

DEPARTMENT OF ATOMIC ENERGY

IMPORT OF URANIUM FOR NUCLEAR PLANTS

[Action taken by Government on the Recommendations/Observations contained in the Thirty-First Report (16th Lok Sabha) of the Committee on Estimates]

**COMMITTEE ON ESTIMATES
(2020-21)**

FIFTH REPORT

(SEVENTEENTH LOK SABHA)



**LOK SABHA SECRETARIAT
NEW DELHI**

FIFTH REPORT

**COMMITTEE ON ESTIMATES
(2020-21)**

(SEVENTEENTH LOK SABHA)

DEPARTMENT OF ATOMIC ENERGY

**[Action taken by Government on the Recommendations/Observations contained
in the Thirty-First Report (16th Lok Sabha) of the Committee on Estimates]**

(Presented to Lok Sabha on 23 September, 2020)



LOK SABHA SECRETARIAT

NEW DELHI

September, 2020/ Bhadrapada, 1942 (Saka)

CONTENTS

	PAGE
COMPOSITION OF THE COMMITTEE ON ESTIMATES (2019-20)	iii
COMPOSITION OF THE COMMITTEE ON ESTIMATES (2020-21)	iv
INTRODUCTION	vi
CHAPTER I Report	1
CHAPTER II Observations/Recommendations which have been accepted by Government	9
CHAPTER III Observations/Recommendations which the Committee do not desire to pursue in view of Government's replies	29
CHAPTER IV Observations/Recommendations in respect of which replies of Government's replies have not been accepted by the Committee	39
CHAPTER V Observations/ Recommendations in respect of which final replies of Government are still awaited	41
APPENDICES	
I Minutes of the Eleventh Sitting of the Committee (2019- 20) on Estimates held on 18.03.2020	42
II Minutes of the Fourth Sitting of the Committee on Estimates (2020-21) held on 21.09.2020	44
III Analysis of the Action Taken by the Government on the Recommendations/Observations contained in the Thirty- First Report of the Committee on Estimates (Sixteenth Lok Sabha) on the subject 'Import of Uranium for Nuclear Plants'	46

COMPOSITION OF THE COMMITTEE ON ESTIMATES (2019-20)

Shri Girish Bhalchandra Bapat – Chairperson

Members

2. Kunwar Danish Ali
3. Shri Kalyan Banerjee
4. Shri Sudharshan Bhagat
5. Shri Pradan Baruah
6. Shri Nand Kumar Singh Chauhan
7. Shri P.P. Chaudhary
8. Shri Parvatagouda Chandanagouda Gaddigoudar
9. Shri Dilip Ghosh
10. Dr. Sanjay Jaiswal
11. Shri Dharmendra Kumar Kashyap
12. Shri Mohanbhai Kalyanji Kundariya
13. Shri Dayanidhi Maran
14. Shri K. Muraleedharan
15. Shri S.S. Palanimanickam
16. Shri Kamlesh Paswan
17. Dr. K.C. Patel
18. Col. Rajyavardhan Singh Rathore
19. Shri Vinayak Bhaurao Raut
20. Shri Ashok Kumar Rawat
21. Shri Magunta Srinivasulu Reddy
22. Shri Rajiv Pratap Rudy
23. Shri Francisco Sardinha
24. Shri Jugal Kishore Sharma
25. Shri Prathap Simha
26. Shri Dharambir Singh
27. Smt. Sangeeta Kumari Singh Deo
28. Shri Kesineni Srinivas
29. Shri Sunil Dattatray Tatkare
30. Shri Parvesh Sahib Singh Verma

COMPOSITION OF THE COMMITTEE ON ESTIMATES (2020-21)

Shri Girish Bhalchandra Bapat – Chairperson

Members

2. Kunwar Danish Ali
3. Shri Kalyan Banerjee
4. Shri Pradan Baruah
5. Shri Sudharshan Bhagat
6. Shri Ajay Bhatt
7. Shri P.P. Chaudhary
8. Shri Nand Kumar Singh Chauhan
9. Shri Nihal Chand Chauhan
10. Shri Parvatagouda Chandanagouda Gaddigoudar
11. Dr. Sanjay Jaiswal
12. Shri Dharmendra Kumar Kashyap
13. Shri Mohanbhai Kalyanji Kundariya
14. Shri Dayanidhi Maran
15. Shri K. Muraleedharan
16. Shri S.S. Palanimanickam
17. Shri Kamlesh Paswan
18. Dr. K.C. Patel
19. Col. Rajyavardhan Singh Rathore
20. Shri Vinayak Bhaurao Raut
21. Shri Ashok Kumar Rawat
22. Shri Magunta Srinivasulu Reddy
23. Shri Rajiv Pratap Rudy
24. Shri Francisco Sardinha
25. Shri Jugal Kishore Sharma
26. Shri Prathap Simha
27. Shri Dharambir Singh
28. Smt. Sangeeta Kumari Singh Deo
29. Shri Kesineni Srinivas
30. Shri Parvesh Sahib Singh Verma

SECRETARIAT

1. Smt. Kavita Prasad - Joint Secretary
2. Smt. B. Visala - Director
3. Smt. A. Jyothirmayi - Additional Director
4. Shri R.S. Negi - Deputy Secretary
5. Shri L. Shantikumar Singh - Assistant Executive Officer

INTRODUCTION

I, the Chairperson of the Committee on Estimates (2020-21) having been authorized by the Committee to submit the Report on their behalf, do present this Fifth Report on the action taken by the Government on the Observations/Recommendations contained in the Thirty-First Report (16th Lok Sabha) of the Committee on the subject 'Import of Uranium for Nuclear Plants' pertaining to the Department of Atomic Energy.

2. The Thirty-First Report (16th Lok Sabha) of the Committee on Estimates was presented to Lok Sabha on 13 December, 2018. Action Taken Notes on the Observations/Recommendations were received from the Department of Atomic Energy (DAE) on 16 April, 2019 and 18 June, 2019. Further, comments/updated information on Observation/Recommendation Nos. 5, 8, 10, 11, 15 and 17 were received on 16 December, 2019. The draft Report was considered and adopted by the Committee (2019-20) at their sitting held on 18 March, 2020. However, the Report could not be presented to the Lok Sabha due to adjournment of the House *sine die*. Hence, the draft Report was re-considered and adopted by the Committee (2020-21) at their sitting held on 21.09.2020.

3. An analysis of the action taken by the Government on the Observations/Recommendations contained in the Thirty-First Report of the Committee is given in Appendix-III.

**NEW DELHI;
22 September, 2020
Bhadrapada 31, 1942 (Saka)**

**GIRISH BHALCHANDRA BAPAT,
CHAIRPERSON,
ESTIMATES COMMITTEE.**

1.4 The Committee desire that response to comments contained in Chapter I of this Report be furnished expeditiously.

1.5 The Committee will now deal with the action taken by the Government on some of the recommendations in the succeeding paragraphs.

A. Nuclear Power Generation

Observation/Recommendation (Sl. No. 7)

1.6 It was noted that ten indigenous PHWRs of 700 MW each had been sanctioned in June 2017 for which preparatory work had already started. DAE was planning to add 2500 MW to 3000 MW of nuclear power generation every year. With the availability of sufficient funding and favourable raw material availability scenario, the targeted increase in capacity addition was achievable as the constraint of funding had been addressed. The Government had agreed to provide funds on a regular basis for the next 15-20 years. In the light of the above, the Committee had recommended that DAE should get into more agreements with the organizations, get uranium and reactors and also make their own reactors to reach the target. The Committee had further recommended that DAE should also exercise adequate monitoring and supervision to ensure that the reactors under construction are completed without any time or cost over-run and the target of adding about 3000 MW nuclear power per year is achieved.

1.7 Having noted the recommendation, DAE has stated that presently, nine Nuclear Power Plants (including PFBR, being implemented by BHAVINI) with aggregating capacity of 6700 MW are under various stages of construction and with progressive completion of the projects under construction, the present total capacity of 6780 MW would reach to 13480 MW by the year 2025. Further, the Government had also accorded administrative approval and financial sanction for setting up 12 more nuclear power plants with an aggregate capacity of 9000 MW and for which currently, pre-project activities comprising of environmental clearance, land acquisition at green field sites, scientific studies, site investigations, tendering for long delivery equipment etc, are in progress at these sites. It has further been stated that with the progressive completion of under construction and

sanctioned projects, the total nuclear power capacity in the country would reach to 22480 MW by the year 2031.

