http://www.dae.nic.in/writereaddata/parl/rsus2947.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO. 2948
TO BE ANSWERED ON 03.05.2012

POWER GENERATION FROM NUCLEAR PLANTS

2948. SHRI K.N. BALAGOPAL:
Will the PRIME MINISTER be pleased to state:
(a) the estimated power generation from new nuclear plants in the coming twenty years;
(b) the number of plants that were expected to commence as per this estimate;
(c) whether the plan to establish nuclear plants is proceeding as per estimates; and
(d) if not, the alternatives drawn for power generation?

ANSWER

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

(a) The Integrated Energy Policy of the country has projected a possibility of reaching a nuclear power generation of 63,000 MW by 2032 by progressive addition of nuclear power capacity through a mix of Light Water Reactors (LWRs) each of 1000 MW and higher capacity based on international technical cooperation, indigenous 700 MW Pressurised Heavy Water Reactors (PHWRs) & Fast Breeder Reactors (FBRs).

(b) The XI Five Year Plan envisaged start of work on eight PHWRs and ten LWRs based on international technical cooperation, of which work on four PHWRs at the existing sites – Kakrapar Atomic Power Plant (KAPP 3 & 4 - 2x 700 MW) at Kakrapar in Gujarat and Rajasthan Atomic Power Plant (RAPP 7 & 8 - 2x 700 MW) at Rawatbhata in Rajasthan has commenced. Work on other four PHWRs proposed to be located at new greenfield sites could not start due to delay in acquisition of land. The delay in fruition of international cooperation resulted in postponement of launch of LWRs.

(c) Despite initial delays in launch of new nuclear power projects in the XI Five Year Plan period, the plan to establish nuclear plants to meet the target of 63,000 MW nuclear power capacity by 2032 is on course.

(d) Does not arise.

(http://www.dae.nic.in/writereaddata/parl/rsus2948.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2949
TO BE ANSWERED ON 03.05.2012

LOSS OF LAND DUE TO UCIL PROJECT

2949. SHRIMATI GUNDU SUDHARANI:
Will the PRIME MINISTER be pleased to state:
(a) whether five villages have lost their land in Pulivendula area of Cuddapah district of Andhra Pradesh due to Uranium Corporation of India Ltd. (UCIL) project;
(b) whether a meeting of the Grievance Redressal Committee was held at Pulivendula recently;
(c) if so, the details thereof;
(d) the details of compensation paid so far to the villagers who have lost their land due to UCIL's project;
(e) whether Grievance Redressal Committee also met on earlier occasions; and
(f) if so, the number of meetings held, assurances given and details of assurances fulfilled so far?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Uranium Corporation of India Limited (UCIL), a Public Sector Undertaking under the Department of Atomic Energy(DAE), has acquired land from four villages in Pulivendula area of Kadapa(YSR) district of Andhra Pradesh The villages are Tummalapalle(322.73 acres), Mabuchintalapalle(96.74 acres), Rachkuntapalle(269.99 acres) and K.K. Kottala(11.56 acres)
(b) Yes Sir.
(c) The meeting was held on 17.03.2012. However, the meeting was adjourned/suspended due to protest by some members over constitution of the committee.
(d) An amount of 9,65,05,960/- (Rupees nine crore sixty five lakh five thousand nine hundred and sixty only) has been paid as compensation to the land owners of the four villages so far. In addition, 204 nominees of such land losers have been provided employment as on 31/03/2012 in UCIL.
(e) Yes Sir.
(f) Five meetings were held earlier by the Grievance Redress Committee on 02.07.2011, 09.12.2011, 11.01.2012, 01.02.2012 and 17.03.2012 where the following issues were raised: a. Examination of water quality and ground water level
b. Employment to nominees of land displaced persons
c. Acquisition of additional land.

UCIL is exploring the possibilities to address the above.

(http://www.dae.nic.in/writereaddata/parl/rsus2949.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2950
TO BE ANSWERED ON 03.05.2012

SRI LANKAN CONCERN OVER KUDANKULAM PLANT

2950. SHRI M.P. ACHUTHAN:
SHRI D. RAJA:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the Sri Lanka has expressed its concern over the impact of disaster in the Kudankulam nuclear power plant which could affect the island nation; and
(b) if so, the details thereof and Government's reaction thereto?

ANSWER

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

(a) There have been reports in the press & media that Sri Lanka has expressed concern over the impact of a disaster in Kudankulam Nuclear Power Plant, Tamil Nadu.

(b) The nuclear power reactors at Kudankulam are generation III+ reactors with advanced safety features employing four safety trains against one required. The reactors have a unique Passive Heat Removal System (PHRS), which would ensure cooling of the reactor core by natural air circulation even in the worst case scenario of total loss of power supply and cooling water sources as it happened in Fukushima (Japan). Post Fukushima, safety reviews of the Kudankulam reactors have found that they are totally safe and have margins and features in design to withstand extreme natural events like earthquakes and tsunamis.

(http://www.dae.nic.in/writereaddata/parl/rsus2950.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2951
TO BE ANSWERED ON 03.05.2012

ASSESSMENT OF REQUIREMENT OF THORIUM

2951. SHRI RAJIV PRATAP RUDY
Will the PRIME MINISTER be pleased to state:
(a) whether Government has assessed the requirement of thorium during the Twelfth Five Year Plan period;
(b) if so, the details thereof;
(c) whether there are adequate thorium reserves available in the country; and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) Yes, Sir. Construction of Advanced Heavy Water Reactor (AHWR) will be launched towards the end of Twelfth Five Year Plan period. The quantity of ThO2 required for the initial core is 52 tonnes. The annual requirement of ThO2 for refueling is 4.7 tonnes. Department of Atomic Energy (DAE) has taken action to see that this quantity is made available at the scheduled time.

(c)&(d) Yes, Sir. India has vast reserves of Thorium. Total estimated reserves of monazite in India are about 10.7 million tonnes (containing about 0.84 million tonnes of thorium metal) occurring in beach and river sands in association with other heavy minerals. Out of nearly 100 deposits of the heavy minerals, at present only 17 deposits containing about ~4 million tonnes of monazite have been identified as exploitable. Mineable reserves are ~70% of identified exploitable resources. Therefore, about 2,25,000 tonnes of thorium metal is available for nuclear power programme.

(http://www.dae.nic.in/writereaddata/parl/rsus2951.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2952
TO BE ANSWERED ON 03.05.2012

MAKING OF AERB A STATUTORY BODY

2952. SHRI N.K. SINGH:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that Government is proposing to make the Atomic Energy Regulatory Board (AERB) a statutory body;
(b) if so, the details thereof;
(c) if not, the reasons therefor; and
(d) the steps being taken by Government to make nuclear regulation and safety more transparent?

ANSWER

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

(a)&(b) Yes Sir. Government of India attaches the highest importance to nuclear safety and that the Government will take all the necessary measures to ensure the safety of our plants. Work is underway in the Department of Atomic Energy towards further strengthening India's national nuclear safety regulatory authority. Accordingly, Government has introduced the Nuclear Safety Regulatory Authority Bill, 2011 in Lok Sabha on 07 September 2011.

(c) Does not arise.

(d) Creation of a statutory nuclear safety authority through introduction of 'The Nuclear Safety Regulatory Authority (NSRA) Bill' will ensure greater degree of independence and transparency.

(http://www.dae.nic.in/writereaddata/parl/rsus2952.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 361
TO BE ANSWERED ON 02.05.2012

SAFETY REVIEWS OF NUCLEAR REACTORS

*361. DR. P. VENUGOPAL:
Will the PRIME MINISTER be pleased to state:
(a) whether any mechanism/forum exists, at international level for the purpose of co-operation amongst nuclear power generating nations in regard to safety reviews and design of nuclear reactors;
(b) if so, the details thereof;
(c) whether India's Atomic Energy Regulatory Board (AERB) has been admitted as the first new member in the Multinational Design Evaluation Programme (MDEP) recently;
(d) if so, the details thereof; and
(e) the manner in which India is expected to influence MDEP's strategic decisions particularly with regard to nuclear safety?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (e) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO. 361 FOR ANSWER ON 02.05.2012 BY DR. P. VENUGOPAL REGARDING SAFETY REVIEWS OF NUCLEAR REACTORS

(a)&(b) Yes Sir. The International Atomic Energy Agency (IAEA) plays an important role in fostering cooperation in regard to safety reviews and design of nuclear reactors. IAEA provides several platforms where experts from Member States operating nuclear power plants exchange information on nuclear safety, operation and design. Among these are the Senior Regulators Forum for PHWRs operating countries, VVER Regulators Forum for VVER operating countries, Incident Reporting System, Technical Working Groups for different types of reactors. The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) is a forum of interested Member States of IAEA that collaborates on topics of common interest including the role of innovation in technologies and institutional arrangements in support of sustainable development of nuclear energy in future.

As mandated by IAEA, the experts from member states together develop safety standards including for nuclear reactors, which helps in developing national standards.

The Convention on Nuclear Safety (CNS) was crafted to achieve a high level of safety globally in the land based civilian nuclear installations. As per the requirement of CNS, all the contracting parties to the Convention are required to submit a detailed national report on the status of nuclear safety in the country. These reports are peer reviewed in an extensive manner. The recommendations made during the review are followed up during subsequent reviews.

India participates actively in IAEA's programmes and activities including those related to safety.

The Multinational Design Evaluation Programme (MDEP) that includes regulators from Canada, China, Finland, France, Japan, the Republic of Korea, the Russian Federation, South Africa, the United Kingdom, United States and now India, is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of national regulatory authorities who are, or will shortly be, undertaking the review of new reactor power plant designs. MDEP provides a unique platform to engage with the regulatory authority of member countries.

Currently MDEP programme incorporates a broad range of activities which includes enhancing multilateral co-operation within the existing regulatory framework, multinational convergence of codes, standards and safety goals and implementing MDEP products to facilitate licensing of new reactors. According to terms of reference, MDEP work is carried out by Design specific and Issue specific Working Groups.

Design-specific working groups are formed when three or more countries express interest in working together. Presently two design specific working groups (one EPR working group and another AP1000 working group) exist.

Issues-specific (generic issues) Working Groups have been established for the technical and regulatory area, which include; Vendor inspection co-operation, Codes and Standards and Digital Instrumentation and control.

(c) &(d) Yes Sir. India's AERB became the first new member of Multinational Design Evaluation Programme (MDEP) on April 4, 2012

(e) MDEP pools the resources of the member nuclear regulatory authorities for the purpose of:

1. Co-operating on safety reviews of designs of nuclear reactors that are under construction and undergoing licensing in several countries.
2. Exploring opportunities and potential for harmonization of regulatory requirements and practices.

As a full member, Atomic Energy Regulatory Board of India will contribute to the programme strategic decisions in the MDEP Policy Group and the MDEP Steering Technical Committee. India would be contributing to the convergence of nuclear safety practices among regulators in member and non-member countries.

(http://www.dae.nic.in/writereaddata/parl/lssq361.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.4160
TO BE ANSWERED ON 02.05.2012

SUPPLY OF NUCLEAR POWER

4160. SHRI P. KUMAR:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government proposes to provide cheap power to the families residing near nuclear plants;
(b) if so, the details thereof;
(c) whether the Government is also proposing to provide more electricity to those States where the nuclear plants are located; and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) The electricity generated by the nuclear power plants is supplied to the regional electricity grid from where it is supplied to the various consumers by the State Electricity Boards/ distribution companies. The rates to be charged from the consumers are decided by the respective State Electricity Boards/ distribution companies.

(c)&(d) In January 2011, the Government has approved allocation of minimum 50% of the power from new nuclear power projects of NPCIL to the home state (state in which the nuclear power plants are located).

(http://www.dae.nic.in/writereaddata/parl/lsus4160.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 4232
TO BE ANSWERED ON 02.05.2012

COMPENSATION TO DISPLACED PERSONS

4232. SHRI KHAGEN DAS:
Will the PRIME MINISTER be pleased to state:
(a) whether five villages have lost their land in Pulivendula area of Cuddapah district of Andhra Pradesh due to Uranium Corporation of India Limited's project;
(b) if so, the details thereof;
(c) whether a meeting of the Grievance Redressal Committee was held at Pulivendula recently;
(d) if so, the details thereof;
(e) the details of compensation paid so far to the villagers who have lost their land due to UCIL's project;
(f) whether Grievance Redressal Committee also met on earlier occasions; and
(g) if so, the number of meetings held, assurances given and details of assurances fulfilled so far?

ANSWER

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

(a) Uranium Corporation of India Limited (UCIL), a Public Sector Undertaking under the Department of Atomic Energy(DAE), has acquired land from four villages in Pulivendula area of Kadapa (YSR) district of Andhra Pradesh

(b) The villages are Tummalapalle (322.73 acres), Mabuchintalapalle (96.74 acres), Rachkuntapalle (269.99 acres) and K.K. Kottala (11.56 acres)

(c) Yes Sir.

(d) The meeting was held on 17.03.2012. However, the meeting was adjourned/suspended due to protest by some members over constitution of the committee.

(e) An amount of 9,65,05,960/- (Rupees nine crore sixty five lakh five thousand nine hundred and sixty only) has been paid as compensation to the land owners of the four villages so far. In addition, 204 nominees of such land losers have been provided employment as on 31/03/2012 in UCIL.

(f) Yes Sir.

(g) Five meetings were held earlier by the Grievance Redress Committee on 02.07.2011, 09.12.2011, 11.01.2012, 01.02.2012 and 17.03.2012 where the following issues were raised: i) Examination of water quality and ground water level

ii) Employment to nominees of land displaced persons

iii) Acquisition of additional land.

UCIL is exploring the possibilities to address the above.

(http://www.dae.nic.in/writereaddata/parl/lsus4232.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 4261
TO BE ANSWERED ON 02.05.2012

COMMITTEE ON CONSTITUTIONAL PERMISSION

4261. SHRI ASHOK KUMAR RAWAT:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government proposes to constitute any committee to keep vigil on granting statutory permission by the State and Central authorities in regard to exploration and research of atomic minerals, including nuclear raw material;
(b) if so, the details thereof;
(c) whether the Atomic Minerals Directorate is responsible for taking decisions in regard to exploration and research related to atomic minerals and this is the first desired step in atomic fuel cycle; and
(d) if so, the progress made in this regard so far?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir.

(b) Does not arise.

(c) Yes Sir. The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent unit of Department of Atomic Energy, is engaged in survey and exploration of uranium resources and other atomic minerals viz. thorium, niobium, tantalum, beryllium, zirconium and lithium required for the Nuclear Power Programme of the country.

(d) The activities of AMD include heliborne/airborne surveys, geochemical/ geophysical surveys, reconnaissance/detailed survey, exploratory drilling etc. AMD continues its efforts to locate additional resources of uranium by conducting such surveys in order to locate new uranium reserves in the country. AMD has so far established 1,75,010 tonnes insitu uranium (U3O8) resources as on March, 2012.

(http://www.dae.nic.in/writereaddata/parl/lsus4261.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 4268
TO BE ANSWERED ON 02.05.2012

REVIEW OF NUCLEAR POLICY

4268. SHRI KUNWAR REWATI RAMAN SINGH:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government proposes to constitute a committee to review its nuclear policy;
(b) if so, the details thereof;
(c) whether the Government also proposes to review the cases of nuclear plants in the coastal areas;
(d) if so, the details thereof; and
(e) if not, the reasons therefor?

ANSWER

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

(a)to(e) The country's Integrated Energy Policy has been carefully formulated to ensure supply of lifeline energy to its people and sustained growth; meeting the energy requirements in an efficient, cost effective way on a path of sustainable energy security. Nuclear power, a clean source of energy with potential for providing long terms energy security is an important component of the country's energy mix. The three-stage nuclear power programme is robust and on course.

The safety of nuclear power plants, both in operation and under construction, located at coastal sites has been reviewed post Fukushima accident. These reviews have found that the nuclear power reactors in the country are safe and have design features and margins to withstand extreme natural events like earthquakes and tsunamis. The features and provisions in the new nuclear power plants at coastal sites will also have features in design and provisions of latest state of the art safety which will ensure these to be safe against extreme natural events.

(http://www.dae.nic.in/writereaddata/parl/lsus4268.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.4269
TO BE ANSWERED ON 02.05.2012

CLEARANCE TO ATOMIC POWER PROJECTS

4269. SHRI PRADEEP MAJHI:
SHRI KISHNBHAI V. PATEL:
Will the PRIME MINISTER be pleased to state:
(a) whether Nuclear Power Corporation of India Ltd. (NPCIL) had submitted proposals for obtaining environmental and forest clearance to atomic power projects;
(b) if so, the details thereof and the present status of each of such project, project-wise; and
(c) the time by which clearance to each of such project is likely to be obtained?

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

(a)&(b) NPCIL has taken up the process of obtaining environmental clearance for its proposed projects at Gorakhpur, Haryana; Chutka, Madhya Pradesh; Kovvada in Andhra Pradesh and Chhaya Mithi Virdi in Gujarat. The Terms of Reference (ToR) for Environmental Impact Assessment (EIA) studies have been approved by the Ministry of Environment & Forests (MoEF). The EIA studies in accordance with the approved ToR by specialized agencies are in progress.

(c) The Environmental clearance process involves approval of ToR, EIA studies and submission of EIA report, public hearing, submission of final EIA report and final review by the Expert Appraisal Committee (EAC) of the MoEF before grant of environment clearance. The process typically takes about two years.