1.8 DAE has also submitted that in addition to the sanctioned projects, presently discussions are in progress with EDF of France to set up 6 X1650 MW LWRs at Jaitapur, Maharashtra and with M/s Westinghouse (WEC) for setting up 6X1208 MW LWRs at Kovvada in Andhra Pradesh.

1.9 It has further been submitted that pre-project activities comprising of land acquisition, Rehabilitation and Resettlement (R&R), obtaining statutory clearances, site investigations and site infrastructure development have been taken up at Jaitapur Site. Land for the project and residential township has been acquired. Agreement for R&R package signed between NPCIL and the state government, is being implemented. Statutory Environmental and CRZ clearances have been obtained from MoEF&CC. Site infrastructure and technology independent site investigation works are in progress at various stages.

1.10 Furthermore, DAE has also submitted that at Kovvada site, pre-project activities comprising of environmental clearance, land acquisition, scientific studies, site investigations, public awareness etc, are in progress. The Government has also accorded sites at Chhaya Mithi Viridi in Gujarat & Haripur in West Bengal for setting up 6 LWRs of 1000 MW or higher capacity at each of these sites and Bhimpur in Madhya Pradesh for setting up 4 Indigenous PHWRs of 700 MW each. Pre-project and public awareness activities have been taken up at these sites. More reactors, based on both indigenous technologies and with foreign cooperation, were also planned in the future.

1.11 Regarding ensuring expeditious completion of the projects under construction, it has been submitted that constant monitoring of progress of project activities at multiple levels is in place in NPCIL. Enhanced monitoring to ensure timely identification of constraints and making necessary mid-course corrections, frequent meetings with vendors/contractors and re-sequencing of construction activities to the extent possible, have been taken up. A Board level Sub-Committee to monitor project progress and for suggesting necessary actions has also been constituted.

1.12 The Committee note that in pursuant to their recommendation, steps have been taken by the Government to ramp up nuclear power generation through implementing nine Nuclear Power Plants (with aggregating capacity of 6700 MW) which are under various stages of construction and which would take the present total capacity of 6780 MW to 13480 MW by the year 2025. The Committee also note that the Government has accorded administrative approval and financial sanction for setting up 12 more nuclear power plants with an aggregate capacity of 9000 MW and for which currently, pre-project activities comprising of environmental clearance, land acquisition at green field sites, scientific studies, site investigations, tendering for long delivery equipment etc, are in progress. These on completion would take the total nuclear power capacity of the country to 22480 MW by the year 2031. The Committee appreciate that in addition to the above, discussions are in progress for setting up of six LWRs of 1650 MW each in collaboration with EDF of France at Jaitapur in Maharashtra and six LWRs of 1208 MW each in collaboration with M/s Westinghouse (WEC) of USA at Kovvada in Andhra Pradesh.

1.13 The Committee also note that the Government is making efforts for ensuring expeditious completion of the projects under construction by constant monitoring of progress of project activities at multiple levels. The Committee are of the view that strict monitoring of the project activities and ensuring accountability for timely completion of projects within the stipulated cost is paramount to achieve the targets set for the nuclear sector i.e. adding about 3000 MW nuclear power per year. The Committee urge that necessary action may be taken to ensure that there are no time and cost overruns in the ongoing projects.

B. Export of Pressurized Heavy Water Reactors (PHWRs)

Observation/Recommendation (Sl. No. 11)

1.14 The Committee was apprised that India had achieved expertise in the designing of Pressurised Heavy Water Reactor (PHWR) and was currently the only PHWR producer in the world. Further, the Government was making efforts to explore the possibilities of joint or individual export of nuclear reactors in bilateral discussions and also through Ministry of External Affairs. In the light of these, the Committee had recommended that the

Government should capitalize on its expertise in the PHWR nuclear reactor market and efforts be made for joint export of PHWRs with Uranium supplier countries.

1.15 DAE, in their action taken reply has stated that the suggestion of the Committee was noted for exploring the possibilities. When updated information on the above recommendation was sought, DAE, in their reply dated 16 December, 2019, has stated that 'no further update is required'.

1.16 The Committee would like to urge the Government to make focused efforts to explore the possibility of such exports. The Committee feel that this could become a major source of revenue for the Government and may also have other favourable spin-off effects such as employment generation, enhanced expertise, raising the country's profile internationally and so on.

C. Nuclear Safety and Waste Management

Observation/Recommendation (Sl. No. 13)

1.17 The Committee had taken cognizance of the fact that radioactive wastes were generated during various operations of the nuclear fuel cycle and the waste could remain radioactive for a few hours or several months or even hundreds or thousands of years. Mining, nuclear power generation and various processes in industry, defence, medicine and scientific research produce by-products that include radioactive wastes. Radioactive waste could be in gas, liquid or solid form, and its level of radioactivity could vary. The Committee had noted that the safe management and disposal of radioactive wastes from the Atomic Plants/Nuclear Plants were regulated by the Atomic Energy Regulatory Board (AERB) in accordance with the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987 and the requirements of AERB Safety Code on 'Management of Radioactive Waste (AERB/SC/RW)'. Further, the waste management aspects were reviewed by AERB throughout the life cycle of the plants, viz, siting, construction, commissioning and operation. It was given to understand that in the spent fuel in reactors, 99 per cent material was useful and only one percent was waste. Added, even in the remaining one percent, many useful materials were found. The Committee had noted that the nuclear waste management practices in India were at par with international practices following the

guidelines of International Atomic Energy Agency. The Committee had, however, observed that lessons ought to be learnt from nature as to how it protected itself from the deleterious effects of solar radiation by creating absorbents in the form of ozone layer in-between. If such absorbents were created in a systemic manner that no harmful radiation could pass through them, it then could protect from skin cancer or any other cancer caused due to nuclear radiation.

1.18 In their response, DAE has stated that the observation/recommendation does not call for any specific action.

1.19 The Committee feel that DAE should have commented on the feasibility of exploring possibilities as per the Committee's observation before making the statement that it does not call for any specific action.

D. Environmental Pollution

Observation/Recommendation (Sl. No. 22)

1.20 Taking note that nuclear technology can be applied for sucking out CO₂ particles from atmosphere in small scale and can also help in removing bacteria and other pollutants from air which would improve air quality in the cities, the Committee had recommended that DAE may give wide publicity to their technologies which are useful for addressing atmospheric pollution in cities. The Committee had also recommended for giving wide publicity regarding availability of consultation mechanism in DAE for the benefit of State Governments.

1.21 In response, DAE has submitted that DAE in general and BARC in particular has developed various spin off technologies in the fields of environmental pollution control, agriculture, solid waste management, water purification and health care that are beneficial to entrepreneurs and society. The various water purifier technologies specific to different water pollutants and stand alone domestic water filter technologies sans electricity have been transferred to industries to fulfill societal needs. It has further been submitted that DAE has developed a wide range of cost effective, import substitute healthcare instruments. Bhabhatron, a Cobalt-60 tele-therapy machine for cancer treatment is in good use in many hospitals across India and has also been exported to other neighbouring

countries. It has also been stated that Nisargruna Bio gas plants for generating energy from kitchen waste have been set up in various municipal corporations with the support of respective state governments and more than ninety such useful technologies are now available for transfer to industry on non exclusive basis.

1.22 As air pollution has become one of the major problems facing the urban population today and as a large number of people in cities suffer from various diseases on account of air pollution, the Committee had specifically recommended for giving wide publicity to DAE's technologies for mitigating atmospheric pollution, for example, technology for sucking out CO₂ particles from the atmosphere and for removing bacteria and other pollutants from the air which could help improving air quality in the cities. DAE's reply states that they have developed various spin-off technologies in the field of environmental pollution control. Further, DAE has stated about various other technologies available with them which are beneficial in the fields of healthcare, waste management, water purification, etc. However, no mention is made about the steps being taken for dissemination of these technologies to relevant agencies for their utilization at the ground level. The Committee had also recommended for giving wide publicity to the availability of consultation mechanism in DAE for the benefit of State Governments. In this regard too, DAE has not given any specific reply. Expressing dissatisfaction with regard to DAE's reply, the Committee reiterate their observation that DAE may take suitable action for making available their technologies which could benefit the public at large.

E. Dissemination of Nuclear Technologies for peace time uses

Observation/Recommendation (Sl. No. 23)

1.23 Given the fact that India was advocating for peaceful use of atomic energy, after having achieved expertise in the field of atomic energy research and technology with its successful record of nuclear power generation and research for more than five decades, the Committee were of the opinion that India should make efforts to become a hub for disseminating technologies for peace time uses in the fields of agriculture, health, water purification, solid waste management, etc. and export the same to other friendly countries.

The Committee had felt that this would not only generate revenue but also make DAE a self-reliant Government Department.

1.24 In their reply, DAE has submitted that the complete list of these technologies under eight categories is displayed in BARC website with descriptions of their salient features. In addition, it was also stated that the modalities for transferring the know-how to industry were also detailed in the website and all queries related to technology transfer were regularly answered. Further public awareness and urge for entrepreneurship were created by conducting outreach programmes, exhibitions and through DAE Technologies Display and Dissemination Facilities (DTDDFs) that are functional in reputed educational institutions in states across all over India. Active efforts were undertaken by DAE/BARC for promoting these technologies in the vernacular languages also for better reach to our society.

1.25 The Committee had specifically recommended for making efforts to make India a hub for disseminating nuclear technologies for peace time uses in the field of agriculture, health, water purification, solid waste management, etc. and export the same to other friendly countries. It would not only raise our international stature as a technology powerhouse but also generate revenues for the Government. Reply of DAE has not addressed this recommendation specifically. They have merely submitted that complete list of nuclear technologies under eight categories is displayed in BARC website with descriptions of their salient features, adding that the modalities for transferring the know-how to industry are also detailed in the website and all queries related to technology transfer are regularly answered.

1.26 The Committee feel that there is no reply from the DAE on some of the points indicated above. The Committee, therefore, are constrained to observe that they do not accept the reply of the Government and urge them to furnish a comprehensive reply on all the points mentioned. Reiterating their earlier recommendation, the Committee would like to be apprised of the action taken in this regard.

CHAPTER - II

RECOMMENDATIONS/OBSERVATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

Recommendation/Observation (Sl. No. 2)

Financial Allocation and revenue generation by DAE: The Committee note that the Department of Atomic Energy (DAE) has been allocated ₹13,971.41 crore as BE 2018-19 which is 5.76% more than the RE 2017-18 (₹13,209.94 crore). The Committee also note that the actual expenditure of the DAE in 2016-17 was ₹12,894 crore. The BE and RE in the year 2017-18 were ₹12,461 crore and ₹13,209.94 crore respectively. The Committee have been informed that the Government has made a special provision of ₹3000 crore per year for construction of nuclear power plants and the DAE is also getting ₹1000 crore to ₹2000 crore from the National Clean Energy Fund. The Committee also note that the DAE has sought a funding of about ₹15000 crore per year from the Government for its requirements relating to Uranium import and nuclear power plants. For procurement of uranium, the DAE spent ₹1500 crore in the year 2016-17. Taking advantage of low prevailing uranium prices, the DAE was able to procure two and a half times more uranium than it had planned for. The Committee appreciate that the DAE has been able to utilize the financial allocation made to it and recommend that flow of adequate financial allocation may be maintained by the Government to enable it to undertake further expansion of nuclear power generation and also reach the target of maintaining the stockpile of uranium to ensure continuity in supply.

Reply of the Government

Department of Atomic Energy has embarked upon an ambitious plan of generating 60 GWe of nuclear energy by the year 2050, out of which about 20 GWe is proposed to be generated through Pressurized Heavy Water Reactors (PHWRs). Towards this, 22 nos. of PHWRs of 700 MWe each are planned by Nuclear Power Corporation of India Ltd. (NPCIL).

In order to cater to the fuel requirements in view of expansion of the nuclear power programme and as recommended by Committee on Estimates in its 31st Report,

stockpiling policy of the Department is being revised which envisage natural uranium stockpile limit to 30,000 MT. This stockpiling would also accommodate any uncertainties in imports given the strategic nature of uranium trading which is largely dependent on relations between the countries. A note to CCS has been sent to PMO seeking approval for circulation of the Note to stakeholder Ministries as a part of inter-ministerial consultation.

The policy also envisages a review of the stockpile status which would be carried out in 2024 to assess the need of continued import of uranium based on status of indigenous production of uranium and actual status of the fleet mode reactors. The increase in stockpile quantity beyond 30,000 MT will be dynamic based on reactor addition and the quantity of uranium required by them.

Recommendation/Observation (Sl. No. 4)

Supply of Uranium: The Committee note that a major portion of domestic production of uranium comes from Jaduguda mines of Jharkhand. These mines are old where uranium is now found at one of the greatest depths in the world. High extraction cost involved in mining makes it unviable as compared to imported uranium. Apart from Jharkhand, uranium reserves are available in Meghalaya, Andhra Pradesh, Rajasthan, Haryana, Karnataka and Tamil Nadu. There are possibilities in other regions also. The Committee have also been informed that imported uranium will continue to be used in reactors which are sourced from abroad. The dependence on imported uranium will reduce in case the domestic production is ramped up and new mines are developed and made functional. The Committee recommend that adequate financial allocation should be provided and all the requisite steps be taken to ensure that new mines are opened as soon as possible for increasing domestic production of uranium.

Reply of the Government

UCIL has been operating seven uranium mines -six underground and one opencast in Jharkhand and one underground mine in Andhra Pradesh. Mining in Jharkhand region is continuing since 1968 and some of the mines have become very deep with substantial depletion of reserves.

In line with the requirement of uranium for the Department's planned nuclear power generation, UCIL has formulated a plan for construction of new production centers in Jharkhand, Rajasthan, Andhra Pradesh, Karnataka, Telengana and Chatishgarh where adequate resources have already been established by Atomic Minerals Directorate for Exploration and Research (AMD). These projects have obtained in-principle approval of the Department and Atomic Energy Commission requiring investment of Rs.10,571 Crore.

Subject to timely approvals/clearances, production from these centers is expected to start within 6 – 8 years.

Recommendation/Observation (Sl. No. 5)

Supply of Uranium: The Committee observe that the decades of nuclear isolation of the Country due to its determination to pursue indigenous nuclear programme came to an end with the signing of Indo-US Civil Nuclear Agreement in 2008. The agreement enabled India to access other countries for nuclear fuel and technology. Although the Agreement and subsequent NSG 'waiver' lifted the embargo on nuclear trade, India still need bilateral agreements with all the member countries of NSG because framework of an Inter-Governmental Agreement (IGA) includes supply of nuclear and non-nuclear materials specifically included in such an IGA and also provides for ancillary matters such as exchange of training personnel, organisation of symposia and seminars, technology transfer, provision of relevant technical assistance and services, exchange of scientific and technical information and documentation, joint research and/or development projects and other forms of cooperation, as may be mutually determined in writing, by the two sides. Such IGAs help structured cooperation towards development of nuclear power, Research and Development, Radiation and Nuclear Safety, Regulatory exchanges, etc. in India. The Committee have been informed that IGA is required even if uranium is mined by private companies in any country, as its export is strictly regulated by that country in accordance with its legal requirements to ensure non-proliferation. Nuclear trade with India by a foreign enterprise is possible only based on the assurance of the concerned foreign Government which is secured in the form of an IGA.

The Committee note that even though India has entered into IGA with countries, namely, USA, UK, Russia, South Korea, Japan, Kazakhstan, Australia, Argentina,

Canada, Czech Republic, France, Mongolia, Namibia, Vietnam and Bangladesh, import of Uranium, so far, has been sourced from only a few countries, namely, Canada, Kazakhstan, France and Russia. No uranium has been imported from other leading producers such as Uzbekistan and other for a number of reasons. The Committee feel that it is important to have multiple sources of uranium supply to protect against supply uncertainties. This is all the more important as the prevailing prices of uranium in the global market are, at present, low and imported uranium will continue to be used in reactors which are sourced from abroad as also in the safeguarded projects. The Committee, therefore, recommend that earnest efforts including diplomatic efforts should be made to explore import of uranium from some more countries with whom India has IGAs. Besides, IGAs should also be concluded with other countries for import of fuel, equipments and technology. The Committee desire to be apprised of the steps taken in this regard within three months of presentation of the Report to Parliament.

Reply of the Government

A contract has been signed with Uzbekistan for supply of 1100 MT of Uranium Ore Concentrate. Efforts are being made to source Uranium Ore Concentrate from Australia.