(http://www.dae.nic.in/writereaddata/parl/lsus4269.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.4328
TO BE ANSWERED ON 02.05.2012

KUDANKULAM POWER PROJECT

4328. SHRI P. VISWANATHAN:
SHRI KODIKKUNNIL SURESH:

Will the PRIME MINISTER be pleased to state:

(a) whether his department has conducted any public hearing before commissioning of Kudankulam Nuclear Power Plant in Tamil Nadu and if so, the details thereof;

(b) whether the Government has ensured migration of population in Tamil Nadu and Kerala as a result of setting up of Kudankulam Nuclear Plant;

(c) if so, the details thereof and the steps taken/being taken by the Government to rehabilitate them and the financial assistance provided to land oustees in Tamil Nadu and Kerala States;

(d) whether it is a fact that Nuclear Power Corporation of India Ltd. (NPCIL) has acquired the land forcibly and if so, the details thereof and the reasons therefor; and

(e) the commitment made by Russian Government for the remaining six reactors enabling Tirunelveli as Energy Park?

ANSWER

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

(a) As per the prevailing procedure laid down by the Ministry of Environment and Forests (MoEF), public hearing is held as a part of the process for obtaining Environmental Clearance of a nuclear power project before start of its construction. The environmental clearance by MoEF in respect of Kudankulam units 1&2 was accorded in 1989. At that time, there was no requirement of public hearing. The public hearing was introduced vide MoEF notification of 1997. As a part of the expansion programme of additional four units at the site, a comprehensive EIA report was made considering the cumulative impact of all the six units. This report was submitted to the MoEF and the Tamil Nadu State Pollution Control Board. A public hearing was conducted as a part of this process in 2007.

(b) There was no displacement involved in setting up Kudankulam Nuclear Power Project (KKNPP). The question of migration of population does not arise.

(c) Does not arise.

(d) No, Sir. The land for setting up KKNPP was acquired in accordance with the prevailing laid down procedure and process.

(e) At the Kudankulam site, four more reactors are proposed to be set up in technical cooperation with the Russian Federation. An Intergovernmental Agreement for setting up these additional units at Kudankulam has been entered into with the Russian Federation.

(http://www.dae.nic.in/writereaddata/parl/lsus4328.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.4317
TO BE ANSWERED ON 02.05.2012

DISINVESTMENT IN NPCIL

4317. SHRI GUTHA SUKHENDER REDDY:
SHRI RAYAPATI SAMBASIVA RAO:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government proposes to disinvest equity in the Nuclear Power Corporation of India Limited (NPCIL);
(b) if so, the details thereof;
(c) if not, the reasons therefor;
(d) whether the Government proposes to amend the Atomic Energy Act so as to ensure disinvestment in NPCIL; and
(e) if so, the details thereof and the steps taken/being taken in this direction?

ANSWER

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

(a) There is currently no proposal to disinvest equity in NPCIL.

(b) Does not arise.

(c) Pre-requisites for disinvestment like conversion of the company from private company to public company, appointment of requisite numbers of independent Directors of the company and dematerialization of shares are needed to be fulfilled before disinvestment process can be considered.

(d) As per the Atomic Energy Act, nuclear power plants can be set up by Government companies in which 51% share is held by the Central Government. Therefore, amendment to the Atomic Energy Act is not necessary for disinvestment in NPCIL.

(e) Does not arise

(http://www.dae.nic.in/writereaddata/parl/lsus4317.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 314
TO BE ANSWERED ON 26.04.2012

DEVELOPMENT OF ATOMIC ENERGY SECTOR

* 314. SHRI RAMCHANDRA PRASAD SINGH :
SHRI SHIVANAND TIWARI:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that most of developed countries of the world are not giving priority to the development of Atomic Energy Sector for power generation to meet their power requirements;

(b) if so, the Government's reaction in this regard and the percentage of power generation by atomic energy out of total power production of the developed countries like America, Britain, Germany, Japan and developing country like China;

(c) whether it is also a fact that power generation capacity of atomic energy sector in India has become double during last five years; and

(d) if so, the facts in this regard?

ANSWER

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

(a) to (d) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO. 314 FOR ANSWER ON 26.04.2012 BY SHRI RAMCHANDRA PRASAD SINGH AND SHRI SHIVANAND TIWARI REGARDING DEVELOPMENT OF ATOMIC ENERGY SECTOR

(a) The deployment of various sources for power generation is country specific and is based on demand and availability of energy resources. Currently, 436 nuclear power reactors are in operation in 31 countries and 61 reactors are under construction in 14 countries globally. Nuclear power contributed about 13.5% of total electricity generation in the world in the year 2011. Most of the developed countries continue to pursue nuclear power programmes to meet their electricity requirements. In developed countries, there are 16 reactors under construction ten in Russia, three in South Korea and one each in France, Finland and USA.

(c) India's electricity demand is huge and growing. All energy sources including nuclear power are being deployed optimally to meet the country's growing demand. Nuclear power is a clean energy option and has vast potential to provide long term energy security. It would therefore be an important component of the country's energy mix.

The share of nuclear power in the total electricity generation in some of the developed countries and China in 2011 is as follows:

Country	**Nuclear share in total electricity generation**
USA	19.2
UK	17.8
Germany	17.8
Japan	18.1
France	77.7
Russian Federation	17.6
China	1.8

(c)&(d) The nuclear power capacity was 3900 MW at the end of X Plan. The current nuclear power capacity is 4780 MW. During the XI Plan, 880 MW was added, resulting in increase in capacity by 23%. The nuclear power capacity is expected to reach 10,080 MW on progressive completion of projects under construction by 2017.

(http://www.dae.nic.in/writereaddata/rssq314.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2326
TO BE ANSWERED ON 26.4.2012

COMMISSIONING OF URANIUM MINE

2326. SHRI A. ELAVARASAN :
Will the PRIME MINISTER be pleased to state:
(a) whether India has decided to commission a new Uranium mine at Mouldih in Jharkhand and a processing plant that would provide fuel to its nuclear power plants;
(b) if so, the details thereof;
(c) whether the Mouldih mine is expected to deliver Uranium ore upto 500 tonne per day which would be processed and sent to nuclear power plants; and
(d) if so, the details thereof?

ANSWER

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

(a) Yes Sir, Uranium Corporation of India Limited (UCIL), a Public Sector Undertaking under the administrative control of the Department of Atomic Energy (DAE), has commissioned a new Uranium Mine at Mohuldih in Jharkhand on 17.04.2012.

(b) The ore from this mine will be processed in the existing process plant of UCIL at Turamdih.

(c) Yes Sir. It has been planned to produce 500 tonne of uranium ore per day from Mohuldih Mine..

(d) The processed MDU (magnesium diuranate) will be transported to Nuclear Fuel Complex (NFC) at Hyderabad for its conversion into nuclear fuel to be used in nuclear reactors.

(http://www.dae.nic.in/writereaddata/rsus2326.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2327
TO BE ANSWERED ON 26.4.2012

CASES OF CANCER DUE TO RADIATION

2327. SHRI TARIQ ANWAR:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that a number of cases of cancer have been found due to radiation from the Nuclear plant of Kalpakkam;
(b) If so, the details thereof;
(c) whether it is also a fact that a report has been submitted declaring that cancer rate in nearby villages was seven times higher than the distant villages; and
(d) if so, the reaction of Government thereto?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir. None of the cancer cases is attributed to radiation.
(b) Does not arise.
(c) A provisional report of a survey conducted by 'A Society for Primary Health Care Intervention, Research and Education' (ASPIRE) in 22 villages around Kalpakkam, Tamil Nadu (within 8 km radius) covering a total of 22,345 individuals by health screening questionnaire and clinical examination has indicated the prevalence of cancer in this villages to be 0.21 %. The report also indicated that in three villages 54 kms away from Kalpakkam, the prevalence of cancer is 0.03% based on health screening data obtained from 6,932 individuals only through questionnaire. The annual cancer incidence in the country varies from 0.04 % to 0.25 % and for Chennai it is about 0.12%. The prevalence of cancer is usually 3 to 5 times the annual incidence of cancer. There is no scientific evidence to infer incidence of cancer around Kalpakkam on account of radiation from nuclear plant at Kalpakkam.
(d) Tata Memorial Centre (TMC) in Mumbai is setting up community based cancer registry and conducting health surveys to document the true occurrence of cancer, birth defects and other illness around various nuclear plants in India. This will result in continuous monitoring and creation of a large database that will help in detecting any changes in the occurrence of cancer and other illness around Indian nuclear plants.
Environmental Survey Laboratory at Kalpakkam is continuously carrying out environmental monitoring for radiation in and around Kalpakkam (10 Km from Madras Atomic Power Station) and radiation levels are found to be similar to that of natural radiation background.

(http://www.dae.nic.in/writereaddata/rsus2327.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2328
TO BE ANSWERED ON 26.4.2012

APPLICATION OF NUCLEAR ENERGY

2328. SHRI K.N. BALAGOPAL :
Will the PRIME MINISTER be pleased to state:
(a) the areas of application of nuclear energy in the country apart from generating electricity and defence purposes; and
(b) the methods and procedure for the safe disposal of the nuclear waste, generated at various reactors and research labs?

ANSWER

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

(a) Radiation and radioisotope technologies have been successfully and extensively deployed as non-power applications for societal benefits in Agriculture, Healthcare and Industry. These applications have made considerable impact in terms of availability of improved varieties of crop plants, especially, oil seeds and pulses, microbiological safety of food and enhancement of shelf-life of certain vegetables and fruit, their export, diagnosis of and treatment of several health conditions, particularly, cancer and industrial radiography. The nuclear energy has also been used for desalination of sea water.

(b) Nuclear waste, in the form of gaseous, liquid and solid, is generated during operation & maintenance activities of various reactors and research laboratories. The methods and procedures for safe disposal of nuclear waste are summarized below:

1) Gaseous waste is treated at the source of generation. The techniques used are adsorption on activated charcoal and filtration by high efficiency particulate air filter. The treated gases having insignificant amount of radioactivity are then diluted with exhaust air and discharged through tall stack with continuous monitoring.

2) Liquid waste streams are treated by various techniques, such as filtration, adsorption, chemical treatment, thermal and solar evaporation, ion exchange, reverse osmosis etc. The concentrate from treatment of liquid waste is immobilized in inert materials like cement, polymer etc. The treated waste having insignificant amount of radioactivity is discharged to large water bodies well within the norms specified by regulators.

3) The radioactive solid waste generated during operation and maintenance of nuclear power plants is segregated and volume reduced using various technologies like compaction and incineration.

> The solid/solidified waste is packaged in suitable containers to facilitate handling, transport and disposal. Disposal of waste is carried out in specially constructed structures such as stone lined trenches, reinforced concrete trenches and tile holes. These disposal structures are located both above and underground in access-controlled areas. Disposal system is designed based on multi barrier principle for ensuring effective containment of the radioactivity. The areas where the disposal structures are located are kept under constant surveillance with the help of bore-wells laid out in a planned manner. The underground soil and water samples from these bore wells are routinely monitored to confirm effective confinement of radioactivity in the disposed waste containment.

(http://www.dae.nic.in/writereaddata/rsus2328.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2329
TO BE ANSWERED ON 26.4.2012

CHEAP ELECTRICITY NEAR NUCLEAR PLANTS

2329. SHRI T.M. SELVAGANAPATHI :
Will the PRIME MINISTER be pleased to state:
(a) whether it has been decided to provide electricity at cheaper rate for the houses near nuclear power plants in the country;
(b) if so, the details thereof;
(c) whether 50 per cent of power produced at each nuclear plant would be given to the States in which the plants are located and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) The electricity generated by the nuclear power plants is supplied to the regional electricity grid from where it is supplied to the various consumers by the state electricity boards / distribution companies. The rates to be charged for supply of electricity to various consumers are decided by the SEBs / distribution companies.

(c)&(d) The Central Government has, in January 2011, approved allocation of 50% of the power from new nuclear power projects of NPCIL to the home state (state in which the nuclear power plants are located).

(http://www.dae.nic.in/writereaddata/rsus2329.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2330
TO BE ANSWERED ON 26.04.2012

USE OF ATOMIC ENERGY IN AGRICULTURAL SECTOR

2330. SHRIMATI NAZNIN FARUQUE :
Will the PRIME MINISTER be pleased to state:
(a) whether Bhabha Atomic Research Center (BARC) has received any representation to work in Assam by using atomic energy in agriculture seed and agriculture sector;
(b) if so, the details of the time period when this work would be completed; and
(c) the details of the research work being done in this direction in Assam?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a)&(b) No, Sir. Bhabha Atomic Research Centre (BARC) has not received any representation to work in Assam for using atomic energy in agriculture seed and agriculture sector. However, BARC will be willing to offer its help to Assam in these areas.

(c) BARC has not initiated any research work in Assam, in this regard.

(http://www.dae.nic.in/writereaddata/rsus2330.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2331
TO BE ANSWERED ON 26.4.2012

NUCLEAR POWER PLANT AT MITHIVIRDI

2331. SHRI BHARATSINH PRABHATSINH PARMAR :
SHRI PARSHOTTAM KHODABHAI RUPALA :

Will the PRIME MINISTER be pleased to state:

(a) whether Government intends to start nuclear power plant at Mithivirdi of Gujarat State;
(b) if so, the action that has been taken by Government for rehabilitation of affected people and against agitation of local people;
(c) whether Government has taken up this matter with the State Government of Gujarat in this regard; and
(d) the action that has been taken to ensure best safety measures for this proposed and existing nuclear power stations in Gujarat State?

ANSWER

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

(a) Yes, Sir.

(b)&(c) Nuclear Power Corporation of India Limited (NPCIL) is closely working with the State government for acquisition of land and arriving at a comprehensive rehabilitation package in line with the Central and State laws and policies. Public outreach activities to allay the apprehensions about the project and nuclear power have been scaled up manifold through structured public awareness campaigns among the villagers, state officials, college & school students, policy makers, planners including other stake holders.

(d) The nuclear power plants planned to be set up at Chhaya Mithi Virdi in Gujarat in technical cooperation with a foreign vendor are Generation III+ reactors with advanced safety features. The safety of these reactors will be comprehensively reviewed by the Atomic Energy Regulatory Board (AERB) and only after clearance they will be set up. Safety reviews of the existing nuclear power plants in operation and under construction at Kakrapar in Gujarat by NPCIL and AERB post Fukushima accident have found that these are safe with margins and features in design to withstand extreme natural events. Recommendations were made by these reviews to take the safety to a higher level. The major recommendations like provision of seismic switches for an automatic shutdown of reactors upon sensing of earthquake are already in place at Kakrapar reactors. In respect of remaining recommendations, the design and engineering have been completed and regulatory clearances obtained for implementation during biennial shutdown of the units.

(http://www.dae.nic.in/writereaddata/rsus2331.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 289
TO BE ANSWERED ON 25.4.2012

GLOBAL CENTRE AND ENERGY PARKS

289. SHRI PRADEEP MAJHI:
SHRI KISHNBHAI V. PATEL:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government proposes to set up a global centre for nuclear energy partnership;
(b) if so, the details and the current status thereof;
(c) whether the Government has also approved setting up of energy parks in the country;
(d) if so, the details thereof and the status of each of such park as on date; and
(e) the details of the steps taken by the Government to expedite the completion of global centre and energy parks?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (e) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO.289 FOR ANSWER ON 25.04.2012 BY SHRI PRADEEP MAJHI AND SHRI KISHNBHAI V. PATEL REGARDING. GLOBAL CENTRE AND ENERGY PARKS

(a) & (b) Yes, Sir. In September 2010, the Central Government approved the establishment of Global Centre for Nuclear Energy Partnership (GCNEP) at village Jasaur Kheri & Kheri Jasaur, Near Bahadurgarh, District Jhajjar, Haryana. Two plots of land measuring 130 acres for the Institute at village Kheri Jasaur and 105 acres for the Township at village Jasaur Kheri have been acquired at a cost of 78 Crore. The proposed centre (GCNEP) will provide facilities related to advanced education, research and training in the field of proliferation resistant nuclear system designing, nuclear security, radiological safety, nuclear material characterisation and applications of radiation technologies and radioisotopes.

(b) & (d) Yes, Sir. The Central Government has accorded in principle approval of coastal sites at Chhaya Mithi Virdi in Gujarat, Kovvada in Andhra Pradesh, Haripur in West Bengal, Jaitapur in Maharashtra and Kudankulam in Tamil Nadu for setting up of nuclear power parks of 6000 to 10000 MW comprising large capacity Light Water Reactors (LWRs) based on foreign technical co-operation. Currently pre-project activities are in progress at these sites. The work at those sites is planned to be taken up in phases at each site starting with twin reactors in first phase followed by launch of next pair in second phase and third phase respectively, with

a gap of about four years between the two phases. The details of the sites for nuclear power parks and their current status are as follows:

Site	State	Capacity (MW)	Present Status
Kudankulam	Tamil Nadu	4 X 1000 #	Land available, Environmental Clearance from MoEF obtained, proposal for financial sanction of KK 3&4 under consideration of Government.
Jaitapur	Maharashtra	6 X 1650	Land title transferred to NPCIL, Environmental and CRZ clearances from MoEF obtained, discussions with M/s. Areva on project proposal for JNPP 1&2 in progress.
Kovvada	Andhra Pradesh	6 X 1000 *	Land acquisition proceedings in progress, ToRs for EIA studies approved by MoEF, EIA studies in progress.
Chhaya Mithi Virdi	Gujarat	6 X 1000	
Haripur	West Bengal	6 X 1000	Pre-project activities are initiated.

(http://www.dae.nic.in/writereaddata/lssq289.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 293
TO BE ANSWERED ON 25.4.2012

NUCLEAR POWER GENERATION

293. DR. MURLI MANOHAR JOSHI:
SHRI RAJENDRASINH RANA:
Will the PRIME MINISTER be pleased to state:
(a) whether nuclear power sector is given lesser importance for power generation in the developed countries all over the world;
(b) if so, the reaction of the Government thereto;
(c) the percentage of power being generated from nuclear sector out of the total quantum of power generated in USA, England, China and Russia; and
(d) the percentage of power targeted to be generated from nuclear sector in the country?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (d) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO.293 FOR ANSWER ON 25.04.2012 BY DR. MURLI MANOHAR JOSHI AND SHRI RAJENDRASINH RANA REGARDING NUCLEAR POWER GENERATION

(a) The share of nuclear power in energy mix is country specific and is based on the electricity demand, availability of energy resources, technological and industrial capability etc. Currently, 436 nuclear power reactors are in operation in 31 countries and 61 reactors are under construction in 14 countries globally. Nuclear power contributed about 13.5% of total electricity generation in the world in the year 2011. Most of the developed countries continue to pursue nuclear power programmes to meet their electricity requirements. Among developed countries, there are 16 reactors under construction - ten in Russia, three in South Korea and one each in France, Finland & USA.