Updated/additional information as on 16.12.2019:

1. A long term contract bearing no. NMMC-DAE-2019 has been concluded with M/s. Navoi Mining and Metallurgical Combinat State Company, Uzbekistan on 18.01.2019 for supply of 1100 MTU of Uranium Ore Concentrates for the period 2022-2026.
2. The offers submitted by M/s. BHP Billiton, Australia and M/s. Heathgate Resources (M/s. Quasar Resources Pvt. Ltd.), Australia for supply of uranium ore concentrate from Australia were examined and it is stated that presently it is not possible to proceed with the contract in the present form.

Observation/Recommendation (SI. No. 6)

Supply of Uranium: The Committee note that the DAE aims at a stockpile of 15000 tonnes of uranium for achieving a level of comfort in so far as achieving supply security of nuclear fuel for nuclear power plants is concerned. The Committee also note that the

Government has approved 10 more Pressurised Heavy Water Reactors (PHWRs) for which there will be a requirement of about 1250 MT of natural uranium dioxide fuel. More reactors will be built in future as the economy moves away from fossil fuels towards greener sources of power. Given the prevailing low international prices of uranium, the Committee feel that it is right time to undertake large-scale procurement of uranium. The Committee, therefore, recommend that adequate financial allocation be made for procurement of required quantity of the approved reactors and the DAE may also consider revising the target of stockpile upwards if the prices and other situations are favourable. Besides adequate storage capacity for reserved stockpile of uranium with adequate safety measures should be created expeditiously.

Reply of the Government

A Proposal for increasing the stockpile was put up in the 234th Atomic Energy Commission (AEC) meeting held on 16.2.2019. Considering the prevailing attractive prices of uranium in the international market and the proposed plan of NPCIL for installing new reactors, AEC recommended that the stockpile of uranium shall be increased to meet the 25 years of fuel requirement for uninterrupted operations of all the reactors planned up to 2030 and adequate financial allocation be provided. Accordingly a Note for the CCS has been sent to PMO.

Adequate storage capacity will be built in NFC Hyderabad and NFC - Kota. The CISF security of these facilities will take care of the security of uranium stockpile also

Observation/Recommendation (Sl. No. 7)

Nuclear Power Generation: The Committee note that the DAE was earlier given a target of 63 GW electricity by 2032 or 2034 in nuclear sector and subsequently a revised target was given by the Government to triple the generation by 2024 which would come to about 14 GW. The Committee have been informed that the revised target is likely to be achieved. The Committee note that total nuclear power generation in 2015-16 was 37456 million units which increased to 38336 million units in 2017-18, an increase of 2.45% in two years. The Committee also note that DAE has planned a tenfold increase in the installed capacity by way of setting up of additional nuclear power projects. Ten indigenous PHWRs of 700 MW each have been sanctioned in June 2017 for which

preparatory work has already started. The Committee also note that the DAE is now planning to add 2500 MW to 3000 MW of nuclear power generation every year. The Committee have also been informed that the constraint of funding has now been addressed and the Government has agreed to provide funds on a regular basis for the next 15-20 years. The Committee note that with the availability of sufficient funding and favourable raw material availability scenario, the targeted increase in capacity addition is achievable. The Committee, therefore, recommend that the DAE should get into more agreements with the organizations, get uranium and reactors and also make their own reactors to reach the target. They should also exercise adequate monitoring and supervision to ensure that the reactors under construction are completed without any time or cost over-run and the target of adding about 3000 MW nuclear power per year is achieved.

Reply of the Government

The recommendation is noted.

Presently, nine Nuclear Power Plants (including PFBR, being implemented by BHAVINI) with aggregating capacity of 6700 MW are under various stages of construction. On progressive completion of the projects under construction, the present total capacity of 6780 MW would reach to 13480 MW by the year 2025. In addition, the Government has also accorded administrative approval and financial sanction for setting up 12 more nuclear power plants with an aggregate capacity of 9000 MW. Currently, pre-project activities comprising of environmental clearance, land acquisition at green field sites, scientific studies, site investigations, tendering for long delivery equipment etc, are in progress at these sites. With the progressive completion of under construction and sanctioned projects, the total nuclear power capacity in the country would reach to 22480 MW by the year 2031.

In addition to the sanctioned projects, presently discussions are in progress with EDF of France to set up 6 X1650 MW LWRs at Jaitapur, Maharashtra and with M/s Westinghouse (WEC) for setting up 6X1208 MW LWRs at Kovvada in Andhra Pradesh.

Pre-project activities comprising of land acquisition, R&R, obtaining statutory clearances, site investigations and site infrastructure development have been taken up at Jaitapur Site. Land for the project and residential township has been acquired. Agreement

for Rehabilitation and Resettlement (R&R) package was signed between NPCIL and the state government, is being implemented. Statutory Environmental and CRZ clearances have been obtained from MoEF&CC. Site infrastructure and technology independent site investigation works are in progress at various stages.

At Kovvada site, pre-project activities comprising of environmental clearance, land acquisition, scientific studies, site investigations, public awareness etc, are in progress.

The Government has also accorded sites at Chhaya Mithi Viridi in Gujarat & Haripur in West Bengal for setting up 6 LWRs of 1000 MW or higher capacity at each of these sites and Bhimpur in Madhya Pradesh for setting up 4 Indigenous PHWRs of 700 MW each. Pre-project and public awareness activities have been taken up at these sites. More reactors, based on both indigenous technologies and with foreign cooperation, are also planned in the future.

For ensuring expeditious completion of the projects under construction, constant monitoring of progress of project activities at multiple levels is in place in NPCIL. Enhanced monitoring to ensure timely identification of constraints & making necessary mid-course corrections, frequent meetings with vendors / contractors and re-sequencing of construction activities to the extent possible, have been taken up. A Board level Sub-Committee to monitor project progress and for suggesting necessary actions has also been constituted.

Comments of the Committee

(Please see para no. 1.12 & 1.13 of Chapter - I)

Observation/Recommendation (Sl. No. 8)

Nuclear Power Generation: The Committee note that Nuclear Power Corporation India Limited (NPCIL) is responsible for siting, designing, constructing, commissioning and operation of nuclear power reactors in the Country. At present, the NPCIL operates 22 nuclear power reactors with a total installed capacity of 6780 MW. Of these, one reactor RAPS-1 (100 MW) is under extended shutdown for techno-economic assessment and KAPS-1 (220 MW) is also under long shutdown for Renovation and Modernisation activities - En masse Coolant Channel Replacement (EMCCR) and En masse Feeder Replacement (EMFR). KAPS-2 (220 MW), which was under shutdown for Renovation and

Modernisation activities, has restarted after undergoing the EMCCR and EMFR procedures. The Committee observe that the plant load factor (PLF) for nuclear plants was 77.09% in 2015-16 (for 21 plants) which came down to 74.32% in 2017-18 (for 19 plants). In comparison, the PLF for coal based power plants was 60.67% in 2017-18. Therefore, the PLF for nuclear power plants is better than coal-based plants. As regards cost of power, the Committee note that the nuclear power plants are capital intensive plants. However, once the plant is installed and starts running, the cost comes down drastically. The Committee have been informed that in the old plants of Tarapur, the cost of power is as low as 90 paise per unit whereas in the newer plants at the same location, the cost is about ₹2.70 per unit which is still competitive to State Electricity Board supplied power. In view of requirement of heavy capital investment at the outset, it is necessary to provide capital at a low rate so that the input cost is contained. Although the Central Government has assured funding for the sector, given the ambitious targets set for the nuclear power sector, the Committee feel that since the recent amendments in the Atomic Energy Act, 1962 provide for joint venture companies with other PSUs, NPCIL should make efforts in this direction to meet additional funding requirements for the sector.

Reply of the Government

The recommendation is noted. NPCIL has entered into Joint Ventures (JV) with NTPC Limited and Indian Oil Corporation Limited and the JV companies, Anushakti Vidhyut Nigam Limited and NPCIL-Indian Oil Nuclear Energy Corporation Limited respectively have been incorporated. The discussions on possible projects to be set up by the JV companies are in progress, which will be taken up on agreement between the JV partners and accord of approval by the Government.