(b) India's electricity demand is huge and growing. All energy sources including nuclear power are being deployed optimally to meet the country's growing demand. Nuclear power is a clean energy option and has vast potential to provide long term energy security. It would therefore be an important component of the country's energy mix.

(c) The share of nuclear power in the total electricity generation in USA, UK, China and Russia in the year 2011 was 19.2%, 17.8%, 1.8% and 17.6% respectively.

(d) The share of nuclear power in the total electricity generation in our country in the year 2011-12 was 3.7% and the installed nuclear power capacity was 4780 MW. The Integrated Energy Policy envisages reaching a nuclear power capacity of about 63,000 MW out of the total 7,78,000 MW capacity required for a GDP growth rate of 8% by the year 2032.

The share of nuclear power in the year 2032 is expected to be of the order of 10%, depending on generation from various sources in that year.

(http://www.dae.nic.in/writereaddata/lssq293.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 3259
TO BE ANSWERED ON 25.04.2012

RADIATION FROM NPP

3259. SHRI SANJAY DINA PATIL:
Will the PRIME MINISTER be pleased to state:
(a) whether a number of cases of cancer have been found due to radiation from the Nuclear Plant of Kalpakkam;
(b) if so, the details thereof;
(c) whether a report has been submitted declaring that cancer rate in nearby villages was seven time higher than the distant villages; and
(d) if so, the reaction of the Government thereto?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir. No cancer case that is reported is attributed due to radiation.
(b) Does not arise.
(c) A provisional report of a recent survey conducted by 'A Society for Primary Health Care Intervention, Research and Education' (ASPIRE) in 22 villages around Kalpakkam, Tamil Nadu (within 8 km radius) covering a total of 22,345 individuals by health screening questionnaire and clinical examination has indicated the incidence of cancer in this villages to be 0.21 %. This should be seen against the national average of 2 to 3 %. The report has also indicated that in three villages near Marakkanam, 54 kms away from Kalpakkam the incidence of cancer is 0.03%; based only on health screening data obtained from 6,932 individuals only through questionnaire.
From these reported data, no scientifically derived evidence is found for increased incidence of cancer around Kalpakkam.
(d) Tata Memorial Centre (TMC) in Mumbai is setting up community based cancer registry and conducting health surveys to document the true occurrence of cancer, birth defects and other illness around various nuclear plants in India. This will result in continuous monitoring and creation of a large database that will help in detecting any changes in the occurrence of cancer and other illness around Indian nuclear plants. The first results from this project are to be expected in 16 to 18 months time.

(http://www.dae.nic.in/writereaddata/lsus3259.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.3263
TO BE ANSWERED ON 25.4.2012

CAPACITY AUGMENTATION

3263. SHRI SUGUMAR K.:
Will the PRIME MINISTER be pleased to state:
(a) whether the bulk of capacity augmentation by Nuclear Power Corporation of India Ltd. (NPCIL) will be through larger sized indigenous 700 MWs PHWRs or pressurized heavy water reactors and imported light water reactors;
(b) if so, the details thereof;
(c) whether the NPCIL has already shortlisted the names of suppliers; and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) NPCIL plans to augment the nuclear power capacity in the country by setting up indigenous Pressurised Heavy Water Reactors (PHWRs) of 700 MW each and Light Water Reactors (LWRs) of 1000 MW and higher capacity based on foreign technical cooperation. Presently, four 700 MW PHWRs are under construction at Kakrapar, Gujarat (KAPP 3 & 4) and Rawatbhatta, Rajasthan (RAPP 7 & 8). Two LWRs are at commissioning stage at Kudankulam (KKNPP 1&2 – 2 x 1000 MW). The XII Plan proposals envisage start of work on eight 700 MW PHWRs and eight LWRs, 1000 MW or larger capacity and two fast breeder reactors. These are planned to be completed in phased manner between XIII Plan and early XIV Plan. More nuclear power reactors comprising indigenous 700 MW PHWRs, 1000 MW or larger capacity LWRs and fast breeder reactors are planned to be set up in future.

(c)&(d)The 700 MW PHWRs are of indigenous design. These reactors are planned to be set up by NPCIL and / or its Joint Venture Companies. The LWRs are planned to be set up in technical cooperation with the four major reactors vendors in the world – Atomstroyexport (ASE) of Russian Federation, Areva of France, Westinghouse Electric Company (WEC) and GE Hitachi Nuclear Energy (GEH) of the USA. The LWRs are planned to be implemented with a shared scope of work. The technology, engineering and supply of critical equipment is envisaged from the foreign vendors whereas the supply of balance of equipment, construction, equipment erection, commissioning and operation by Indian side.

(http://www.dae.nic.in/writereaddata/lsus3263.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 3266
TO BE ANSWERED ON 25.04.2012

NUCLEAR POWER PLANT AT MITHI VIRDHI

3266. SHRIMATI DARSHANA JARDOSH:
Will the PRIME MINISTER be pleased to state:
(a) whether the Government has taken any action for the rehabilitation of the people affected/displaced by the proposed Chhaya Mithi Virdhi nuclear power project in Gujarat;
(b) if so, the details thereof;
(c) whether the Union Government has taken up this matter with the State Government of Gujarat;
(d) if so, the details thereof; and
(e) the details of the action taken to ensure safety measures for this proposed nuclear power plant in Gujarat?

ANSWER

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

(a)to(d) The Nuclear power Corporation of India Limited (NPCIL) is closely working with the State government for arriving at a comprehensive rehabilitation package in line with the policies of the Central Government and Gujarat Government.

(e) The nuclear power plants planned to be set up at Chhaya Mithi Virdi in Gujarat in technical cooperation with a foreign vendor are generation III+ reactors with advanced safety features. The safety of these nuclear power reactors will be comprehensively reviewed by the Atomic Energy Regulatory Board (AERB) and only after its clearance these reactors will be set up.

(http://www.dae.nic.in/writereaddata/lsus3266.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.3346
TO BE ANSWERED ON 25.04.2012

URANIUM CONTAMINATION IN PUNJAB

3346. SHRI MANISH TEWARI:
SHRI SARDAR SUKHDEV SINGH LIBRA:
Will the PRIME MINISTER be pleased to state:

(a) whether the Bhabha Atomic Research Centre (BARC) has carried out a study on uranium contamination in both the air and ground water in the Malwa and other regions of Punjab;
(b) if so, the salient findings of this report with regard to 60th concentration and toxicity of uranium and its impact on human health in Punjab and the corrective steps taken/being taken in this regard;
(c) whether the report has found that the use of phosphate fertilizers with high concentration of uranium and the subsequent agro-chemical processors that came into play following their use are responsible for this contamination;
(d) if so, the details thereof;
(e) whether the Government intends conducting a study in all those agro-climatic zones where there is both heavy use of phosphate fertilizers and salinity in water; and
(f) if so, the details thereof?

ANSWER

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

(a) Yes Sir, Bhabha Atomic Research Centre (BARC) has analysed around 700 samples for uranium content in water from Malwa region of Punjab in collaboration with Guru Nanak Dev University (GNDU), Amritsar. The samples are jointly collected by BARC and Guru NanakDev University, Amritsar, Punjab. BARC has not carried out any study for uranium content in air.

(b) Sir, In the study carried out by Bhabha Atomic Research Centre (BARC) in collaboration with Guru Nanak Dev University (GNDU), Amritsar during September-October, 2009; uranium content of 235 water samples collected from four districts (Bhatinda, Mansa, Faridkot and Ferozpur) of Punjab state was measured. Uranium concentration in these water samples ranged from 2.1 – 644 ppb (microgram per litre). BARC has further analysed additional 365 samples from Malwa region of Punjab in collaboration with Guru Nanak Dev University (GNDU), Amritsar. The uranium content in these samples are also within the aforementioned range.

In a new study carried out for screening purpose, we have already collected ninety two (92) water samples from remaining thirteen (13) districts (TaranTaran, Moga, Barnala, Sangrur, Ludhiana, Fatehgarh Sahib, Mohali, Ropar, Nawanshehar, Hoshiarpur, Gurdaspur, Amritsar and Pathankot) for the assessment of uranium content. These samples were collected under a collaborative project with Guru Nanak University, Amritsar. The uranium content in these samples varied

from 0.1-153 ppb and eight samples have uranium concentration above the permissible radiological limit of 60 ppb for drinking water specified by Atomic Energy Regulatory Board.

BARC has not carried out any study on the effect of uranium content in drinking water on human health in Punjab. Hence, the Department is unable to offer any comments on this issue. However, several studies focusing on health effects of radiation have been carried out in Finland among people who use drilled wells as sources of drinking water, which have uranium concentrations much higher than that observed in Malwa region. Nevertheless, none of the human studies reported so far have shown a clear association between chronic uranium exposure and cancer risk, clinical symptoms, or toxicity.

The levels of uranium in ground water observed during the study are relatively high at some of the locations. Ground water with higher uranium concentration can be made potable by the use of techniques such as Reverse Osmosis (RO). Based on field study carried out in Punjab, the use of RO systems was recommended.

(c)&(d) Sir, BARC has not carried out any study to find out whether the use of phosphatic fertilizers is related to the higher uranium content in ground water in Punjab. Hence it is unable to offer any comments in this regard.

(e)&(f) As far as BARC is concerned, there is no such proposal under consideration.

(http://www.dae.nic.in/writereaddata/lsus3346.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.3419
TO BE ANSWERED ON 25.04.2012

NUCLEAR WASTE

3419. SHRI S. SEMMALAI:
DR. PADMASINHA BAJIRAO PATIL:
SHRI BALIRAM JADHAV:

Will the PRIME MINISTER be pleased to state:

(a) whether under the existing practice, nuclear waste is being kept in borosilicate glass containers;
(b) if so, whether in a departure from the existing practice, the Department of Atomic Energy proposes to bury it underground;
(c) if so, the details thereof and whether this arrangement will require lot of space for burying;
(d) If so, the details thereof and the arrangements made by the Government in this regard; and
(e) whether the Government has any proposal to set up underground laboratories to study the effects and desirability of storing nuclear waste in deep underground sites and if so, the details thereof?

ANSWER

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

(a) No, Sir. Under the existing practice, waste is not kept in borosilicate glass container. Rather, a three stage approach is followed in our country in line with the practice followed world over for management of high level waste. These steps are:

(1) Waste is first converted into an inert solid material in the form of sodium borosilicate glass.

(2) As a second step, the above solidified waste is stored under surveillance in an air-cooled engineered facility for a period of 25-30 years to facilitate dissipation of heat generated due to decay of radioactivity.

(3) Finally, it is planned to dispose the solidified waste to a deep geological repository at a depth of about 800-1000 meters to isolate the radioactivity from the environment.

(b) There is no departure from the existing practice. Isolation of radioactivity from bio-sphere is ascertained by adopting the above mentioned three step approach.

(c) No Sir. Geological repository would not require lot of space.

(d) The need of repository would arise only after 30-40 years. This is because the inventory of radioactive waste generated is very small for the current nuclear power program of the country and present interim storage facility is adequate for the above period. Research activities for the development of geological repository have been undertaken. Presently,

work related to host rock characterization with a view to develop comprehensive data bases are in progress.

(e) Yes Sir. The Department of Atomic Energy (DAE) has a proposal to construct an Underground Research Laboratory during the XII Five Year Plan. The proposed laboratory will be of generic nature. Such laboratories are used for development of methodology and technology related to emplacement of solidified waste in the repository. Experiments in such laboratories will form a basis for the development and construction of underground geological repository for storing high level nuclear waste in the future.

(http://www.dae.nic.in/writereaddata/lsus3419.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.3432
TO BE ANSWERED ON 25.04.2012

SOLAR WATER PURIFIER

3432. SHRI NAVEEN JINDAL:
Will the PRIME MINISTER be pleased to state:
(a) whether the Bhabha Atomic Research Centre (BARC) has developed a low-cost solar water purifier recently; and
(b) if so, the details thereof alongwith the Government's reaction thereto?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir. Bhabha Atomic Research Centre (BARC) has developed a low-cost solar water purifier.

(b) BARC has developed solar energy driven portable domestic Brackish Water Reverse Osmosis (BWRO) technology for water purification. The technology is based on solar photovoltaic. It has capacity of 10 litres per hour which can desalinate contaminated water of salinity 1000 – 3000 ppm to provide drinking water of 50 – 300 ppm. The product water is devoid of toxic elements, pathogens and turbidity. The technology is available for know-how transfer to interested parties on non-exclusive basis.

(http://www.dae.nic.in/writereaddata/lsus3432.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 3438
TO BE ANSWERED ON 25.04.2012

NUCLEAR SCIENCE STUDY

3438. SHRI ASHOK TANWAR:
Will the PRIME MINISTER be pleased to state:
(a) the details of nuclear science study programmes sponsored by the Government;
(b) whether the Government has tied up with other countries in exchanging the knowledge; and
(c) if so, the details thereof?

ANSWER

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

(a) The research and development activities in the areas of nuclear science (viz. physics, chemistry, nuclear engineering, life science, isotope applications & technology, etc) are sponsored to various national universities, R&D labs and other institutes such as IITs and IISc through the Board of Research in Nuclear Sciences.

(b)&(c) Yes, Research Centres and Aided Institutions of Department of Atomic Energy (DAE) have been pursuing research in frontier areas in physical sciences through collaborative programmes with CERN (Europe), GANIL (France), ILL (Grenoble), BNL (USA), SERC(UK), DOE(USA), CEA(France), Homi Bhabha National Institute(HBNI), a deemed to be university under DAE provides academic linkages between different research laboratories, aided institutions, industrial units and public sector undertakings of the Department. HBNI has established relationship with several academic and research institutes both Indian and foreign.

(http://www.dae.nic.in/writereaddata/lsus3438.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.1709
TO BE ANSWERED ON 29.03.2012

SUPPLY OF URANIUM FROM TUMMALAPALLE

1709. SHRI M.P. ACHUTHAN :
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the supplies from a new uranium mine and processing facility at Tummalapalle in Andhra Pradesh is set to commence later this year; and
(b) if so, the details of the supplies expected and to what extent it would cater to the need of our atomic power plants?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.

(b) The full capacity of Tummalapalle Project, presently under construction is 256 ton of U3O8 per year. The production will reduce the fuel demand-supply gap for the unsafeguarded reactors.

(http://www.dae.nic.in/writereaddata/rsus1709.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 232
TO BE ANSWERED ON 29.03.2012

FORTY YEARS' CAP ON THE LIFE OF NUCLEAR REACTORS

*232. SHRI K.N. BALAGOPAL:

Will the PRIME MINISTER be pleased to state:

(a) whether Government is planning to implement any additional safety measures to bolster nuclear safety regulations in our country in the wake of last year's Fukushima disaster in Japan;

(b) if so, the details thereof;

(c) whether Government is aware that Japan is planning to put a forty years' cap on the operational life of their nuclear reactors;

(d) if so, whether Government of India is also planning to put such a cap on the operational life of Indian reactors;

(e) if so, the details thereof; and

(f) if not, the reasons therefor?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (f) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO. 232 FOR ANSWER ON 29.03.2012 BY SHRI K.N. BALAGOPAL REGARDING FORTY YEARS' CAP ON THE LIFE OF NUCLEAR REACTORS.

(a)&(b) Yes Sir. After the Fukushima (Japan) accident, Atomic Energy Regulatory Board (AERB) reviewed the safety status of Indian Nuclear Power Plants vis-a-vis the Fukushima accident. A high level Committee was constituted to review the safety of Indian Nuclear Power Plants against external events of natural origin. The Committee was chaired by a former Chairman of AERB and it had experts from Department of Atomic Energy as well as other national agencies dealing with the areas of seismicity/earthquake, tsunami, cyclones, river flooding etc.

The high level Committee of AERB reviewed safety aspects considering its broad terms of reference as follows :

i. Capacity of Indian Nuclear Power Plants to withstand earthquakes and other external events such as tsunamis, cyclones, floods, etc.

ii. Adequacy of provisions available to ensure safety in case of such events,

both within and beyond design basis.

The high level Committee of AERB submitted its report in August 2011. The report is available on AERB website. Committee observed that the existing designs, regulations and practices followed in India for Nuclear Power Plants have inherent strengths to deal with external natural events and their consequential events safely. To further strengthen the safety, the AERB Committee made certain recommendations. All recommendations of the AERB Committee have been accepted by AERB. Necessary steps have already been taken by AERB to ensure implementation of the recommendations appropriately in a time bound manner, at all the nuclear plants.

Besides this, to make AERB an independent body, Nuclear Safety Regulatory Authority (NSRA) Bill, 2011 has been introduced in the Parliament on 7 September 2011.

Further, to bolster the nuclear safety regulation, the Central Government has taken a decision to invite IAEA Missions namely, Operational Safety Review Team (OSART) and Integrated Regulatory Review Service (IRRS) for peer review of safety of nuclear power plants, and of the regulatory system, respectively.

(c) There is no formal communication from Japan with respect to forty years' cap on the operational life of their nuclear reactors.

(d)to(f) With respect to Indian nuclear power plants, there are no regulatory requirements of having a cap of forty years on the operational life of nuclear power plants. Continuation of operation is granted based on periodic safety review by Atomic Energy Regulatory Board (AERB).

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
NOTE FOR SUPPLEMENTARIES

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA STARRED QUESTION NO. 232 FOR ANSWER ON 29.03.2012 BY SHRI K.N. BALAGOPAL REGARDING FORTY YEARS' CAP ON THE LIFE OF NUCLEAR REACTORS.
PART - I

EXECUTIVE SUMMARY

The thrust of the question is to know the details of the measures taken by the Government to bolster nuclear safety regulation in the country post the Fukushima incident and whether nuclear plants/installations in India are safe and follow adequate safety standards/norms, especially post Fukushima incident. It also seeks to know if Japan proposes to cap the life of Indian nuclear power reactors to 40 years.

Nuclear Regulation in India

India has a robust nuclear safety mechanism that has been functionally independent. The safety of all aspects of nuclear power plants from siting, design, construction, commissioning, operation, renovation and modernization to decommissioning are exhaustively reviewed by the Atomic Energy Regulatory Board (AERB) and stage-wise authorizations accorded. The activities are carried out only after receiving the authorization of the AERB. The AERB regulates all the safety aspects -nuclear, radiological and industrial of nuclear power plants in the country

Post Fukushima Strengthening of Regulatory Mechanism

While the AERB was functionally independent and did not come under the Department of Atomic Energy, it reported to the Atomic Energy Commission. To accord statutory status to the regulatory body, the Government has introduced the Nuclear Safety Regulatory Authority Bill, 2011. On passing of the bill, the new Nuclear Safety Regulatory Authority will be created and the present AERB will be subsumed in it.

(http://www.dae.nic.in/writereaddata/rssq232.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA STARRED QUESTION NO. 232 FOR ANSWER ON 29.03.2012 BY SHRI K.N. BALAGOPAL REGARDING FORTY YEARS' CAP ON THE LIFE OF NUCLEAR REACTORS.
PART II

ANTICIPATED QUESTIONS AND ANSWERS

What immediate actions we have taken after the Fukushima Accident?

Atomic Energy Regulatory Board (AERB) and Nuclear Power Corporation of India Ltd (NPCIL) constituted a high level Committee/Task Force to review the safety of Indian Nuclear Power Plants against external events of natural origin in the light of Fukushima incident.

What has been the finding of the task forces of NPCIL regarding ability of Indian nuclear power plants to withstand earthquakes?

The task forces of NPCIL on review of safety post Fukushima incident have found that all the nuclear power plants can withstand the maximum earthquakes likely at their respective locations. The review has also found that the Indian nuclear power plants have margins, several times more than the design earthquake peak ground acceleration values.

To further enhance the safety of the nuclear power plants, recommendations have been made by the task forces which are being implemented after due process of approval. The salient recommendations made by the task forces are:

• Automatic reactor shutdown initiation sensing seismic activity.
• Augmentation of cooling water inventories and provisions for additional hook up arrangements through external sources and provision of mobile diesel driven pump sets.
• Increasing the duration of the passive power sources/battery operated devices for monitoring important parameters for a longer duration.
• Additional shore protections measures at Tarapur Atomic Power Station and Madras Atomic Power Station.
• Revision of Emergency Operating Procedures (EOPs) and structured training programs to train plant personnel on modified EOPs.
• Inerting (filling up of the containment with nitrogen) of the TAPS-1&2 containment.

What are the outcomes of the AERB Committee?

The high level Committee of AERB reviewed safety aspects considering its broad terms of reference as follows:

(1) Capability of Indian Nuclear Power Plants to withstand earthquakes and other external events such as tsunamis, cyclones, floods, etc.

(2) Adequacy of provisions available to ensure safety in case of such events, both within and beyond design basis.

The high level Committee of AERB submitted its report in August 2011. The Committee has observed that the existing designs, regulations and practices followed in India for Nuclear Power Plants have inherent strengths to deal with external natural events and their consequential events safely. To further strengthen the safety, the AERB Committee made certain recommendations. Recommendations of the AERB Committee are being pursued with the utilities for their implementation.

AERB has asked NPCIL to devise and submit necessary action plans for implementation of the various recommendations made by the AERB high level committee. Necessary steps will be taken by AERB to ensure implementation of the recommendations appropriately in a time bound manner, at all the nuclear plants.

Is the existing regulatory regime weak?

The existing regulatory regime is robust. Measures for regulation of nuclear safety and radiation safety are in place and strictly adhered to under the provisions of the Atomic Energy Act, 1962 and in accordance with the international norms of safety.

What are the steps taken to further strengthen Regulatory body?

At present, it is being carried out under the provisions of the Atomic Energy Act, 1962 and a comprehensive Bill therefore is already introduced in the Lok- Sabha on 7 September, 2011 which is currently going through the legislative process.

Is the safety of our nuclear power plants reviewed by any external agency?

Yes. At present our nuclear power plants are reviewed by World Association of Nuclear Operators (WANO) which is an important international organization. WANO undertakes peer review of the safety and reliability of nuclear plants. WANO peer reviews enjoy widespread credibility and have time and again served to flag India's impeccable record on safety of our nuclear power plants

Is there any proposal to involve any other external agency for safety review of our nuclear power plants?

In the wake of Fukushima accident, a decision has been made to invite IAEA Missions namely, Operational Safety Review Team (OSART) and Integrated Regulatory Review Service (IRRS) for peer review of safety of nuclear power plants, and of the regulatory system, respectively. The Government is in touch with IAEA for scheduling the visit of the OSART Team in 2012. Action with regard to Integrated Regulatory Review Service (IRRS) mission will be taken subsequent to the passage of the Nuclear Safety Regulatory Authority Bill.

Are our nuclear power reactors safe enough?

Utmost attention is given to nuclear safety in Indian nuclear power plants. Principle of "SAFETY FIRST- PRODUCTION LATER" is adopted in all activities. The overriding importance to safety encompasses is, siting, design, construction, commissioning, and operation. In all these activities, a major effort is devoted to ensuring safety of operating personnel, public as well as the environment.

A systematic approach using well-defined principles is followed in the design of the nuclear power plants to provide the required safety features adopting principles of defence-in-depth, diversity and redundancy. Nuclear Power Plants are constructed in accordance with the design intent, and with required quality of workmanship to very strict quality standards. The manufacture of components and equipment as well as the erection, testing and commissioning activities are performed under stringent Quality Assurance Programmes. The operations are performed using well laid out procedures by thoroughly well qualified and trained staff. The operators are trained using simulators and periodically re-trained for sharpening their reflexes and skills.

The specific safety features of the Indian Nuclear Power Reactors are:

a) In design of nuclear power plants, safety principles of redundancy, diversity and fail-safe design features are followed. Physical separation between redundant safety systems and diversity of equipment of critical safety systems ensure that common mode failures due to fire etc. do not occur. Further, the nuclear reactors are designed for the maximum intensity earthquake, flood and tsunami etc. applicable to the site.

b) The defence-in-depth approach in design ensures that there are multiple barriers (fuel matrix, fuel clad, primary pressure pipe, primary containment and secondary containment) to be crossed before radioactivity can escape to environment.

c) There is a multi-tier system of review by the Atomic Energy Regulatory Board (AERB) during all the stages.

d) For nuclear power plant operation, operating personnel for specific positions are licensed by AERB and then only allowed to perform the task.

e) An exclusion zone around the reactors is established where the land is acquired and fenced. No resident public habitation is permitted. In addition a sterilised zone of 5 km. radius surrounds the plant where only normal growth of existing population is allowed.

f) Emergency preparedness, as a matter of abundant caution, is ensured by well laid down plans and procedures and regular rehearsals by the plant and state authorities.

Has any accident taken place in Indian nuclear power reactor involving release of radiation to the environment?

Indian nuclear power plants have demonstrated safe and reliable operation over 353 reactor-years of operation and there has not been any accident in Indian nuclear power stations involving release of radioactivity from these plants.

How safe are TAPS 1&2 Boiling Water Reactors (BWR), the oldest reactors?

TAPS 1&2 are the only two BWRs in operation in the country. These are in operation since October 1969. The TAPS 1&2 have been renovated and safety upgrades carried out in 2006 to the current standards of safety. During these upgrades additional diesel generator sets have been provided to ensure the backup power supply availability amongst other similar reinforcements in systems and equipment.

An emergency condenser in each unit has also been provided to remove the decay heat. This passive feature works based on the natural principle of thermo-siphoning, independent of any external power supply. It contains water inventory sufficient to remove decay heat for 8 hours. This is in addition to the water inventory in the suppression pools, another passive safety feature. In addition, these units are equipped with mobile high pressure water pumps to supplement the above systems.

TAPS1&2 is located on the west coast, which is 990 km away from the plate boundary (Makran Fault), an epicenter of earthquake where tsunami can be generated. The last tsunami on the western coast occurred in 1945 due to an earth quake at the Makran Fault. Because of the long distance from the plate boundary a high tsunami wave is very unlikely at Tarapur. The plants are designed to withstand seismic disturbances originating from the nearest fault line.

The AERB licenses the operation of the reactors, based on evaluation of safety and also ensuring that the lessons learnt from national and international events have been incorporated. TAPS 1&2 units have undergone a detailed safety and evaluation review by AERB before licensing for operation after Renovation and Modernisation in 2006.

Have any Indian reactors undergone Life Extension, Renovation and Modernization and safety upgrades in the country?

Life extension measures have been undertaken at the country's first two Boiling Water reactors, TAPS 1&2 at Tarapur in Maharashtra. These reactors were commissioned in 1969 and have undergone safety upgrades and modernization in the year 2006. In addition to this, Renovation and Modernisation (R&M) in terms of En-masse Coolant Channel Replacement has been carried out in six earlier generation Pressurised Heavy Water Reactors (PHWRs) at RAPS-2, MAPS 1&2, NAPS 1&2 and KAPS-1. The En-masse Feeder Replacement (EMFR) has also been carried out at RAPS-2, MAPS-1, NAPS-1&2 and KAPS-1. The steam generator hairpins were also replaced in Madras Atomic Power Station (MAPS) at Kalpakkam in Tamilnadu. There have also been safety upgrades at these stations and in RAPS-1.

Why is the life of RAPS-1 not being extended like that of other reactors?

RAPS-1 was of a prototype Canadian design of this size reactor, based on The Douglas Point Reactor. Some deficiencies and inadequacies in materials and equipment were encountered in both the reactors at Douglas Point and RAPS-1 during their operation. So unlike other Indian reactors of its vintage, RAPS-1 has had a chequered history of operation and problems associated with its components and equipment.

In view of this, a techno-economic study on possibility of its refurbishment was conducted and it has indicated that it may not be viable. Hence it has been decided not to extend the life of this unit and instead undertake a detailed techno-economic study on continuation of operations.

What are the plans for RAPS-1 now?

RAPS-1 has been under long term shutdown since October 2004. The unit has been defueled (all fuel removed) and preserved in a safe shutdown condition as the various studies on options of refurbishment, continuation of operation etc. were carried out. A decision on the reactor will be taken up on completion of the techno-economic assessment on continuation of operations.

Does India have decommissioning capability?

India has comprehensive capabilities in decommissioning. India has decommissioned Research reactors Zerlina and Purnima and has sufficient expertise.

How is the decommissioning of RAPS-1 proposedto be funded if a decision is taken to decommission it?

The decommissioning of RAPS-1 if a decision to the effect is taken, will be funded from the decommissioning fund, which has been accumulated from the decommissioning levy in tariff of nuclear power. The decommissioning levy, currently at 2 Paise/ unit of electricity, is charged as a part of tariff, and is credited to a decommissioning fund. The credits into the fund from sale of electricity and interest thereon have generated a corpus that is adequate to meet the funding needs of decommissioning of RAPS-1 and other reactors in future.

What are the Current Initiatives in public outreach to allay the apprehension?

The Public outreach has been accorded a high priority and necessary organizational structures and mechanisms have been enhanced. A separate Directorate for Rehabilitation and Resettlement (R&R) and Corporate Social Responsibility (CSR) has been created in NPCIL. Committees have been constituted at NPCIL headquarters and each site for carrying out public outreach activities and detailed action plans have been formulated. The monitoring of the actions in this regard has been taken up at the highest levels.

The target groups – the local people, decision makers, people's representatives, administrators, prominent citizens, press and media, school & college students etc. have been indented for special focus in the outreach programme. Professional agencies have also been roped in to create means to explain the facts in simple and attractive manner. The major initiatives taken in this regard are:

- Bringing out Public Awareness Material addressing each of the concerns including safety, radiation, merits of nuclear power and benefit of nuclear power in simple layman terms, in the local language
- Use of Multimedia clips
- Use of Short films,
- Use of Jingles, Teasers
- Lectures/ Presentations
- Web Sites of NPCIL/DAE constituent units

The website of NPCIL has also a portal where the public can put questions, request for visiting any site or ask any official to come over to their place. This has been receiving very good response from the public.

Is there any proposal to involve any other external agency for safety review of our nuclear power plants?

In the wake of Fukushima accident, a decision has been made to invite IAEA Missions namely, Operational Safety Review Team (OSART) and Integrated Regulatory Review Service (IRRS) for peer review of safety of nuclear power plants, and of the regulatory system, respectively. The Government is in touch with IAEA for scheduling the visit of the OSART Team in 2012. Action with regard to Integrated Regulatory Review Service (IRRS) mission will be taken subsequent to the passage of the Nuclear Safety Regulatory Authority Bill.

(http://www.dae.nic.in/writereaddata/rssq232.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA STARRED QUESTION NO. 232 FOR ANSWER ON 29.03.2012 BY SHRI K.N. BALAGOPAL REGARDING FORTY YEARS' CAP ON THE LIFE OF NUCLEAR REACTORS.
PART III

DETAILED NOTES FOR SUPPLEMENTARIES

India has a robust nuclear safety mechanism that has been functionally independent. The safety of all aspects of nuclear power plants from siting, design, construction, commissioning, operation, renovation and modernization to decommissioning are exhaustively reviewed by the Atomic Energy Regulatory Board (AERB) and stage-wise authorizations accorded. The activities are carried out only after receiving the authorization of the AERB. The AERB regulates all the safety aspects -nuclear, radiological and industrial of nuclear power plants in the country

While the AERB was functionally independent and did not come under the Department of Atomic Energy, it reported to the Atomic Energy Commission. To accord statutory status to the regulatory body, the Government has introduced the Nuclear Safety Regulatory Authority Bill, 2011 in the Lok Sabha on 07 September, 2011. On passage of the bill, the new Nuclear Safety Regulatory Authority will be created and the present AERB will be subsumed in it.

In the wake of Fukushima accident, a decision has been made to invite IAEA Missions namely, Operational Safety Review Team (OSART) and Integrated Regulatory Review Service (IRRS), for peer review of safety of nuclear power plants, and of the regulatory system, respectively. The Government is in touch with IAEA for scheduling the visit of the OSART Team. Action with regard to IRRS Mission will be taken subsequent to the passage of the Nuclear Safety Regulatory Authority Bill.

The average design economic life of nuclear power reactors currently operational is 40 years. The earlier generation reactors in operation had a design life of 25 years. The new generation reactors planned to be set up in the country has a life of 60 years. The Advanced Heavy Water Reactor (AHWR) has been designed for a life of 100 years.

Nuclear power reactors are designed in a conservative manner with large margins. Given the inherent robustness of the designs, they can be operated well beyond their design economic life. Life of reactors has been extended across the world, including in India. The life extension of reactors is one of the reasons for large new capacity not being set up in the last two decades in the USA and Europe.

The extension of life is based on detailed health assessment and implementation of life extension measures and necessary safety upgrades after regulatory review and approval. Life extension of the plant is carried out on authorization of the AERB. The AERB also accords license for operation after life extension after carrying out exhaustive safety review.

Life extension has the economic advantage of capacity being available at a small fraction of the cost of setting up new capacity. In terms of safety they are brought to the state of the art by safety upgrades, ensuring enhanced safety.

Life of Indian reactors

There are twenty nuclear power reactors in the country of which nineteen are in operation. One reactor, RAPS-1 is under extended shutdown since October 2004 for techno-economic assessment on continuation of operations/ refurbishment. Of the nineteen operating reactors, two reactors TAPS 1&2 have been operating for over 42 years. The remaining reactors have operating age ranging from 1 to 38 years. AERB conducts periodic safety reviews of all operating plants and mid course improvements in safety are made as per these reviews.

Life extension measures have been undertaken at the country's first two Boiling Water reactors, TAPS 1&2 at Tarapur in Maharashtra. These reactors were commissioned in 1969 and have undergone safety upgrades and modernization in the year 2006. They have been brought to the state of the art in terms of safety and are performing very well.

In addition, Renovation and Modernisation (R&M) in terms of En-masse Coolant Channel Replacement has been carried out in six earlier generation Pressurised Heavy Water Reactors (PHWRs) at RAPS-2, MAPS 1&2, NAPS 1&2 and KAPS-1. The En-masse Feeder Replacement (EMFR) has also been carried out at RAPS-2, MAPS-1, NAPS-1&2 and KAPS-1. The steam generator hairpins were also replaced in Madras Atomic Power Station (MAPS) at Kalpakkam in Tamilnadu. There have also been safety upgrades at these stations and in RAPS-1.

RAPS-1 was the first Pressurised Heavy Water Reactor (PHWR) to be set up in the country at Rawatbhata near Kota in Rajasthan in the 1960s in technical collaboration with Atomic Energy of Canada Limited (AECL) of Canada. The unit commenced commercial operation in the year 1973. The reactors of earlier vintage were designed for an economic life of 25 years and RAPS-1 had already completed 31 years of its operating life by 2004. The reactor also underwent safety upgrades in the 1990s.

Decision Capping of Life of Reactors/ Continuation of Operation

In India the decisions on shutting down of reactors or authorizing their continuation of operation or extension of life is taken by the AERB based on reviews of safety. The AERB has a structured mechanism for continuous review of safety of reactors and will take decisions in this regard at appropriate time.