Observation/Recommendation (Sl. No. 9)

Use of thorium as part of long-term nuclear power programme: The Committee note that thorium reserves in India are among the largest in the world and the DAE has a plan to use thorium as part of its long-term nuclear power programme. With this in view, a three-stage nuclear power programme, based on a closed nuclear fuel cycle has been chalked out to use thorium as a viable and sustainable option which aims to multiply the domestically available fissile resource through the use of natural uranium in Pressurised

Heavy Water Reactors, followed by use of plutonium obtained from the spent fuel of Pressurised Heavy Water Reactors in Fast Breeder Reactors. Large scale use of thorium will subsequently follow making use of uranium-233 that will be bred in Fast Breeder Reactors, when adequate nuclear installed capacity in the Country has been built. The third stage of Indian nuclear power programme which contemplates making use of this uranium-233 to fuel uranium-233 – thorium based reactors, can provide energy independence to the Country for several centuries.

With the sustained efforts over years, India has gained experience over the entire thorium fuel cycle- fabrication, irradiation and reprocessing on a semi-industrial scale. As a long term plan, the Department is working on technology development for High temperature reactors where thorium will be used as a fuel. While taking pride in India being one of the most advanced Country in thorium research, the Committee strongly recommend that adequate financial allocations and other support should be provided and constraints of funds should not come in the way of implementation of different stages of the nuclear power programme.

Reply of the Government

Bhabha Atomic Research Centre (BARC) a constituent unit of the Department of Atomic Energy has an active programme for utilisation of Thorium in innovative advanced reactors including Advanced Heavy Water Reactor (AHWR), High Temperature Reactors (HTRs) and Molten Salt Breeder Reactor (MSBR).

AHWR, using thorium based fuel, will serve as a technology demonstrator for the thorium fuel cycle technologies, AHWR will generate nearly 60% of its power from Thorium. AHWR will demonstrate all related technologies for commercial utilisation of Thorium. The Government, in December, 2016, has accorded in-principle approval for the Tarapur Maharashtra Site (TMS) for locating AHWR. Various pre-project activities and activities related to obtaining regulatory and statutory clearances have been initiated. Construction of this reactor can begin after associated statutory clearances, regulatory clearances and financial sanction are obtained for the project.

The HTRs are being developed to produce hydrogen by splitting water. Hydrogen is considered an attractive energy carrier to substitute fossil fuel for transport applications.

As these reactors are being designed to operate at high temperatures, most of the technologies, coolants, fuel and materials are new. BARC is developing these technologies indigenously.

MSBR is considered as one of the best options for the third stage of our nuclear power programme, as this reactor would be self-sustainable in ^{233}U -Th fuel cycle. The reactor would need fissile material ^{233}U at the start-up reactor to run the reactor through addition of only thorium. Besides carrying out design of this reactor, BARC is also developing various technologies, salts, components, and materials for this reactor. In order to develop and demonstrate all these technologies a demonstration reactor named Indian Molten Salt Breeder Reactor (IMSBR) is being designed. In order to qualify all engineering systems of this demonstration 5 MWth IMSBR, a dedicated facility, 'Molten Salt Breeder Reactor Development Facility' is under design as a part of Phase-II activities for Vizag. The clearance from the Expert Appraisal Committee (EAC) of the Ministry of Environment, Forest and Climate Change (MoEFCC) for this facility, along with other Vizag phase-II facilities, was obtained on 27th April 2018. The pre-project activity for this facility is being pursued as a part of the 'Development Project for Phase-II Facilities at BARC Campus, Vizag'. Architectural layout of the building for this facility is being finalised.

The development of these reactors is being done through the planned projects with sufficient funds being provided by the Government.

Observation/Recommendation (Sl. No. 10)

Use of thorium as part of long-term nuclear power programme: The Committee note that the second stage of the three stage nuclear programme of the Country involves reprocessing of spent fuel and utilising recovered plutonium to build Fast Breeder Reactor (FBR) initially as the FBR uses a plutonium core and depleted Uranium blanket to breed more plutonium than the original output. The Committee also note that the Prototype Fast Breeder Reactor (PFBR) with the capacity of 500 MW is being established in Kalpakkam, Tamil Nadu. The Committee have been informed that the PFBR is at the advanced stage of completion and is expected to be commissioned by the fourth quarter of 2018-19. The Committee further note that owing to certain issues in the commissioning of PFBR, there has been a cost overrun and an additional requirement of ₹423 crore has been projected.

The Committee recommend that additional funding for the PFBR project should be expeditiously granted and the DAE should also ensure that the PFBR is made operational without any further time and cost overrun.

Reply of the Government

Being a first of a kind project, PFBR has encountered challenges during commissioning phase which necessitates unplanned additional activities leading to the extension of project completion date by the end of 2021 with an additional cost of Rs.1163 crore above the already approved cost. Currently, the proposal for time and cost overrun is under consideration for approval.

Observation/Recommendation (Sl. No. 11)

Use of thorium as part of long-term nuclear power programme: The Committee note that the Country has achieved expertise in the designing of PHWR. Moreover, the safety design of Indian PHWRs have been upgraded to the post-Fukushima safety requirements. The Committee also note that the DAE currently does not have any proposal for joint or individual export of nuclear reactors. The Committee have been informed during the deliberations that efforts are being made to explore the possibilities in bilateral discussions and also through Ministry of External Affairs (MEA). The Committee further note that India is currently the only pressurised heavy water nuclear producer in the world and feel that the opportunities for export of PHWR reactors to friendly uranium producing countries should be explored with a view to pool their expertise and for greater mutual advantage. The partner country can supply the required Uranium for such a PHWR plant, while India could be a source for heavy water and other major reactor components. The Committee, therefore, recommend that the Government should capitalize on its expertise in the PHWR nuclear reactor market. Efforts may also be made for joint export of PHWRs with Uranium supplier countries. The Committee may be apprised of the steps taken in this direction.

Reply of the Government

The suggestion is noted for exploring the possibilities.

Comments of the Committee

(Please see para no. 1.16 of Chapter - I)

Observation/Recommendation (Sl. No. 12)

Nuclear Safety and Waste Management: The Committee have been apprised that Atomic Energy Regulatory Board (AERB) is the nodal agency in the country responsible for ensuring safety of all atomic power plants in the Country. The mission of the AERB is to ensure that the use of ionizing radiation and nuclear energy in India does not cause undue risk to the health of people and the environment. The Committee note that the AERB conducts regular inspections to ensure radiation protection compliance by the facilities which are using radioactive materials for diagnostic or research purposes. Besides DAE trains large number of security agencies including trainers to train the first responders. While appreciating the impeccable safety track record of Indian nuclear reactors, as presented before the Committee by the DAE, the Committee emphasize for taking all requisite measures for safety and security of atomic power plants.

Reply of the Government

AERB has taken note of the observations of the Committee and is committed to continue its regulatory oversight programme for safety of atomic power plants in the country.

Observation/Recommendation (Sl. No. 13)

Nuclear Safety and Waste Management: The Committee note that radioactive wastes are generated during various operations of the nuclear fuel cycle. Mining, nuclear power generation, and various processes in industry, defence, medicine and scientific research produce by products that include radioactive wastes. Radioactive waste can be in gas, liquid or solid form, and its level of radioactivity can vary. The Committee have been informed that the waste can remain radioactive for a few hours or several months or even hundreds or thousands of years. The Committee also note that the safe management and disposal of radioactive wastes from the Atomic Plants/Nuclear Plants are regulated by the Atomic Energy Regulatory Board (AERB) in accordance with the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987 and the requirements of AERB Safety Code on 'Management of Radioactive Waste (AERB/SC/RW)'. The waste management aspects are reviewed by AERB throughout the life cycle of the plants, viz, siting, construction, commissioning and operation. The Committee have been informed

that India is one of the most developed countries in nuclear waste management in the world. In the spent fuel in reactors, 99 per cent material is useful and only one percent is waste. Even in the remaining one percent, many useful materials are found. The Committee appreciate that the nuclear waste management practices in India are at par with international practices following the guidelines of International Atomic Energy Agency. It is a matter of satisfaction that no major nuclear disaster has taken place in the Country since the beginning of nuclear programme. The Committee, however, observe that lessons should be learnt from nature as to how it protects from the deleterious effects of solar radiation by creating absorbents in the form of ozone layer in-between. If such absorbents are created in a systemic manner that no harmful radiation can pass through them, it can protect the danger of having any skin cancer or any other cancer from nuclear radiation.

Reply of the Government

The observation/recommendation does not call for any specific action.