(http://www.dae.nic.in/writereaddata/rssq232.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO. 1707
TO BE ANSWERED ON 29.03.2012

ENERGY GENERATING CAPACITY OF KALPAKKAM

1707. SHRIMATI KANIMOZHI :
Will the PRIME MINISTER be pleased to state:
(a) the total energy generation capacity of the existing reactor at Kalpakkam, Tamil Nadu;
(b) whether an additional reactor is being constructed at Kalpakkam and details thereof; and
(c) the capacity of this reactor and when it would be commissioned?

ANSWER

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

(a) At present, a total capacity of 440 MW comprising of two nuclear power reactors of 220 MW each (Madras Atomic Power Station 1&2) is in operation at Kalpakkam in Tamil Nadu.

(b)&(c) One nuclear power reactor of 500 MW, the Prototype Fast Breeder Reactor (PFBR) is at advanced stage of construction at Kalpakkam. This will be the first commercial fast reactor of the country. It is a first of its kind reactor involving complex technologies. The commissioning of the reactor is expected to be completed in 2014-15.

(http://www.dae.nic.in/writereaddata/rsus1707.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.1709
TO BE ANSWERED ON 29.03.2012

SUPPLY OF URANIUM FROM TUMMALAPALLE

1709. SHRI M.P. ACHUTHAN :
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the supplies from a new uranium mine and processing facility at Tummalapalle in Andhra Pradesh is set to commence later this year; and
(b) if so, the details of the supplies expected and to what extent it would cater to the need of our atomic power plants?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.

(b) The full capacity of Tummalapalle Project, presently under construction is 256 ton of U3O8 per year. The production will reduce the fuel demand-supply gap for the unsafeguarded reactors.

(http://www.dae.nic.in/writereaddata/rsus1709.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.2349
TO BE ANSWERED ON 28.03.2012

EIA OF JAITAPUR NUCLEAR POWER PROJECT

2349. SHRI KULDEEP BISHNOI:
Will the PRIME MINISTER be pleased to state:
(a) whether environmental organization Greenpeace and US geologists have suggested to conduct another Environmental Impact Assessment (EIA) and earthquake impact for the Jaitapur Nuclear Power Project;
(b) if so, the details thereof and the reasons therefor;
(c) the reasons for taking off project despite these scientific and environmental concerns;
(d) whether any recent measures have been taken to address these concerns; and
(e) if so, the details thereof?

ANSWER

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

(a)&(b) Greenpeace organization in a press release dated November 23, 2011 has quoted a paper in Current Science journal regarding seismicity at Jaitapur by two geologists, Roger Bilham and Vinod Gaur, suggesting a redoing of Environment Impact assessment (EIA) studies.

(c)&(d) The seismic data and opinions of experts have been considered while arriving at seismic related inputs for design of the nuclear reactors. The issues raised in the paper in Current Science journal has also been considered while arriving at the design parameters. The same was clarified by Nuclear Power Corporation of India Limited (NPCIL) through a press release. The Environmental clearance for the Jaitapur project was granted by the Ministry of Environment & Forests (MoEF) after careful consideration of all relevant facts.

(e) Does not arise in view of reply to (c) & (d) above.

(http://www.dae.nic.in/writereaddata/lsus2349.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.2383
TO BE ANSWERED ON 28.03.2012

ATOMIC ENERGY PROGRAMME

2383. ADV. A. SAMPATH:
SHRI ASHOK TANWAR:
SHRI RAJAIAH SIRICILLA:
KUMARI SAROJ PANDEY:

Will the PRIME MINISTER be pleased to state:

(a) whether India's atomic energy programme represented a very significant step towards technological and energy self reliance and security;
(b) if so, the details thereof and the steps taken in this regard during the last three years;
(c) the details of foreign investments made in each of the nuclear power plants set up, under construction and proposed to be set up;
(d) the names of the countries with whom Government has signed fuel supply agreement so far;
(e) whether these countries are supplying fuel according to the agreement;
(f) if so, the details thereof and if not, the reasons therefor alongwith the steps taken/being taken by the Government in this regard;
(g) whether the Government is facing difficulties in acquiring land for Fatehabad, Haryana Nuclear reactor and if so, the details thereof and the current status in this regard; and
(h) the steps taken/being taken by the Government to resolve the matter?

ANSWER

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

(a)&(b) Yes, Sir. The major achievements have been development of indigenous nuclear power reactor and associated fuel cycle technologies for the country's three-stage nuclear power programme in an international isolation and technology denial regime that lasted from 1974 to 2008. Today India is recognized globally as a country having advanced technology with impeccable non-proliferation record .

In the last three years, three nuclear power reactors (3 x 220 MW) have been commissioned successfully. Construction of 4 indigenously designed Pressurised Heavy Water Reactors of 700 MW each have been started. Bilateral cooperation agreements have been signed with several countries.

(c) As per the provisions of the Atomic Energy Act, 1962 foreign equity investment in nuclear power projects is not permitted. Therefore, foreign funding can only be in the form of debt. Currently, the Kudankulam project is being set up with Russian state credit of 6416 crore. In respect of future projects, foreign debt either as state credit, banks or multilateral funding agencies is envisaged.

(d) The Central Government has signed fuel supply contracts with Russian Federation, Kazakhsthan and France.

(e)&(f) Yes, Sir. France has completed supply of the contracted quantity. With Russian Federation and Kazakhstan, there are long term fuel supply agreements. Supplies are being received regularly.

(g)&(h) The land acquisition at Fatehabad, Haryana is progressing in accordance with the Land Acquisition Act. It has reached to an advanced stage of conclusion. Of the 1313 acres to be acquired for the plant site, land holders of 1109 acres have already expressed their consent. Currently compensation for land to be acquired is being discussed with the state government. The apprehensions about safety of nuclear power, particularly post Fukushima are being addressed through sustained public outreach programmes.

(http://www.dae.nic.in/writereaddata/lsus2383.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.2392
TO BE ANSWERED ON 28.03.2012

RADIATION DETECTION SYSTEM

2392. DR. SUCHARU RANJAN HALDAR:
DR. VINAY KUMAR PANDEY 'VINNU':
Will the PRIME MINISTER be pleased to state:
(a) the details of the follow up action taken for installation of Radiation Detection System, in the wake of the Delhi University's Radiation Fiasco;
(b) whether the Government has put in place any mechanism to ensure that such incidents do not recur in future and if so, the details thereof;
(c) the names of the Regulatory Body in the country which monitor the disposal of scrap or medical waste containing radiation; and
(d) the number of cases reported during the last three years and the current year regarding violation of the rules and guidelines relating to disposal of scrap or medical waste containing radiation and the actions taken so far against the violators?

ANSWER

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

(a) The Government of India had initiated actions for installation of Radiation Detection System at some major Indian ports before the incident at Mayapuri happened. The Committee of Secretaries in its meeting held on October 9, 2009, decided that Ministry of Home Affairs in consultation with various other Ministries/Departments concerned will monitor the installation of Radiation Detection System at the ports in a time bound manner. Ministry of Shipping had been assigned the responsibility of executing the project of installation of monitors in the major ports.

(b) Yes Sir, several actions have been initiated by Atomic Energy Regulatory Board (AERB) to prevent recurrence of such incidents in future which include the following :

- for strengthening the inventory of the sources including the legacy sources,

  suppliers of gamma cells and other radiation sources world-wide were contacted

  various ministries/governmental departments were contacted

  Users of the sources were informed with the help of print media to furnish information on sources in their possession

  initiated the process of developing a computerized web-based system for managing the regulation of radiation sources

- Awareness / Training programs on handling of radioactive material for research and training activities were conducted

- In order to detect sources at the shops/ facilities/ dealing with metallic scrap, efforts are on to persuade the scrap associations and dealers to install the radiation monitoring instruments to check the presence of radiation in the scrap.

- AERB has established Regional Regulatory Centers (RRCs) at Southern and Eastern Region to make the regulatory process more effective.

- As a part of its compliance assurance program, AERB has significantly increased the number of inspections for radiation facilities.

- As recommended by AERB, action has been initiated by relevant authorities to install high sensitivity radiation monitoring systems at all major sea ports and air ports.

- A committee has been constituted to streamline arrangements for disposal of used sources; the committee has representation from all concerned agencies.

(c) Atomic Energy Regulatory Board (AERB) is the only Regulatory Body in the country regulating the safe disposal of radioactive wastes.

(d) Except Mayapuri (Delhi) incident, no case of violation of the Atomic Energy (Safe Disposal of Radioactive Waste) Rules, 1987, has been reported to AERB during the last three as well as the current year.

(http://www.dae.nic.in/writereaddata/lsus2392.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.2437
TO BE ANSWERED ON 28.03.2012

USE OF URANIUM

2437. SHRI DINESH CHANDRA YADAV:
DR. MURLI MANOHAR JOSHI:
SHRI WAKCHAURE BHAUSAHEB RAJARAM:
Will the PRIME MINISTER be pleased to state:
(a) whether a scheme to use slightly enriched uranium in power generating projects has been formulated recently;
(b) if so, the facts in this regard;
(c) whether assessment of all benefits from its use has been made;
(d) if so, the likely benefits therefrom;
(e) the time by which the complete assessment of the success of this test is likely to be made; and
(f) the action plan of the Government for protecting environment in the wake of uranium mining in the country?

ANSWER

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

(a)&(b) The indigenous Pressurised Heavy Water Reactors (PHWRs) are fuelled by natural uranium containing 0.7% U-235 while the Light Water Reactors (LWRs) to be set up in technical cooperation with foreign countries would use Low Enriched Uranium (LEU) about 4%-5% U-235. The fissile uranium content (U-235) is slightly higher about 1% [Slightly Enriched Uranium (SEU)] in the spent fuel of LWRs. The nuclear power expansion plan in medium term envisages setting up of 40,000 MW of LWR capacity in the country with foreign technical cooperation. The spent fuel from these LWRs can be reprocessed and the SEU thus obtained can be used in PHWRs as fuel. With a view to use this SEU from LWR spent fuel in PHWRs which is likely to be available in future, SEU based fuel has been developed for conducting tests in operating 220 MW PHWR reactors to assess its performance. The trial irradiation of SEU fuel has been taken up in Madras Atomic Power Station (MAPS), Kalpakkam in Tamil Nadu.

(c)&(d) With the use of SEU fuel for operating PHWRs, the LWR spent fuel can be reused and LWR spent fuel inventory reduced. With increased burn up of SEU fuel in PHWRs, the requirement of fuel and the overall fuel cycle cost will be reduced. These are the advantages of use of SEU in PHWRs from LWR spent fuel.

(e) The trial irradiation and further examination of Slightly Enriched Uranium (SEU) fuel will take about one and half years from now. However, actual implementation of use of Slightly Enriched Uranium (SEU) in operating units would depend upon availability of SEU from Light Water Reactors(LWRs).

(f) Uranium mining in the country is carried out by Uranium Corporation of India Limited (UCIL), a PSU under administrative control of Department of Atomic Energy, Govt. of India. All mining operations are carried out under well-established regulatory frame-work approved and monitored by Ministry of Environment & Forests, State Pollution Control Boards, Atomic Energy Regulatory Board and Directorate General of Mines Safety. Prior to start of construction of mines, an Environmental Impact Assessment and Environmental Management Plan (EIA/EMP) is drawn up after detailed discussion as approved by the State Pollution Control Boards and Ministry of Environment and Forests, Govt. of India. Action Plans spelt out in the Environmental Management Plan (EMP) are monitored by UCIL's own Environmental Cell besides Environmental Survey Laboratories (ESLs) of Bhabha Atomic Research Centre (BARC) set up at all the sites of mining. These laboratories start functioning before commencement of operations in the mine to collect baseline data. Environmental data are collected throughout the operating phase of the mine. The data pertain to radioactivity in air, water, soil and food items. It is ensured that the regulatory limits prescribed by the Atomic Energy Regulatory Board are complied with.

(http://www.dae.nic.in/writereaddata/lsus2437.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.2498
TO BE ANSWERED ON 28.03.2012

APPROVAL FOR SETTING UP OF NPP

2498. DR. BHOLA SINGH:
SHRI BHUDEO CHOUDHARY:
SHRI RUDRA MADHAB RAY:
DR. P. VENUGOPAL:

Will the PRIME MINISTER be pleased to state:

(a) whether approval from the State Governments and the interest of people of the area is taken into consideration before setting up of atomic power plants in the country;
(b) if so, the details thereof and the details of safety measures taken before setting up of various atomic plants in general and Kudankulam and Jaitapur in particular;
(c) if not, the reasons therefor;
(d) whether the Government proposes to provide alternative site for the next generation of various nuclear power plants including Kudankulam in view of local protest and if so, the details thereof; and
(e) the details of the sector to which electricity is likely to be supplied from the Kudankulam nuclear power plant and the criteria for the same?

ANSWER

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

(a)& (b) Yes Sir. The sites offered by state governments for setting up nuclear power plants are evaluated by the Site Selection Committee (SSC) of the Government in accordance to the criteria laid down in Atomic Energy Regulatory Board (AERB) code of siting. The Government accords 'in principle' approval of the sites found suitable and recommended by the SSC. At each stage for setting up of a nuclear power plant, interests of the people of the area are taken into consideration. Statutory clearances from state and central authorities are taken before commencement of work of a nuclear power plant. The review during these statutory clearances essentially ensures that necessary safety measures are in place.

The site at Kudankulam was jointly identified by the Tamil Nadu state government and the Site Selection Committee of the Government. Based on detailed evaluation of the site by the Site Selection Committee and meeting of the laid down criteria, the site was accorded approval by the Government. All statutory clearances from the state and central government agencies have been obtained.

The site at Jaitapur was offered by the Maharashtra state government and evaluated and recommended by SSC. Based on this, the Government has accorded approval to the site to locate nuclear power plant. Subsequently, environmental clearance, and Coastal Regulation Zone clearance by MoEF have been obtained in line with the laid down procedures.

(c)&(d) Do not arise in view of reply to (a) & (b) above.

(e) The electricity generated from Kudankulam nuclear power plant will be allocated to the beneficiary states and Union Territories in the Southern Electricity region by the Ministry of Power. The power from the plant will be fed into the southern grid, from where the State Electricity Boards/distribution companies of the beneficiary states will supply it to various sectors/customers.

(http://www.dae.nic.in/writereaddata/lsus2498.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.931
TO BE ANSWERED ON 22.03.2012

TRAINING TO DEAL EMERGENCIES/NATURAL CALAMITIES

931. SHRI P. RAJEEVE:
Will the PRIME MINISTER be pleased to state:
(a) whether staff at nuclear power plants is given training to deal with emergencies/natural calamities such as earthquakes/tsunamis;
(b) if so, the details of the training programmes that have been conducted till date from 2004 onwards, year-wise and plant-wise; and
(c) if not, the reasons therefor?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Nuclear Power Corporation of India Limited (NPCIL) has a structured training programme for training the plant personnel on various plant procedures including Emergency Operating Procedures (EOP) for handling off-normal conditions. The emergency procedures include contingencies arising out of floods, tsunamis, cyclonic storms, earthquakes and fire.
(b) The relevant training programmes on EOPs for off-normal conditions are regularly conducted in batches to the plant personnel at all the nuclear power plants. Retraining on these topics is also imparted regularly to the operation personnel as a part of the licensing process. On an average, at every site five training programmes in this regard have been conducted every year since 2004.
(c) Does not arise

(http://www.dae.nic.in/writereaddata/rsus931.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.932
TO BE ANSWERED ON 22.03.2012

STEPS TO ALLAY FEARS OF NUCLEAR PLANTS

932. SHRI A. ELAVARASAN:
Will the PRIME MINISTER be pleased to state:

(a) whether strong protests at proposed nuclear power plants in Kudankulam and Jaitapur, Nuclear Power Corporation of India Ltd. (NPCIL) has begun a concerted nation-wide campaign to allay public fears about radiation and its linkage with health hazards such as cancer;

(b) if so, the details thereof;

(c) whether this marks a change of stance by the company as it seeks to restart the work at its plants and Government pushes to continue the opening up India's nuclear power industry; and

(d) if so, the details thereof?

ANSWER

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

(a)&(b) Nuclear Power Corporation of India Limited (NPCIL) has scaled up its public outreach activities in a structured manner by adopting a multipronged approach to allay the apprehensions of the people living around Kudankulam, Jaitapur and other nuclear power plant sites in the country regarding safety of nuclear power, radiation and health etc. Towards this, interactive sessions with press, students, villagers have been held and correct information is being disseminated through TV channels, radio, newspapers, pamphlets etc.

(c) While pursuing nuclear power programme the government has always attached highest importance to safety, security & livelihood of people of the neighbourhood. India's energy needs are very large. Nuclear energy will play a major part in future for achieving energy security of the country. India's nuclear policy has not undergone any change.

(d) Does not arise.

(http://www.dae.nic.in/writereaddata/rsus932.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.933
TO BE ANSWERED ON 22.03.2012

STUDY OF SAFETY ISSUES OF KUDANKULAM POWER PLANT

933. SHRI T.M. SELVAGANAPATHI:
Will the PRIME MINISTER be pleased to state:
(a) whether the high level experts panel set up by Government to study the entire gamut of safety issues related to the Kudankulam Nuclear Power Project have rejected the possibility that radiation from functioning nuclear power plants across the country would increase cancer and birth deformity cases;
(b) if so, the details thereof;
(c) whether similar studies have been undertaken in respect of other nuclear plants in the country on the same issue; and
(d) if so, the results of such studies?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.
(b) The group of experts from diverse fields, namely academicians, scientists, engineers, radiation experts and doctors etc. constituted by the Central Government to study entire gamut of safety issues related to Kudankulam submitted its report in December 2011. It has concluded that incidence of cancers and birth defects is not increased due to radiation from operating nuclear power plants. It has also been conveyed that the people living around Kudankulam nuclear power plant need not be apprehensive as the operation of the plant would not give rise to any deleterious health effects.
(c) Yes, Sir.
(d) The studies have found that there has not been any rise in cancer morbidity, birth defects or other ailments and there is no significant change in radiation level in the environment compared to the base line data collected before operation of nuclear power plant.

(http://www.dae.nic.in/writereaddata/rsus933.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.934
TO BE ANSWERED ON 22.03.2012

URANIUM IN GROUND WATER IN PUNJAB

934. SHRI H.K. DUA:
Will the PRIME MINISTER be pleased to state:
(a) whether Government is aware of the Bhabha Atomic Research Centre's (BARC) report confirming traces of uranium in ground water in several districts of southern Punjab;
(b) if so, the details thereof;
(c) whether some research has been carried to find out whether this is the cause of high prevalence of cancer in the region;
(d) whether BARC has confirmed that the high prevalence of cancer is the cause of the presence of uranium in the sub-soil water in the region; and
(e) the steps Government is going to take to ensure that the presence of uranium does not affect either the crops or the health of the people of the region?

ANSWER

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

(a) Yes Sir, Bhabha Atomic Research Centre (BARC) in collaboration with Guru Nanak Dev University (GNDU), Amritsar has analysed uranium content in water from four districts (Bhatinda, Mansa, Faridkot and Ferozpur) of Punjab state. Elevated levels of uranium were found in some of the water samples.

(b) In the study being carried out by BARC in collaboration with GNDU since Sept. 2009, uranium content of 520 water samples collected from four districts (Bhatinda, Mansa, Faridkot and Ferozpur) of Punjab State was measured. Uranium concentration in these water samples ranged from 2.1 – 644 ppb (microgram per litre).

In a new study, BARC has collected 92 water samples from remaining thirteen (13) districts (TaranTaran, Moga, Barnala, Sangrur, Ludhiana, Fatehgarh Sahib, Mohali, Ropar, Nawanshehar, Hoshiarpur, Gurdaspur, Amritsar and Pathankot) for the assessment of uranium content. These samples were collected and analysed under a collaborative project with GNDU. The uranium content in these samples varied from 0.1-153 ppb (microgram per litre).

(c)&(d) BARC has not carried out such study related to high prevalence of cancer in the region.

Linking of increase of cancer to the level of uranium or other heavy metals in ground water requires epidemiological studies. Such epidemiological studies can be undertaken by the population based cancer registry at Patiala under the national cancer registration programme. If needed, help of Epidemiology Division of Tata Memorial Centre (TMC), Mumbai could be sought.

Several studies focusing on health effects have been carried out in Finland among people who use their drilled wells as sources of drinking water, which is having uranium concentrations much higher than that observed in Malwa region. These include case-cohort studies of uranium intake and risks of leukemia, stomach, and urinary tract cancers as well as chemical toxicity studies of uranium intake and renal and bone effects. Nevertheless, none of the human studies reported so far has shown a clear association between chronic uranium exposure and cancer risk, clinical symptoms, or toxicity.

(e) Studies are carried out to ascertain the effect of uranium in ground water on agricultural crops and consequent health effect.

(http://www.dae.nic.in/writereaddata/rsus934.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.935
TO BE ANSWERED ON 22.03.2012

COMMISSIONING OF KUDANKULAM NUCLEAR PLANT

935. SHRI M.P. ACHUTHAN:
SHRI D. RAJA:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the Kudankulam nuclear plant in Tamil Nadu could not be commissioned as scheduled in December 2011 due to agitation by the local people on safety grounds;
(b) if so, the details thereof; and
(c) the measures being taken to allay their apprehension fully before it is commissioned?

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

(a) Yes, Sir.

(b) Following the protests at the site, requisite number of employees of Nuclear Power Corporation of India Limited (NPCIL) & its contractors have not been able to enter the project site. Work has been halted since October 2011.

(c) The Government set up an expert group comprising 15 members having expertise in diverse fields relevant to nuclear and radiation safety, seismology, health, ecology, oceanography, fisheries etc. to interact with the spokespersons of the people of the region to address all their legitimate concerns. The group has met the state government officials and local spokespersons nominated by the government of Tamilnadu and conclusively addressed all the legitimate and genuine apprehensions of the people. DAE/NPCIL has also embarked upon a focused outreach programme in areas around Kudankulam nuclear power project using a multi-pronged approach to allay the apprehensions of the people protesting against the startup of the project. The efforts in this regard are continuing and will be further enhanced.

(http://www.dae.nic.in/writereaddata/rsus935.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.936
TO BE ANSWERED ON 22.03.2012

RESEARCH PROJECT IN GUJARAT

936. SHRI PARSHOTTAM KHODABHAI RUPALA:
SHRI BHARATSINH PRABHATSINH PARMAR:
Will the PRIME MINISTER be pleased to state:
(a) the research projects implemented or in process by Bhabha Atomic Research Centre (BARC) within last three years in Gujarat State;
(b) the amount of funds that has been allocated in this regard; and
(c) whether BARC extends research collaborative in field of Agriculture with Navsari Agriculture University for joint research for mangoes by using atomic methods?

ANSWER

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

(a) Research & Developmental activities pertaining to the activities of Department of Atomic Energy(DAE) are being pursued in various universities / academic institutions in different states of the country by sponsoring R&D projects through the Board of Research in Nuclear Science (BRNS). As a part of this programme since 2005, 37 R&D projects were sponsored in the Gujarat State. Out of these, 17 projects were sponsored during the last three years. Besides R&D projects, BRNS also provides grant for conducting national / international seminars conferences across the country. In Gujarat state, in the last three years, about 14 conferences were provided grant by BRNS;

In addition to above, studies on radiation based induced mutagenesis for crop improvements along with conventional breeding have been underway at BARC, Mumbai since several decades. Using both mutation and recombination breeding in groundnut, BARC has developed 14 groundnut varieties and are released and notified for commercial cultivation across the country. As a part of this, five varieties namely TAG 24, Somnath, TG 26, TG 37A and TPG 41 were released for Gujarat through active collaboration with Directorate of Groundnut Research (DGR), Indian Council of Agricultural Research (ICAR), Junagadh and Junagadh Agricultural University, Jungadh. Besides, recently released varieties like TG 38, TLG 45 and TG 51 (released elsewhere) are also popular among Gujarat farmers. These activities were continued in Gujarat State during the past three years.

New groundnut breeding lines of BARC having disease resistance are evaluated by Agricultural Research Station, Talod, Gujarat. Recently, Navsari Agricultural University, Navsari has undertaken evaluation of advanced breeding lines of groundnut at four regional research stations. BARC is actively collaborating with Agricultural Universities at Junagadh and Anand for some of these activities.

(b) For the BRNS sponsored R&D projects in Gujarat State, an amount of Rs.89.30 lakh was allocated during 2009, 2010 & 2011 and Rs.12.65 lakh towards conducting national / international conferences during 2010, 2011 & 2012.

(c) BARC would extend research collaboration in the field of agriculture with Navsari Agriculture University, if a specific proposal which is scientifically worth pursuing, is received.

(http://www.dae.nic.in/writereaddata/rsus936.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.937
TO BE ANSWERED ON 22.03.2012

PROTEST AGAINST KUDANKULAM NUCLEAR PLANT

937. SHRI GOVINDRAO ADIK:
SHRI BAISHNAB PARIDA:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that the Prime Minister's charge that civil society groups were misusing funds from America and other western countries to stoke protests at the Kudankulam nuclear plant;
(b) if so, the details thereof;
(c) whether the Russian stand has been vindicated; and
(d) by when, the plant would become operational?

ANSWER

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

(a)to(c) There are reports about some organizations diverting funds for purposes other than the permitted use of foreign funds. These matters are being investigated.

(d) The government is making all efforts to normalize the situation to enable early restart of the work on the project. The date of plant becoming operational can be assessed after normalization of the situation.

(http://www.dae.nic.in/writereaddata/rsus937.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
STARRED QUESTION NO. 119
TO BE ANSWERED ON 21.03.2012

EFFECTS OF RADIATION

*119. SHRI ANANTH KUMAR:
Will the PRIME MINISTER be pleased to state:
(a) whether some studies have been conducted on the ill-effects of radiation on the villages around operational nuclear power plants in the country;
(b) if so, the reasons for conducting such studies and the main findings of these studies;
(c) whether the Government has plans for relocation of the villagers within a specified radius of operational nuclear power plants;
(d) if so, the details of the relocation package that the Government has to offer to the villagers;
(e) whether the Government has consulted the State Governments in respect of these studies and the relocation packages; and
(f) if so, the response of the State Government thereto?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (f) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO LOK SABHA STARRED QUESTION NO. 119 FOR ANSWER ON 21.03.2012 BY SHRI ANANTH KUMAR REGARDING EFFECTS OF RADIATION.

(a)&(b) Yes, Sir. Radiation levels around the nuclear power plants are negligibly higher than the background radiation. While average background radiation level is 2400 micro Sievert per year, at plant site radiation levels are higher from the average by 1 to 25 micro Sievert per year. Therefore, there is no ill effect of radiation around nuclear power plants. The epidemiological survey for health assessment in respect of employees working in Nuclear Power Plants (NPP) have been carried out in detail. The studies have found that there has not been any rise in cancer morbidity, birth defects or any other ailments compared to areas away from NPPs. Annual medical checkups are carried out for all occupational workers, results of which also established that there is no ill effect of radiation in and around NPPs. In order to analyze the effect of radiation, on air, water, soil, vegetation, crops, milk, fish etc. around each of the nuclear power plant site, Environmental Survey Laboratories (ESL) are established at all sites several years before setting up of the plant. The monitoring of environmental matrices by ESL before and after operation of nuclear power plant has established that there is no significant changes in radioactivity or radiation level in environment compared to the base line data.

(c) No, Sir.

(d)to(f) Do not arise.

(http://www.dae.nic.in/writereaddata/lssq119.pdf)

GOVERNMENT OF INDIA

DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1181
TO BE ANSWERED ON 21.03.2012

THORIUM BASED NPP

1181. SHRIMATI JAYSHREEBEN PATEL:
Will the PRIME MINISTER be pleased to state:
(a) whether scientists have now started to experiment the power of other radioactive element, thorium for safe and clear energy source;
(b) if so, whether according to them, the thorium based small nuclear reactors can make the world free from its dependency on coal and natural gas;
(c) if so, the reaction of the Government thereto and whether the Government is contemplating to use it; and
(d) if so, the time as well as the manner by which it is likely to be done?

ANSWER

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

(a) Yes, Sir. Thorium plays a pivotal role in Indian Nuclear power programme. In fact, right at the beginning of our nuclear power programme, use of thorium as an energy source has been contemplated during the third phase. Right from the inception of Indian nuclear power programme, work has been carried out on various aspects of thorium utilisation-mining and extraction of thorium, fuel fabrication, and irradiation in reactors, reprocessing and refabrication. In addition studies are underway for utilisation of thorium in different types of reactors.

(b) India has vast reserves of Thorium. Total estimated reserves of monazite in India are about 10.7 million tonnes (containing about 0.84 million tonnes of thorium metal) occurring in beach and river sands in association with other heavy minerals. Out of nearly 100 deposits of the heavy minerals, at present only 17 deposits containing about ~4 million tonnes of monazite have been identified as exploitable. Mineable reserves are ~70% of identified exploitable resources. Therefore, about 2,25,000tonnes of thorium metal is available for nuclear power programme.

The third stage of Indian nuclear power programme contemplates making use of Uranium-233 to fuel Uranium-233 – Thorium based reactors, which can provide energy independence to the country for several centuries. This will avoid the dependency on coal and natural gas.

(c) Use of Thorium as an energy source has been contemplated during the third phase of our nuclear power programme. Right from the inception of Indian nuclear power programme, work has been carried on various aspects of thorium utilisation-mining and extraction of thorium, fuel fabrication, irradiation in reactors, reprocessing and refabrication. In addition, studies are underway for utilisation of thorium in different types of reactors.

(d) Thorium can be used to produce nuclear energy, but not directly. On account of physics characteristics of Thorium, it is not possible to build a nuclear reactor using Thorium alone. Thorium has to be converted to U-233 in a reactor before it can be used as fuel.

However, for efficient conversion of Thorium to Uranium-233, Fast Breeder Reactors are required. Therefore, using Thorium in the first, or an early part of second stage of nuclear power programme will adversely affect the rate of growth of nuclear power generation capacity in the initial periods.

Due to these reasons, large scale deployment of Thorium is to be postponed till the later part of the second stage. Thorium is to be introduced only at an optimal point during operation of Fast Breeder Reactors in the second stage. Thorium, for power generation, will be used mainly in the third stage. The time of large scale thorium deployment is expected to be 3 - 4 decades after the commercial operation of Fast Breeder Reactors with short doubling time. All efforts towards technology development and demonstration are being made now so that a mature technology is available in time. Various steps taken in that direction are as follows:

i) Thorium fuel fabrication through powder pellet route has been well established. Few tons of fuel have been made for CIRUS and Dhruva, PHWR and for blanket assemblies for FBTR. Few pins have been fabricated using mixed oxides of (Th-Pu) for irradiation in research reactors.

ii) Thoria bundles are used in the initial cores of PHWR. The irradiation experience of thoria fuel in the research reactors CIRUS and Dhruva, PHWR and test irradiations are satisfactory.

iii) Thoria pins of CIRUS have been reprocessed to obtain U233. The recovered U233 has been fabricated as fuel for KAMINI reactor, which is a small research reactor with 30 kWth capacity based on Uranium-233. It is in operation at Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam.

iv) The Post Irradiation Examination of one of the thoria bundle irradiated in PHWR has also been carried out for validation of theoretical analyses.

v) Studies have been carried out regarding use of thorium in different types of reactors with respect to fuel management, reactor control and fuel utilisation.

vi) A Critical Facility for Advanced Heavy Water Reactor has been commissioned in 2008 and is being used for carrying out experiments to further validate the physics design features of Advanced Heavy Water Reactor.

vii) To accelerate thorium utilisation, BARC has designed an Advanced Heavy Water Reactor (AHWR). The 300 MWe Advanced Heavy Water Reactor is specially meant for large scale commercial utilization of thorium. The design of all nuclear systems of the reactor has been completed and associated confirmatory R&D is in a very advanced stage.

(http://www.dae.nic.in/writereaddata/lsus1181.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1236
TO BE ANSWERED ON 21.03.2012

AGREEMENT BETWEEN INDIA AND JAPAN

1236. SHRI FRANCISCO SARDINHA:
Will the PRIME MINISTER be pleased to state:
(a) whether India and Japan have entered into any agreement for cooperation in the fields of rare earths, etc;
(b) if so, the details thereof, agreement-wise; and
(c) the benefits to be accrued as a result thereof?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir.

(b)&(c) Do not arise.

(http://www.dae.nic.in/writereaddata/lsus1236.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.1270
TO BE ANSWERED ON 21.03.2012

NUCLEAR POWER PLANT

1270. SHRI JAI PRAKASH AGARWAL:
SHRI NISHIKANT DUBEY:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government is holding talks with foreign companies for supplying equipments for construction of nuclear reactors;
(b) if so, the details thereof;
(c) whether the technology adopted by the Government in the field of nuclear power is costly in comparison to that of Russia, China and other developed countries;
(d) if so, the details thereof and the reasons therefor; and
(e) the steps taken by the Government to setup and operate projects in the country on the lines of the projects in Russia, China and other developed countries?

ANSWER

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

(a)&(b) Nuclear Power Corporation of India Limited (NPCIL), a Public Sector Undertaking under the Department of Atomic Energy, is having discussions with foreign companies for supply of equipments for setting up large capacity Reactors on technical cooperation basis. These companies are M/s Atomstroyexport (ASE) of Russian Federation, M/s AREVA of France, M/s Westinghouse Electric Company (WEC) and M/s GE Hitachi Nuclear Energy of USA.

(c) No, Sir. The cost of nuclear power, inter-alia, depends on the type of technology, life of plant, cost of fuel etc. The levelised cost of power from Light Water Reactors (LWRs) being set up in the country with foreign technical cooperation is expected to be comparable to that of similar plants in developed countries.

(d)&(e) Do not arise.

(http://www.dae.nic.in/writereaddata/lsus1270.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 1361
TO BE ANSWERED ON 21.03.2012

ATOMIC ENERGY GENERATION

1361. SHRI RAMSINH RATHWA:
SHRI JAI PRAKASH AGARWAL:
SHRI ARUN YADAV:
SHRI A.T. NANA PATIL:
SHRI P. KUMAR:

Will the PRIME MINISTER be pleased to state:

(a) the details of targets fixed for atomic energy generation in the country during the current Five Year Plan, year-wise and plant-wise;
(b) whether the target has been achieved by each of the plants;
(c) if so, the details thereof;
(d) if not, the reasons therefor and the details of atomic energy generated and funds spent thereon during the above mentioned period, plant-wise and year-wise;
(e) whether the Government has fixed any target for atomic energy generation during the Twelfth Five Year Plan;
(f) if so, the details thereof, year-wise and plant-wise and the fund requirement for the purpose;
(g) the steps taken/proposed to be taken by the Government to achieve the target and increase atomic energy generation in the country; and
(h) the details of the share of the Centre/State/Private Sector in generation of electricity from the nuclear power plants?