Comments of the Committee

(Please see para no. 1.19 of Chapter - I)

Observation/Recommendation (Sl. No. 16)

Nuclear Safety and Waste Management: The Committee observe that there is apprehension in the mind of people, particularly those living in the neighbourhood of nuclear installations about the hazards they are exposed to. The Committee, therefore, recommend that the DAE should give wide publicity through print and electronic media in local languages about the safety aspects and safety arrangements for the benefit of the populace living near nuclear installations. The Committee also recommend that periodical community awareness camps be organised in the area for the awareness of the local inhabitants.

Reply of the Government

In order to address the legitimate concerns of the local people, NPCIL is implementing a large public outreach programme based on a multipronged approach to

spread awareness about all aspects of nuclear power and address the apprehensions of the people and related issues in a simple, understandable and credible manner.

Some of the efforts in this regard include:

- distribution of single sheets in simple local language addressing each of the issues concerning the local people,
- setting up of information centres in the vicinity of nuclear power plant site,
- showcasing short films in local languages,
- radio jingles, arranging visits to nuclear power plants,
- holding exhibitions,
- briefing local press & media and arranging site visits,
- addressing community leaders and people's representatives,
- lecture presentations in local schools & colleges,
- scientific meets with doctors and paramedics.

For reaching out to the rural households, an "Exhibition on Wheels" (exhibition on a modified bus) is fabricated which travels to the villages in the vicinity, spreading awareness. Thus, the local people around the nuclear power plants are almost fully reached through the above programmes.

In addition, 'Hall of Nuclear Power', permanent exhibitions highlighting different aspects of nuclear energy have been setup at Mumbai, New Delhi and Chennai. Further, miniature nuclear galleries are also planned at science centres across the country to spread awareness among masses on various aspects of nuclear energy.

The suggestion of the committee on conducting community awareness camps is noted.

Observation/Recommendation (Sl. No. 17)

Water Quality Improvement: The Committee note that the technologies developed in nuclear plants have made applications in different areas. For instance, the Committee have been informed that DAE is working on a nuclear based desalination plant which purifies almost 6300 cubic meter water per day, which will be sufficient for meeting needs of around one lakh people per day. This is not exactly nuclear based, it is basically done through the steam which is the secondary product of it. DAE has the technology to convert both sea/saline water into potable/drinking water as well as for removing/reducing contaminants from polluted water and this is thoroughly reliable, robust and sustainable. Further the BARC has developed and transferred the technical knowhow of preparing sea

water desalting membranes to a private entrepreneur for mass scale production and its deployment.

The Committee observe that in the river Ganga, starting from Kanpur and going right up to Bangladesh, there is terrific amount of arsenic. The DAE has the technology for removing arsenic from water. This is called ultra filtration membrane that removes arsenic. The Committee also note that these technologies may also be used for removing brackishness and other pollutants from water. The Committee feel that the application of nuclear and spin-off technologies may be immensely useful for India in the field of providing potable water to all. The Committee are fully conscious of the fact that while DAE has this technology, they do not have that mandate for its application at mass scale. For an effective solution of drinking water, the Ministry of Water Resources, River Development and Ganga Rejuvenation needs to take steps in collaboration with the Department of Atomic Energy, so as to utilize such technologies for improving water quality in the Country in coordination with the Ministries/agencies concerned, especially in the areas where potable water is in scarcity. The Committee feel that such technologies are not meant only for transfer to a handful of entrepreneurs for commercialization. Provision of clean drinking water to the common people in both rural and urban areas at affordable cost has to be the top most priority of the Government and huge investments and initiatives on their part is required in this connection. Such applications should also be given wide publicity. The Committee may be apprised of the steps taken in this direction within three months of the presentation of the Report to Parliament.

Reply of the Government

BARC a constituent Unit under Department of Atomic Energy has proposed two projects on Desalination and Water Purification with an aim to disseminate and deploy the DAE developed technologies, which are under consideration for approval.

The first project is on deployment of multi-effect distillation-thermo vapour compression (MED-TVC) plant coupled with Madras Atomic Power Station (MAPS), which is meant for augmentation of distilled quality water requirement of the MAPS for their process applications. This technology can be used for desalination of sea water for potable applications after proper post-treatment.

The second project dwells on field testing of point-of-use (PoU) devices and community-scale plants in 50 villages of India having water affected microbial contamination, arsenic, iron and multiple contaminants including heavy metals through BARC licensees. In this project, it is planned to evolve a mechanism for further dissemination of DAE developed technologies in larger sections of India having water quality issues by appropriate Government and Non-Government organizations in a sustainable and affordable manner.

Updated/additional information as on 16.12.2019:

In principle approval was obtained for setting up of sea water desalination plant based on indigenously developed MED TVC technology at MAPS, Kalpakkam. Detailed Project Report is under preparation.

The second project dwells on field testing of point-of-use (PoU) devices and community-scale plants in 50 villages of India having water affected with microbial contamination, arsenic, iron and multiple contaminants including heavy metals through BARC licensees. In this project, it is planned to evolve a mechanism for further dissemination of DAE developed technologies in larger sections of India having water quality issues by appropriate Government and Non-Government organizations in a sustainable and affordable manner.

The project sanction has been obtained from DAE. The first water purification facility under this project has been setup in a village near Nanded (Maharashtra) having a capacity of 1000 LPH. This facility will start functioning from 28 Nov 2019.

Observation/Recommendation (Sl. No. 18)

Agriculture and Food Processing: The Committee note that the nuclear technologies have applications in the agriculture and food processing sector also. In agriculture, by mutation breeding, 42 varieties of seeds of groundnut, edible oils and pulses have been developed and released. The Committee recommend that linkages with State Governments and agricultural universities may be strengthened so that the seeds may be widely distributed among the farming community for its maximum impact and high yield.

Reply of the Government

MOUs were signed with Navsari Agricultural University, Konkan Krishi Vidyapeeth, Jodhpur Agricultural University and Himachal Pradesh Agricultural University for taking up collaborative programmes in new seed development and popularization of released and notified Trombay varieties of oil seeds, pulses and cereals. With the help of the above and other State agricultural universities (SAUs) (with whom BARC already have signed MOUs), BARC is undertaking breeder seed multiplication of released and notified Trombay varieties of round nuts, pulses, mustard and rice. Apart from this, BARC is also distributing seeds and soil organic carbon detection kits to farmers, so as to make the aware of these developments.

Observation/Recommendation (Sl. No. 21)

Health Care: The Committee note that nuclear technologies have application in health care sector in the treatment for diseases such as cancer and tuberculosis. In health care, Cancer care is a very big success. In Cancer care, they do three types of work- treating the patient, creating a manpower base to treat the patient and third, developing drugs and supplying it – radio isotopes – for doing this.

The Committee also note that the DAE provides financial assistance in the form of Grants-in-aid to Tata Memorial Hospital in Mumbai for cancer patients. They also have collaboration with a tuberculosis centre under Mumbai Municipal Corporation to whom they have offered kit for TB detection. They have also offered them technology to apply radiation to waste and kill bacteria. The Committee further note that these institutions provide quality care for cancer and TB at affordable cost. In view of rising number of cancer and TB patients in the Country, the Committee recommend that more such hospitals be opened in various parts of the Country so that the patients do not have to travel to Mumbai for quality health care and that adequate financial allocation be made to DAE for this purpose.

Reply of the Government

Tata Memorial Centre continues to be at the forefront of cancer treatment, training and research in the country. TMC uses the funds provided by DAE to make cancer care

highly subsidized or free to approximately 60% of patients who are registered with the hospital.

Patients registered at TMC use nuclear technologies both in diagnosis (imaging like PET CT scan, SPECT CT etc) and treatment (radio-isotopes for treatment of thyroid, liver cancer) both from Tata Memorial Hospital as well as Radiation Medicine Centre (RMC). In addition, TMC, in collaboration with BARC, is conducting cutting edge research on radio-labelled targeted therapy for cancer treatment.

TMC provides training to a large number of cancer care professionals in the country - with over 400 residents / trainees / fellows undergoing training at TMC at any given point of time, most of the cancer care human resources of the country are provided by TMC. Tata Memorial Centre is opening seven new hospitals in different parts of the country (new hospitals opened at Sangrur and two at Varanasi, new hospitals under construction at Mullanpur, Vishakapatnam, taking over of B Borooah Cancer Institute at Guwahati and the proposed hospital at Muzaffarpur). This is in addition to a large expansion plan in Mumbai, both at the Parel (Haffkine) campus and at ACTREC, Navi Mumbai). Between these hospitals, the overall bed-strength of TMC will increase from the current 740 to over 3300.