ANSWER

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

(a)to(d) The details of target fixed and actual generation from nuclear power in the current five year plan plant wise and year wise in Million Units (MUs) is as under:

Station	2007-08		2008-09		2009-10		2010-11		2011-12		Total	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual upto Feb 2012	Target	Actual upto Feb 2012
TAPS-1 to 4	5215	7339	8723	6309	8723	7991	8723	9122	8723	9106	40108	39867
RAPS-2to4	3538	2669	4042	2459	4042	3370	4485	5091	4485	4894	20592	18481
RAPS-5&6	846	0	2264	0	3084	304	3084	2813	3084	3390	12361	6508
MAPS-1&2	2292	1749	2640	1518	2640	2046	2640	2239	2640	2279	12853	9831
NAPS-	1173	674	1802	740	2462	818	2640	1886	2640	1752	10717	5871

1&2												
KAPS-1&2	2198	2030	1320	1213	1802	1068	2462	1446	2640	3455	10422	9213
KGS-1&2	2195	2085	2640	2236	2640	2122	2640	2247	2640	2400	12756	11090
KGS-3&4	1228	410	2462	453	2640	1112	2640	1629	2640	2319	11611	5923
KK-1&2	-	-	-	-	4380	-	11388	-	14016	-	29784	-
PFBR	-	-	-	-	-	-	-	-	2190	-	2190	-
Total	**18685**	**16956**	**25894**	**14927**	**32413**	**18831**	**40703**	**26473**	**45699**	**29596**	**163395**	**106783**

The availability of imported fuel from fruition of international cooperation for reactors to be placed under International Atomic Energy Agency (IAEA) safeguards as per the Separation Plan and an improvement in domestic uranium supplies was factored in at the time of formulation of XIth Five Year Plan. However, the fruition of international cooperation came about only towards end of 2008 and the imported fuel was available from 2009 onwards. The improvement in domestic fuel also came about only from 2009-10 onwards. Thus the fuel supply continued to be constrained during first three years of the XI plan. This led to operation of nuclear power plants at lower power level matching the availability of the fuel. Thus, the shortfall in generation in respect of TAPS 3&4, MAPS 1&2, and KGS 1&2 have been due to non availability of indigenous fuel in the required quantities. The construction of Kaiga-4 (220 MW) and RAPP 5&6 (2X220 MW) was completed as per schedule, however these reactors could not be brought into commercial operation due to fuel constraints. Similarly NAPS-2 and KAPS-1 had to wait for fuel for over a year after completion of Renovation & Modernization.

In respect of Kudankulam Nuclear Power Plant (KKNP 1&2), being set up in technical cooperation with Russian Federation, there has been a delay in the completion of the project because of delay in sequential receipt of equipment and components from the Russian Federation and the current protests resulting in halting of work since October 2011. There has been a delay in commissioning of the Prototype Fast Breeder Reactor (PFBR). The PFBR being first of its kind reactor involving complex and advanced technologies, specialized procedures and special materials, development of exacting standards equipment and unforeseen developments during manufacturing took additional time. Thus, there has been no generation from KK 1&2 and PFBR during the XIth Five Year Plan.

Considering the fuel constraint, the XIth Five Year Plan generation target of 163,395 MUs was reduced to 124,608 MUs at MTA stage. The expected generation in XIth Five Year Plan is 109,000 MUs.

The expenditure involved in generation, essentially comprising Operation and Maintenance (O&M) and fuel costs is met from the revenue account of NPCIL.

(e) Yes, Sir.

f) The details of generation target set for the XII .Plan plant-wise & year wise are as follows.

Station	Capacity (MW)	2012-13	2013-14	2014-15	2015-16	2016-17	XII Plan Total
Stations with indigenous fuel							
MAPS-1&2	440	2698	2891	3084	3084	3084	**14839**
NAPS-1&2	440	2698	2891	To be under IAEA safeguards			5589
KGS-1&2	440	2698	2891	3084	3084	3084	14839
KGS-3&4	440	2698	2891	3084	3084	3084	14839
TSPS-3&4	1080	6007	7096	7569	7569	8185	36424
KAPS-3&4	1400	**Under construction**				4200	4200
RAPS-7&8	1400					2100	2100
Sub Total	5600	16799	18659	16819	16819	23736	**92832**
Stations under IAEA safeguard							
TAPS-1&2	320	2383	2383	2383	2383	2383	**11914**
RAPS-2 to 6	1080	8042	8042	8042	8042	8042	**40208**
KAPS-1&2	440	3276	3276	3276	3276	3276	**16381**
NAPS-1&2	440	With indigenous fuel		3276	3276	3276	**9829**
KK-1&2	2000	7501*	13808	14892	14892	14892	**65985**
Sub Total	4280	21201	27509	31869	31869	31869	**144317**
NPCIL TOTAL	9920	38000	46167	48688	48688	55605	**237149**
PFBR/BHAVINI	500	**Under construction & commissioning**			2190	2409	**4599**
TOTAL	**9980**	**38000**	**46167**	**48688**	**50878**	**58014**	**241748**

* Note : currently work at KKNPP is stopped due to agitation by a section of the local people. The generation projected in the XII plan, particularly in the year 2012-13 will depend on normalization of the situation.

The expenditure for setting up of new Nuclear Power Stations will be met from the internal accruals and external borrowings by NPCIL and equity participation by other PSUs in energy sector.

(g) The Government is making efforts to augment fuel supplies by opening new mines and setting up processing facilities to meet the targets in respect of reactors fuelled by indigenous fuel. Fuel supply contracts have also been concluded with other countries for import of fuel for nuclear power reactors under IAEA safeguards. These reactors have been operating in the current year at full power level, achieving about 96% Capacity Factor. The Government is also making efforts to ensure timely completion of projects to ensure that the plants start generation as per approved schedules.

(h) All nuclear power plants in the country are in the central sector.

(http://www.dae.nic.in/writereaddata/lsus1361.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 1372
TO BE ANSWERED ON 21.03.2012

SETTING UP OF FUEL COMPLEXES

1372. SHRI DHRUVA NARAYANA:
Will the PRIME MINISTER be pleased to state:
(a) whether three more nuclear fuel complexes are being set up in the country; and
(b) if so, the details thereof, State-wise?

ANSWER

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

(a & b) Nuclear Fuel Complex (NFC), a Constituent Unit of the Department of Atomic Energy, is making preparations to set up one new Nuclear Fuel Complex only, at Kota, Rajasthan.

(http://www.dae.nic.in/writereaddata/lsus1372.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 41
TO BE ANSWERED ON 15.03.2012

SAFETY REVIEW OF KUDANKULAM NUCLEAR PROJECT

*41. SHRI BALWINDER SINGH BHUNDER:
Will the PRIME MINISTER be pleased to state:
(a) whether safety review of the Kudankulam Nuclear Project has been completed;
(b) if so, the details in this regard;
(c) whether all the apprehensions of the people agitating against the Project have been allayed;
(d) whether the Project has been delayed; and
(e) if so, the efforts that are being made to put the Project on road?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (e) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO.41 FOR ANSWER ON 15.03.2012 BY SHRI BALWINDER SINGH BHUNDER REGARDING SAFETY REVIEW OF KUDANKULAM NUCLEAR PROJECT

(a) Yes, Sir.

(b) The safety review of Kudankulam project in Tamilnadu post Fukushima (Japan) incident, has been completed by Nuclear Power Corporation of India Limited (NPCIL) and Atomic Energy Regulatory Board (AERB). The reviews have found that the Kudankulam reactors are safe against extreme natural events like earthquakes and tsunamis. The reviews have also shown that the Kudankulam reactors have four safety trains against one required. The reactors have a Passive Heat Removal System (PHRS), which would ensure cooling of the reactor core by natural air circulation even in the worst case scenario of total loss of power supply and cooling water sources as it happened at Fukushima (Japan).

(c) The Central Government and NPCIL have enhanced public outreach activities manifold, adopting a multi-pronged approach to allay the apprehensions of the local people about the project in consultation with the State Government. The expert group constituted by the Central Government has addressed all the apprehensions of the agitating people.

(d) Yes, sir. However, a cumulative physical progress of 99.2% in Unit-1 and 94.6% in Unit-2 with an overall progress of 97.4% has been achieved in the Kudankulam Project, so far.

(e) The project work is expected to be resumed soon in view of initiatives pointed at (c) above.

(http://www.dae.nic.in/writereaddata/rssq41.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 49
TO BE ANSWERED ON 15.03.2012

AMERICAN MONEY TO OPPOSE NUCLEAR PLANTS

*49. SHRI BALAVANT BAL APTE:
Will the PRIME MINISTER be pleased to state:
(a) whether American NGOs are pumping in money to oppose the nuclear power plants;
(b) if so, the names of such NGOs along with the action Government is going to take in this regard;
(c) whether there are reports of involvement of such NGOs in antidevelopment work in other States and places also; and
(d) if so, the details thereof?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (d) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO.49 FOR ANSWER ON 15.03.2012 BY SHRI BALAVANT ALIAS BAL APTE REGARDING AMERICAN MONEY TO OPPOSE NUCLEAR PLANS

(a) Preliminary reports indicate that NGOs from certain foreign countries are sending money to NGOs in India especially to those NGOs working in and around Kudankulam area who are involved in the agitation against the nuclear power plant. Detailed investigation will reveal the source of funding and expenditure pattern of those NGOs who are opposing the Kudankulam nuclear power plant.

(b) CBI enquiry against two NGOs has been ordered. Two criminal cases have been referred to Tamilnadu Police for investigation. Since the investigations are in the initial stage, it will not be advisable to furnish further details at this stage.

(c) No, Sir.

(d) Does not arise.

(http://www.dae.nic.in/writereaddata/rssq49.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 54
TO BE ANSWERED ON 15.03.2012

COMPLETION OF KUDANKULAM NUCLEAR POWER PLANT

*54. SHRI TARUN VIJAY:
Will the PRIME MINISTER be pleased to state:
(a) the percentage of Kudankulam Nuclear Power Plant that has been completed and the total investment on the project till date;
(b) by when Government plans to operationalise its various units;
(c) whether Government has evidence of foreign funding of the NGOs protesting against the project at Kudankulam;
(d) if so, the names thereof;
(e) the actions, if any, that have been taken against such NGOs; and
(f) the reasons for the reactor under construction being VVER 1000 type and not VVER 1200, which happens to be a generation ahead of the former from the point of view of safety?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) to (f) A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO. 54 FOR ANSWER ON 15.03.2012 BY SHRI TARUN VIJAY REGARDING COMPLETION OF KUDANKULAM NUCLEAR PLANT.

(a) A cumulative physical progress of 99.2% in Unit-1 and 94.6% in Unit-2, with an overall progress of 97.4% has been achieved in the Kudankulam Nuclear Power Project in Tamilnadu. The total expenditure on the project up to January 2012 is 14326 crore.

(b) The work on the project has been halted due to the protest by the locals and the groups ideologically opposed to nuclear power. All efforts are being made by the Government to resolve the impasse in consultation with the State Government. The schedule of operationalisation of Kudankulam Nuclear Power Project will be worked out after normalization of the situation.

(c) Preliminary reports indicate receipt of foreign funds by the NGOs who are opposing Kudankulam Nuclear Power Plant.

(d) As the investigations have been ordered, it is not feasible to furnish the details at this stage.

(e) CBI enquiry has been initiated against two NGOs and criminal cases have been referred in respect of two NGOs to Tamilnadu Police.

(f) The reactors under construction at Kudankulam have safety features at par with those of VVER 1200.

(http://www.dae.nic.in/writereaddata/rssq54.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
STARRED QUESTION NO. 56
TO BE ANSWERED ON 15.03.2012

URANIUM FOUND IN FISH FROM NAGARJUNASAGAR DAM

*56. SHRI JESUDASU SEELAM:
Will the PRIME MINISTER be pleased to state:
(a) whether Government is aware that researchers funded by Bhabha Atomic Research Centre have found uranium in fish caught in the Nagarjunasagar Dam in Andhra Pradesh; and
(b) if so, the details thereof?
ANSWER
THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)
(a) & (b) A statement is laid on the Table of the House.
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STATEMENT REFERRED TO IN REPLY TO RAJYA SABHA STARRED QUESTION NO.56 FOR ANSWER ON 15.03.2012 BY SHRI JESUDASU SEELAM REGARDING URANIUM FOUND IN FISH FROM NAGARJUNASAGAR DAM
(a)&(b)Yes Sir. Department of Atomic Energy (DAE) has awarded a project to SRM University, Chennai, Tamilnadu for a comprehensive study of uranium content in various environmental matrices including water and 'biota' i.e. , the animal and/or plant life of a particular habitat, of Nagarjunasagar reservoir in Andhra Pradesh, since the water from the said reservoir is used for drinking purposes in the twin cities of Hyderabad and Secunderabad of Andhra Pradesh. Under the same study/project the measurement of uranium content in fish, samples has also been carried out. Due to its natural occurrence in soil and rocks of the earth crust, uranium is present in all environmental matrices such as air, water, soil, sediment, food materials and the biota. Its concentration in soil varies from 1to 5 micro grammes per gram i.e. 1 to 5 parts in a million parts of a gram; it varies in water from 1 to 3 nanogrammes per milliliter i.e. 1 to 3 parts of a billion parts of a milliliter; while in fish it varies from 5 to 60 nanogrammes per gram (wet weight). In Nagarjunasagar reservoir, the uranium content in fish was found to vary from 20 to 30 nanogrammes per gram of fish (wet weight) which is within the normal concentration range in fish found in other parts of the country.
(http://www.dae.nic.in/writereaddata/rssq56.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.311
TO BE ANSWERED ON 15.03.2012

DEMAND OF VILLAGES NEAR KAIGA NUCLEAR PLANT

311. SHRI SANJAY RAUT:
Will the PRIME MINISTER be pleased to state:
(a) whether it is a fact that residents of villages in the vicinity of the Kaiga atomic power station are agitating over their demands;
(b) if so, the details of their demands;
(c) the number of promises made to the villagers of the Kaiga that have been fulfilled; and
(d) the number that are yet to be fulfilled?

ANSWER

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

(a)&(b) The villagers in the vicinity of Kaiga, Karnataka are demanding that land falling in the sterilized zone (beyond the plant boundary upto 5 km radius) be acquired by the project and Rehabilitation & Resettlement (R&R), compensation and employment for each family be provided.

(c) The land for Kaiga Atomic Power Project was acquired in the year 1985. The rehabilitation and resettlement of all project affected persons has been completed. No promises were made to the people living in the vicinity regarding acquisition land in the sterilized zone.

(d) Does not arise.

(http://www.dae.nic.in/writereaddata/rsus311.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.312
TO BE ANSWERED ON 15.03.2012

THREAT BY ANTI-NUKE ACTIVISTS TO SUE PM

312. SHRI RUDRA NARAYAN PANY:
Will the PRIME MINISTER be pleased to state:
(a) whether any 'anti-nuke activist' has threatened to sue the hon'ble Prime Minister and the Minister of State in the PMO in recent days;
(b) if so, the details thereof; and
(c) the reactions of Government to it?

ANSWER

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

(a) (b)&(c) There are some media reports on the matter. But as far as Minister of State in PMO, Shri V. Narayanasamy is concerned, one Shri Udaya Kumar sent a lawyer's notice for which Minister replied suitably.

(http://www.dae.nic.in/writereaddata/rsus312.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.313
TO BE ANSWERED ON 15.03.2012

RESERVATION IN PROMOTION IN MINISTRY

313. SHRI AMBETH RAJAN:
Will the PRIME MINISTER be pleased to state:
(a) whether reservation in promotion is strictly followed and implemented in your Ministry as per the provisions made in the Constitution through 77th Amendment;
(b) if so, the details of promotion made for last five years in all categories;
(c) if not, reasons therefor; and
(d) the tentative time by which the same would be completed?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY):
(a) Government orders on reservation in promotion are followed in Department of Atomic Energy for all cadres except for scientific and technical posts which are exempted from the purview of orders on reservation.
(b) As per Annexure.

(c)&(d) Do not arise.

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Annexure to Rajya Sabha USQ No.313 Details of promotion made during the last five years in all categories in the Department of Atomic Energy

Year	Group A				Group B				Group C			
	SC	ST	Gen	Total	SC	ST	Gen	Total	SC	ST	Gen	Total
2007	42	5	396	443	120	21	538	679	175	44	427	646
2008	40	9	399	448	125	28	512	665	117	43	349	509
2009	23	6	283	312	167	33	676	876	119	94	312	525
2010	58	14	474	546	163	43	628	834	124	70	437	631
2011	23	2	278	303	124	37	458	619	156	69	347	572
TOTAL	**186**	**36**	**1830**	**2052**	**699**	**162**	**2812**	**3673**	**691**	**320**	**1872**	**2883**

(http://www.dae.nic.in/writereaddata/rsus313.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.314
TO BE ANSWERED ON 15.03.2012

COMMISSIONING OF TUMMLAPALLE URANIUM MINE

314. SHRI N.K. SINGH:
Will the PRIME MINISTER be pleased to state:
(a) whether the Tummalapalle Uranium mine has been commissioned;
(b) if so, the details thereof;
(c) the total estimated deposits of Uranium reserves in the Tummalapalle mine;
(d) whether the Uranium, found in this mine is of similar or higher quality to that found in other countries; and
(e) if so, the details thereof?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY):
(a) No, Sir.

(b) Does not arise in view of (a) above.

(c) U3O8 (Magnesium Di-Uranate) reserves of Tummalapalle uranium mine as estimated in Detailed Project Report (DPR) is 17,780 tonnes.

(d) No, Sir. The grade of uranium ore in Tummalapalle mine is very low compared to many uranium producing mines in the world.

(e) Does not arise in view of (d) above.

(http://www.dae.nic.in/writereaddata/rsus314.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.315
TO BE ANSWERED ON 15.03.2012

OUTREACH PROGRAMME FOR ACCEPTANCE OF NUCLEAR POWER

315. SHRI A.A. JINNAH:
Will the PRIME MINISTER be pleased to state:
(a) whether amid protests holding up new nuclear power projects, the country's atomic energy establishment, Atomic Energy Commission is looking to scale up its outreach programmes to enhance public acceptance of nuclear power;
(b) if so, the details thereof;
(c) whether the Nuclear Power Corporation has initiated developmental activities around the project sites to scale up the outreach programme to win people's confidence; and
(d) if so, the details thereof?