In addition, TMC has started the National Cancer Grid, a large network of over 160 cancer centres and research institutes in the country, which between them treat over 650,000 new patients with cancer annually (amounting to 60% of all of India's cancer burden). This revolutionary initiative, funded by the DAE, is one of a kind in the world and works towards uniform standards of cancer care across India.

With this massive expansion in scope and activities of the TMC, there is an urgent need to increase the funding and manpower allocation for cancer care provided by the TMC commensurate with the over four fold increase in bed-strength and treatment provided. Budgetary and manpower requirement proposals are being sent to the DAE to support this expansion and cancer care provision.

Observation/Recommendation (Sl. No. 24)

Public Awareness about safety of Nuclear Safety: The Committee note that there

is a general apprehension among the people who are living near nuclear reactors and other nuclear installations about the impact of nuclear radiation on their health as well as impact on land resources. As a result of such apprehensions there have been sporadic protests on the installation of nuclear reactors and demand that they may be located away from populated areas. The Committee have been informed that the DAE, in order to, address such concerns and remove such apprehensions from the minds of people living near to nuclear installations, have undertaken activities such as distributing pamphlets in local language, arranging visits to power plants, holding exhibitions, briefing local media, street plays and other audio visual media like films and radio jingles to reassure them that it is completely safe to live near nuclear installations and there is no hazard of radiation. The Committee, while appreciating the efforts of the DAE to create awareness among the local people, also observe that it is necessary to make local people stakeholders in the entire exercise by offering them jobs wherever possible and also contributing to the development of local area through activities such as assisting in construction of hospitals, schools, supply of potable water and other utilities. The Committee recommend that adequate financial allocations for such activities should be made on priority.

Reply of the Government

Government/NPCIL has been sensitive to the needs of the Project Affected Persons (PAPs) whose land has been acquired. While adhering to the orders/guidelines of the central government, efforts have been made by NPCIL to facilitate land losers and local candidates in respect of employment. This includes:-

- Introduction of local language as a medium for the qualifying examination in addition to Hindi & English.
- Relaxations have been provided in age and percentage of marks in basic qualification for PAPs whose land has been acquired in recruitment to certain categories of Group 'C' posts in NPCIL, essentially to facilitate a fruitful participation of the PAPs in the recruitment.
- Special dispensation for PAPs through allotment of Shops in Townships.

NPCIL takes up many initiatives for benefit of the surrounding populations at its installation, to ensure inclusive growth as a part of its Corporate Social Responsibility (CSR). Many social welfare schemes are designed and implemented based on the needs

of the local people, largely in the areas of education including skill development, healthcare, infrastructure development and sanitation. Implementation of skill development schemes for the locals, makes them more employable.

These welfare programmes, over time, have led to improved opportunities of livelihood, availability of healthcare, drinking water, education including skill development and infrastructure facilities to the surrounding populace.

The funds for CSR activities are allocated in accordance with the provisions of the Companies Act. The CSR funds have been fully utilised by NPCIL in the last several years.

CHAPTER - III

RECOMMENDATIONS/OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF GOVERNMENT'S REPLY

Observation/Recommendation (Sl. No. 3)

Financial Allocation and revenue generation by DAE: So far as mobilisation of sources internally by DAE is concerned, the Committee find that sources of revenue generation include revenue from interest receipts, dividend, contributions & recoveries, power, industries and atomic energy research. The analysis of the data of revenue generation by DAE, as made available to the Committee during the course of examination, reveal that the overall revenue generated has fluctuated during the last five years. The revenue generated during 2013-14 was ₹6716 crore which increased to ₹6911 crore during 2014-15 and subsequently declined in 2015-16 and 2016-17 to the level of ₹6802 and ₹5733 crore, respectively. During the year 2017-18, although the overall revenue generated has increased to ₹7175 crore as compared to ₹5733 during the previous year, the revenue generation under the 'heads' - power, industries and atomic energy research has declined from ₹2009 crore, ₹1400 crore and ₹104 crore to ₹1520 crore, ₹1330 crore and ₹84 crore, respectively. With regard to the financial performance of NPCIL, revenue from operations has increased from ₹9626 crore during 2015-16 to 12026 crore during 2017-18. The Committee have been informed that ₹10660 crore is the revenue target for the year 2018-19. The Committee would like the Department to furnish the reasons for declining of revenue generation under power, industries and atomic energy research heads and the lesser targets set during 2018-19 by NPCIL.

Reply of the Government

Revenue generation depends on various factors viz. Biennial Shutdowns (BSDs) of the units, refueling outages, regulatory inspections etc. Thus, number of units and the shutdown days for conduct of maintenance, surveillance and inspection activities beside unforeseen outages affects the revenue generation. In addition, the units which are commissioned later have high tariffs and higher generation for these units contribute appreciably.

NPCIL's revenue from operation in 2017-18 was Rs.12206 crore. This was mainly due to higher generation from units having higher tariffs.

The generation plan for 2018-19 is expected lower than the previous year generation from the operating fleet, mainly on account of outages of KKNPP units (latest commissioned) for carrying out maintenance activities, KAPS-1 EMCCR & EMFR activities and planned BSDs of various units. Therefore, the projected revenue for the year 2018-19 is Rs. 10660 crore.

Ample opportunities are available for Post Graduation (specialization) for Short Service Commissioned officers in AFMS on completion of minimum mandatory service period as given below :

- a) Between 4-7 years of service eligible for applying for DNB course.
- b) Between 7-10 years services eligible for applying for MD/MS courses
- c) After completion of SSC tenure, an officer can also apply for PG seats as an ex-SSC officer.

Observation/Recommendation (Sl. No. 14)

Nuclear Safety and Waste Management: The Committee observe that in most of the installations administering X-Ray, sonography, etc. for diagnostic purposes, record of radiation administered to the patients are not kept or provided to the patients. The Committee also observe that no institutional mechanism or manpower or equipment exists- either in public or private sector- to monitor the quantity of radiation to which patients are exposed during examinations such as X-ray, MRI, etc. The Committee recommend that there should be systemic and institutionalized way of recording radiation administered during diagnostic tests. Adequate manpower for the purpose should be created by way of imparting training to the youth. The equipment should be such which can indicate when the prescribed safe limit of radiation is crossed. The patient should also be educated and informed before performing tests involving exposure to radiation.

Reply of the Government

AERB, as per its mandate, regulates all facilities using ionizing radiation which includes medical diagnostic X-ray (e.g. Computed Tomography (CT) equipment, Interventional Radiology (IR) equipment, General X-rays and Dental X-rays machines.) used in hospitals/clinics in the country. However, sonography, MRI equipment as indicated above are not under the purview of AERB as they do not emit ionising radiation. Patient dose monitoring system is incorporated in the design of such equipment and is mandatory for Computed Tomography (CT) and interventional radiology equipment. Therefore, in order to monitor patient dose in such equipment, availability of dose-management features such as availability of dose recording system is inbuilt in the equipment (e.g. CT dose-length product, dose-area product and total dose received during procedure). These design features are ensured in equipment design (in-built feature). Availability of such features in these equipment are verified during Type Approval (design approval) and also during regulatory inspections by AERB. For other x-ray equipment such as dental x-rays, General x-ray etc., provisions for dose monitoring are not provided considering the significantly lower radiation doses to the patients from these investigations.

Further, As per Atomic Energy (Radiation Protection) Rules, 2004, records need to be maintained by an employer for radiation doses received by therapy patients and radioactivity administered to patients for carrying out diagnostic or therapeutic work using radiation generating equipment, sealed or unsealed sources.

Observation/Recommendation (Sl. No. 15)

Nuclear Safety and Waste Management: The Committee note with concern that in AERB, as on 01.05.2016, the sanctioned staff strength was 459 against which the total staff in position was 326, the shortage being of 133 personnel, *i.e.*, about 29% of its total strength. The Committee consider it unacceptable to have such an acute shortage of manpower in such a vital organization. The Committee, therefore, recommend that the DAE and the AERB should immediately take urgent steps to fill these vacancies. The Committee be apprised of the steps taken in this regard within three months of presentation of the Report to Parliament.

Reply of the Government

Atomic Energy Regulatory Board (AERB) has been regulating the nuclear facilities, from the front end such as uranium and thorium exploration, mining, milling, fuel fabrication, heavy water production to nuclear power production to back end such as fast reactor fuel reprocessing and its fuel fabrication. It also regulates the facilities engaged in application of radiation in medicinal uses (such as radiotherapy, nuclear medicine, diagnostic X-ray etc.), industrial uses (irradiators, accelerators, radiography, nucleonic gauges etc.), research, consumer products etc.