ANSWER

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

(a)&(b) The Fukushima accident in Japan in March 2011 generated apprehensions among a section of people. These apprehensions were primarily about safety of nuclear power plants, radiation etc. Soon after the event, a safety review of nuclear power plants in operation and under construction in the country was taken up by Nuclear Power Corporation of India Limited (NPCIL) and the Atomic Energy Regulatory Board (AERB). It has been found that Indian nuclear power plants were safe and had margins and features in design to withstand extreme natural events like earthquake and tsunami. Reports of the reviews were posted at Department of Atomic Energy (DAE), AERB and NPCIL websites for information of public. The public outreach activities were scaled up manifold to allay apprehensions, in a structured manner, by adopting a multipronged approach in and around of nuclear power plant sites. The campaigns have also been extended to other parts of the country. To supplement the scaled up outreach activities, NPCIL has entered into partnership with several agencies like Vigyan Prasar of the Department of Science & Technology, DAVP, UFO Movies etc. NPCIL has approved the scaled up outreach plans for long term, as well.

(c)&(d) NPCIL has been carrying out neighborhood welfare activities in the areas of education, health and infrastructure development. NPCIL has adopted a policy of investing minimum 2% of its profit towards inclusive growth of the neighborhood around its sites. At the new greenfield sites, NPCIL, as a policy has taken up welfare activities upfront to meet the needs and aspirations of the people, in addition to the Resettlement & Rehabilitation package as applicable in local context.

(http://www.dae.nic.in/writereaddata/rsus315.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.316
TO BE ANSWERED ON 15.03.2012

SETTING UP OF NUCLEAR PLANTS IN ELEVENTH/TWELFTH PLANS

316. DR. T. SUBBARAMI REDDY:
Will the PRIME MINISTER be pleased to state:
(a) the number of nuclear power projects set up/proposed to be set up in the country during the Eleventh and Twelfth Plans, State-wise;
(b) the total estimated cost of each project, its capacity and the time-frame for commissioning of the proposed power stations; and
(c) the various safeguards taken or proposed to be taken in the installation and operation of these projects?

ANSWER

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

(a)&(b) The projects completed in XI Five Year Plan/ expected to be completed in XII Five Year Plan with requisite details are listed below:-

Project	Location & State	Capacity (MW)	Approved cost Rs. in crore	Expected completion
Kaiga 3&4	Kaiga, Karnataka	2 x 220	3282.00	Completed
RAPP 5&6	Rawatbhata, Rajasthan	2 x 220	3072.00	Completed
KKNPP 1&2	Kudankulam, Tamilnadu	2 x 1000	13171.00 *	Completion was expected in 2011-12. But the project is delayed due to agitation.
PFBR	Kalpakkam, Tamilnadu	500	3492.00*	2014-15
KAPP 3&4	Kakrapar, Gujarat	2 x 700	11459.00	2015-16
RAPP 7&8	Rawatbhata, Rajasthan	2 x 700	12320.00	2016-17

Work on new nuclear power projects and pre-project activities are planned in the XII Plan as per the following details:

Project	Location	Capacity (MW)
Gorakhpur 1&2	Gorakhpur, Haryana	2 x 700
Chutka, 1&2	Chutka, Madhya Pradesh	2 x 700
Mahi Banswara, 1&2	Mahi Banswara, Rajasthan	2 x 700
Kaiga, 5&6	Kaiga, Karnataka	2 x 700
Kudankulam, 3&4	Kudankulam, Tamilnadu	2 x 1000
Jaitapur, 1&2	Jaitapur, Maharashtra	2 x 1650
Kovvada, 1&2	Kovvada, Andhra Pradesh	2 x 1500
Chhaya Mithi Virdi, 1&2	Chhaya Mithi Virdi, Gujarat	2 x 1100
FBR 1&2	Kalpakkam, Tamilnadu	2 x 500
Advanced Heavy Water Reactor (AHWR)	Location to be decided	300

These projects are expected to be completed in the XIII Five Year Plan / early XIV Five Year Plan depending on their actual start dates. Their cost estimates will be evolved as the project proposals are finalized. Pre-project activities are also planned at Bhimpur in Madhya Pradesh (4 x 700) and Haripur in West Bengal (6 x 1000 MW).

(c) Safety is accorded utmost priority in all aspects of nuclear power plants. At each stage of the plant like siting, construction, equipment erection, commissioning and operation, safety is reviewed and authorization accorded by the Atomic Energy Regulatory Board (AERB).

The reactors of indigenous design – Pressurised Heavy Water Reactors (PHWRs) and Fast Breeder Reactors (FBRs) follow the latest safety standards prescribed by the International Atomic Energy Agency (IAEA), which are regulated by the AERB. In respect of Light Water Reactors (LWRs) set up in technical cooperation with foreign countries, safety requirements of regulatory body of the vendor country as well as Indian regulatory body, i.e. AERB are to be satisfied. The AERB independently reviews and accords stage-wise clearance / approvals for setting up reactors in India. Post Fukushima, (Japan) incident, safety of the Indian nuclear power plants has been reviewed by task forces of Nuclear Power Corporation of India Limited (NPCIL) and the AERB. The reviews found that the plants are safe and have margins and features to withstand extreme natural events such as Tsunami, Earthquake etc.,

(http://www.dae.nic.in/writereaddata/rsus316.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.244
TO BE ANSWERED ON 14.03.2012

THORIUM BASED NUCLEAR ENERGY

244. SHRI MANOHAR TIRKEY:
SHRI PRASANTA KUMAR MAJUMDAR:
Will the PRIME MINISTER be pleased to state:
(a) the details of thorium reserves available in the country, location-wise;
(b) the steps taken/proposed to be taken for extraction of thorium from these locations;
(c) the time by which thorium is likely to be extracted;
(d) whether the Government has any plan for generating thorium based nuclear energy; and
(e) if so, the details thereof and if not, the reasons therefor?

ANSWER

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

(a) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit of the Department of Atomic Energy (DAE) has established the presence of 10.70 million tonnes of Monazite in the country, which contains 9,63,000 tonnes of Thorium Oxide (ThO2). Indian Monazite contains about 9-10% of ThO2 and about 8,46,477 tonnes of Thorium Metal can be obtained from 9,63,000 tonnes of ThO2 which will be used for future programmes of DAE. The state-wise thorium reserves in the country are as given below:

STATE	**MONAZITE (Million Tonnes)**
KERALA*	1.51
TAMILNADU	2.16
ANDHRA PRADESH	3.74
ODISHA	1.85
WEST BENGAL	1.22
BIHAR	0.22
TOTAL	**10.70**

*Including resources of lake and sea bed

(b)&(c) The commercial exploitation of thorium deposits is being carried out by the Indian Rare Earths Limited (IREL), a Public Sector Undertaking of the Department of Atomic Energy. Since the year 1952, the IREL has been processing monazite and sufficient quantity of thorium has been stockpiled for future use. Extraction of thorium is a continuous process.

(d)&(e) India is pursuing a three stage nuclear power generation programme aimed at long term energy independence based on use of our abundant Thorium resources. The programme is to use Thorium for electricity generation in the long-term. In order to realize this goal, we are well into the first stage based natural Uranium fuel, both from domestic and imported sources. This will be followed by second stage comprising of fast reactors. It is proposed to set up a large power generation capacity based on fast reactors before getting into the third stage. Thorium in itself

cannot produce electricity and it has to be first converted to Uranium-233 in a nuclear reactor. A comprehensive three-stage nuclear power programme is, therefore, being implemented sequentially.

(http://www.dae.nic.in/writereaddata/lsus244.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.274
TO BE ANSWERED ON 14.03.2012

NUCLEAR WASTE

274. SHRI P.K. BIJU:
Will the PRIME MINISTER be pleased to state:

(a) whether the Government has assessed the quantity of nuclear waste generated by the nuclear power plants in the country;
(b) if so, the details thereof, plant-wise;
(c) whether the Government uses latest technology for disposing of the nuclear waste; and
(d) if so, the details thereof and if not, the reasons therefor?

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

(a) Yes, Sir.

(b) Nuclear waste is classified into high, intermediate and low levels depending on the level of radioactivity in it. The spent fuel which contains long lived radioisotopes are stored for a long period to reduce the level of radioactivity and subsequently reprocessed at reprocessing plants for collecting fissile elements. The generation of high level waste is at reprocessing plants. The quantity of this waste in our country is much smaller due to our adoption of the closed fuel cycle. High level waste generated from the reprocessing plant is vitrified into a glassy form, contained in multiple barrier containers and stored for an interim period of three to four decades in engineered vaults with necessary surveillance facilities. After cooling down in these storage facilities, waste containers will be stored for long term in deep geological repositories.

Reprocessing and Waste Management plants are currently being operated by Bhabha Atomic Research Centre (BARC).
The low and intermediate level nuclear waste containing radioactive substances with short half life are generated at nuclear power plants and are processed at the site in the following manner:
(i) The generated waste is solidified by fixing this in materials like cement, polymers, glass etc., to ensure that it does not move.
(ii) The solidified waste is then stored in specially fabricated double walled high integrity stainless steel container.
(iii) The containers containing the solidified waste are stored inside a high integrity concrete pit at each of the nuclear power plant site.
(iv) As the waste is fixed in cement, glass, polymer, it is immobilized and its placement in high integrity containers inside a pit ensures that the radioactive wastes is completely insulated from the environment.

The radioactivity level of the stored wastes reduces with time and by the end of the plant life, including decommissioning falls to normal levels.
Such facilities for handling low and intermediate level waste are located at all the nuclear power stations viz. Tarapur (Maharashtra), Rawatbhata (Rajasthan), Kalpakkam (Tamilnadu), Narora (Uttar Pradesh), Kakrapar (Gujarat) and Kaiga (Karnataka). The quantity of low and intermediate level waste to be stored at site during the life time including decommissioning is within 0.15 cubic meters/year/MW.

(c) Yes, Sir.

(d) The Government is using latest technology for disposing the nuclear waste generated during operation of nuclear power plants. The details are as follows:

(i) The low and intermediate level radioactive waste generated during operation and maintenance of nuclear power plants is segregated, its volume reduced using various technologies and solidified. This solid/solidified waste is packaged in suitable containers to facilitate handling, transport and disposal.

(ii) Disposal of low and intermediate level waste is carried out in specially constructed structures such as stone lined trenches, reinforced concrete trenches and tile holes. These disposal structures are located both above and underground in access-controlled areas. Disposal system is designed based on multi barrier principle for ensuring effective containment of the radioactivity. The areas where the disposal structures are located are kept under constant surveillance with the help of bore-wells laid out in a planned manner. The underground soil and water samples from these bore wells are routinely monitored to confirm effective confinement of radioactivity present in the disposed waste.

(iii) Gaseous waste is treated at the source of generation. The techniques used are adsorption on activated charcoal and filtration by high efficiency particulate air filters. The treated gases are then diluted with exhaust air and discharged through a tall stack with monitoring.

(iv) Liquid waste streams are treated by various techniques, such as filtration, adsorption, chemical treatment, thermal and solar evaporation, ion exchange, reverse osmosis etc. The concentrate from treatment of liquid waste are immobilized in inert materials like cement, polymer etc.

The nuclear waste handling, treatment, storage and disposal is carried out as per the well laid down procedures and guidelines stipulated by the Atomic Energy Regulatory Board (AERB).

(http://www.dae.nic.in/writereaddata/lsus274.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.326
TO BE ANSWERED ON 14.03.2012

JOINT DEVELOPMENT OF URANIUM DEPOSITS

326. SHRI PRADEEP MAJHI:
SHRI KISHNBHAI V. PATEL:
Will the PRIME MINISTER be pleased to state:
(a) whether India and Russia have agreed for the joint development of uranium deposits in Russian Federation and third countries and joint venture for fabrication of nuclear fuel;
(b) if so, the details thereof;
(c) the status of the said agreements; and
(d) the extent to which both the countries are likely to be benefited by the said agreements?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) No, Sir.

(b)to(d) Do not arise in view of reply to (a) above.

(http://www.dae.nic.in/writereaddata/lsus326.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.368
TO BE ANSWERED ON 14.03.2012

FUNDS FOR CSR

368. DR. AJAY KUMAR:
Will the PRIME MINISTER be pleased to state:
(a) whether the Uranium Corporation of India Limited (UCIL) has allocated and utilized the funds in Jaduguda for social work as part of their corporate social responsibility (CSR); and
(b) If so, the details thereof during the last three years and the current year?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY) :
(a) Yes, Sir.

(b) The expenditure incurred during the last three years and allocated during the current year is as follows:

Financial Year	Amount in `
2008-2009	42,89,683/-
2009-2010	1,35,56,515/-
2010-2011	1,82,65,819/-
2011-2012	1,50,00,000/-

(http://www.dae.nic.in/writereaddata/lsus368.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.378
TO BE ANSWERED ON 14.03.2012

URANIUM RESERVES

378. SHRI RADHA MOHAN SINGH:
SHRI HARI MANJHI:
SHRI HARISHCHANDRA CHAVAN:

Will the PRIME MINISTER be pleased to state:

(a) the details of uranium reserves found in the country during the last three years and the current year, location and Statewise;
(b) whether the Government is self reliant in providing uranium to nuclear power plants in the country;
(c) if so, the details thereof;
(d) if not, whether the Government has conducted or proposes to conduct any survey to locate new uranium reserves in the country;
(e) if so, the details thereof, location and State-wise;
(f) whether the Government proposes to acquire uranium mines in foreign countries; and
(g) if so, the details thereof and the time by which the Government is likely to be in a position to export uranium material to foreign countries?

ANSWER

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

(a) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent unit of Department of Atomic Energy, has established 1,75,010 tonnes insitu uranium (U3O8) resources as on January, 2012. The details of insitu uranium resources established by AMD during the last three financial years and current financial year are as given under:

(Figures in Tonnes) 2008-09	2009-10	2010-11	2011-12	Total
12,688	16,520	22,628	11,034	62,870

(http://www.dae.nic.in/writereaddata/lsus378.pdf)

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO.387
TO BE ANSWERED ON 14.03.2012

KUDANKULAM NUCLEAR POWER PLANT

387. SHRI BHARAT RAM MEGHWAL:
SHRI BHAKTA CHARAN DAS:
SHRI ARJUN MEGHWAL:
KUMARI SAROJ PANDEY:
SHRI RAYAPATI SAMBASIVA RAO:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has taken note of the opposition in completion of the Kudankulam nuclear power plant in Tamil Nadu and if so, the details thereof;
(b) whether some Non-Governmental Organisations (NGOs) have allegedly used funds received from foreign agencies for opposing the setting up of the plant;
(c) if so, the details of such funding agencies and NGOs;
(d) the corrective action taken/proposed to be taken by the Government against these funding agencies and NGOs;
(e) the current status of Kudankulam nuclear power plant; and
(f) the time by which the plant is likely to be made operational and the power generated?

ANSWER

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

(a) Yes, Sir. The Fukushima incident in Japan in March 2011 and emergency response drill in August 2011 created apprehensions in a section of local people about safety aspects of the project. This resulted in agitation and halt of work. Pursuant to multi pronged outreach programmes by Department of Atomic Energy (DAE) and Nuclear Power Corporation of India Limited (NPCIL), the resumption of work is expected soon.

(b) Preliminary reports indicate receipt of funds originating from foreign NGOs through certain Indian NGOs to oppose the nuclear power plants.

(c) As the investigations are in progress, it is not possible to furnish the details at this stage.

(d) The Government monitors the receipts and utilizations of foreign contributions by any "person" in the country through the Foreign Contribution (Regulation) Act 2010 and Foreign Contribution (Regulation) Rules, 2011 framed under the Act. Besides FCRA 2010 and FCRR 2011, various laws of the land such as Unlawful Activities (Prevention) Act, Prevention of Money Laundering Act, Indian Penal Code and State Local Laws form the legal structure for regulating the activities of the NGOs in India.

(e) A cumulative physical progress of 99.2% in Unit-1 and 94.6% in Unit-2 with an overall progress of 97.4% has been achieved in the Kudankulam project.

(f) All efforts are being made by the Central Government to resolve the impasse in consultation with the State Government. The revised schedule of operationalisation of Kudankulam units can be worked out only after normalization of the situation and resumption of work.

(http://www.dae.nic.in/writereaddata/lsus387.pdf)

Ministry of External Affairs
LOK SABHA
UNSTARRED QUESTION NO.435
TO BE ANSWERED ON 14.03.2012

EXCHANGE OF NUCLEAR FACILITIES

435. SHRI DHRUVA NARAYANA:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether India and Pakistan has exchanged their nuclear facilities list; and

(b) if so, the details thereof?

ANSWER
THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS
(SMT. PRENEET KAUR)

(a) & (b) India and Pakistan exchanged on 1 January 2012, through diplomatic channels simultaneously at New Delhi and Islamabad, the list of nuclear installations and facilities covered under the 'Agreement on the Prohibition of Attack against Nuclear Installations between India and Pakistan'.

The Agreement, which was signed on 31 December 1988 and entered into force on 27 January 1991, provides, inter alia, that the two countries inform each other of nuclear installations and facilities to be covered under the Agreement on the first of January of every calendar year. This was the twenty first of the consecutive exchanges of such lists between the two countries, the first one having taken place on 1 January 1992.

(http://meaindia.nic.in/mystart.php?id=100519532)

Ministry of External Affairs
LOK SABHA
UNSTARRED QUESTION NO.364
TO BE ANSWERED ON 14.03.2012

PROLIFERAION OF NUCLEAR ARMS IN INDIA

†364. SHRI JAI PRAKASH AGARWAL:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether the Government has conducted any study regarding proliferation of nuclear arms coming into the country from its neighbouring countries;

(b) if so, the outcome thereof; and

(c) the steps taken/proposed to be taken in this regard?

ANSWER
THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS
(SMT. PRANEET KAUR)

(a) to (c) No. There has been no proliferation of nuclear arms into India from its neighbouring countries.

(http://meaindia.nic.in/mystart.php?id=100519521)