With proposed expansion of nuclear power programme as well as anticipated rise in the use of radioactive sources in Industrial, Medical and Research applications in India, the regulatory activities will increase. The expansion of nuclear and radiation facilities as well the increased regulatory activities warrant a proportionate augmentation of manpower in AERB. The scientific and technical posts, in different grades, were sanctioned to AERB under the XII plan.

There is no immediate shortage of manpower in AERB for its current activities.

As on December 31, 2018, the sanctioned staff strength of AERB is 468. The sanctioned strength of the manpower is considering the future needs for anticipated increased work load of AERB in future due to expanding nuclear power programme and radiation facilities and at present the shortage is not affecting the mandated regulatory activities.

Details about the staff in-position and vacancies are given below (category-wise):

Category	Sanctioned	In position	Vacant
Scientific	315	249	66
Technical	72	24	48
Administrative	66	50	16
Auxiliary	15	11	4
Total	468	334	134

To augment the manpower requirements for scientific posts at AERB for its efficient and effective functioning, employees in different grades are being recruited from BARC Training Schools, AGFS from IITS, Lateral transfers from DAE units and also through open advertisement.

During the period 2017-18 & 2018-19, following recruitment and selection activities were done:

- 15 TSOs from BARC Training Schools have been recruited.
- 6 AGFS have been recruited from IIT Bombay and Madras.
- 14 Scientific officers have joined AERB through lateral transfers from different DAE units.
- At present, 20 scientific/technical officers in different grades are being recruited through open advertisement.
- For Technical posts in scientific assistants and technician grades, the recruitment is in the process.

Updated/additional information as on 16.12.2019:

There is no immediate shortage of manpower in AERB for its current activities. As on October 31, 2019, the sanctioned staff strength of AERB is 468. The details of the up-to-date information on staff in position and vacancies in AERB as on 31.10.2019 are as given below:

Category	Sanctioned	In position	Vacant
Scientific	315	254	61
Technical	72	30	42
Administrative	66	48	18
Auxiliary	15	11	4
Total	468	343	125

Further, the recruitment initiated in AERB as on date is as detailed below:

- 1) Six (06) SO/Cs were recruited through AGFS Scheme from IIT (Bombay & Madras) as on 22.07.2019.
- 2) Interview for the post of SO(G) was conducted on 04.09.2019 to 06.09.2019 and One (01) candidate was selected and issued offer of appointment.
- 3) As per the requirement of AERB, BARC has selected 29 candidates of Stipendiary Trainee Cat. I for AERB and they are being imparted training.

4) Recruitment of four (04) posts of ST.CAT.I and one (01) post of ST.CAT.II were included in HWB Advertisement and Five (05) posts of ST.CAT.I were included in BARC Advertisement.

5) DPS has selected 2 UDCs for AERB and C&A Forms are being forwarded to them. BARC was requested to include 2 UDCs for AERB in their advertisement.

6) Requirement of Two (02) posts of Steno Grade-III were included in the advertisement of BARC.

7) Five (05) TSOs from IGCAR/NFC Training Schools were recruited and they have joined on 01.08.2019.

Observation/Recommendation (Sl. No. 19)

Agriculture and Food Processing: In food processing, the Committee note that almost 16 percent of our fruit and vegetable products worth about ₹41,000 crore are wasted every year during transportation and storage. Similarly, the wastage of foodgrains is also high. The Committee note that with the use of nuclear technology by giving small amount of radiation, their shelf life can be increased substantially. The Committee recommend that an institutional mechanism with the partnership of the stakeholders may be created to promote the application of nuclear technology for promoting food processing and preservation.

Reply of the Government

Extensive interactions with different stake holders such as industry, consumers and defence personnel were initiated. Scientists from the BARC participated in several consumer education programs to make the public at large aware of the benefits of food irradiation. Representatives from various food industries were informed about the radiation processing technology and practical application of the process was demonstrated to them. MOUs were signed with five agricultural universities/institutes to further carry forward R&D activities in the area of food preservation by radiation processing.

Observation/Recommendation (Sl. No. 20)

Solid Waste Management in Cities: The Committee note that with the application of nuclear technology, urban waste management can be improved. With radiation of urban

waste - whether solid or liquid - all the bacteria present in the waste are killed and the waste may become a good source of organic manure. Similarly, the waste water coming out of textile dyes and tanneries may also be improved by radiation. The Committee recommend that DAE may give publicity to their technologies which are useful for waste management in cities and rural areas. The DAE may also publicise the ways for contacting them so that the urban and rural local self-government institutions may become aware of these technologies for waste management and get maximum benefit.

Reply of the Government

DAE and BARC in particular is working on application of nuclear technology for urban waste management like sewage sludge hygienisation and treatment of textile dyes waste water and waste water coming out of tanneries. DAE gives wide publicity to the use of radiation technology for urban waste management. Technical meetings are organized with municipal corporations to spread awareness and for better understanding of technologies for urban waste management. DAE and BARC outreach programmes have also been conducted as an effective platform to disseminate information regarding technologies developed through oral presentations, animated videos, posters, demonstrations at different universities and institutions. These efforts have resulted in wide coverage of technologies in print and digital media. BARC technology has been also propagated in scientific and public forums through theme meetings, workshops, seminars, newsletters, etc.

A dry sludge hygienisation facility is constructed at Ahmedabad by Ahmedabad Municipal Corporation with technical support from BARC under MOU. A MOU is also signed with Indore Municipal Corporation for setting up another facility, site clearance was obtained from Atomic Energy Regulatory Board (AERB), and civil design is ready.

Observation/Recommendation (Sl. No. 25)

Rehabilitation and Resettlement (R&R) Policy: The Committee note that for establishment of new or expansion of existing nuclear power plants and for other related purposes, land is acquired under the Land Acquisition Laws. The Committee also note that a comprehensive rehabilitation package including compensation for land, provision

of various facilities for the Project Affected Peoples (PAPs), etc. is worked out by the respective State Government based on the prevailing laws and consultations with NPCIL. The R&R package is implemented by the State Government and the cost for the same is funded by NPCIL. Apart from that other outreach activities including skill development training are also undertaken by the NPCIL to the project affected people. The Committee feel that the NPCIL and the DAE need to work for the overall development of the area. This will not only ensure smooth operation of nuclear power plants but also bring development and prosperity to the region. Therefore, adequate financial allocation should be made for the purpose and the DAE may also develop a standard list of activities that may be undertaken in all the project areas-whether existing or proposed. The Committee may be apprised of the steps taken in this regard within three months of the presentation of Report to Parliament.

Reply of the Government

Nuclear Power Corporation of India Ltd. (NPCIL) a public sector undertaking under DAE carries out neighbourhood welfare activities, under the Corporate Social Responsibility (CSR), in the surrounding areas of its nuclear power plants, in accordance with the provisions of the Companies Act 2013 and NPCIL CSR Policy, framed in accordance with the CSR rules. Since, the local requirements and priorities vary from site to site, the CSR activities are identified in conjunction with the local administration based on the requirements of the local people and requests from people's representatives like Sarpanchs, etc. Professional agencies have also been engaged for conduct of baseline surveys to get the requirements of the local communities at the sites.

Thus, the schemes under CSR are designed and implemented based on the needs of the surrounding population, in the broad areas of infrastructure development, healthcare, education & skill development and sustainable development. These welfare programmes, over time, have led to improved opportunities of livelihood, availability of healthcare, drinking water education including skill development and infrastructure facilities to the surrounding populace.

In addition to CSR activities taken up around existing operating sites, welfare programmes have also been taken up around new green field sites where projects are under construction or pre-project activities.

The funds for these activities are earmarked in accordance with the provisions of the Companies Act. The CSR funds have been fully utilized by NPCIL in the last several years.

Observation/Recommendation (Sl. No. 26)

Research activities and capacity building: The Committee note that the DAE carries out interaction with researchers in universities through symposia and other outreach programmes. Besides, it provides financial grant to the institutions for carrying out research projects related to Uranium exploration, impact of Uranium mining and nuclear waste management. The Committee also note that the DAE invites research proposals in nuclear sciences and such proposals, after being duly approved, are supported through 'Extra Mural Research Funding'. The Committee further note that post-graduation courses in nuclear engineering have started in four universities. This initiative is also extended to private universities. The Committee appreciate the initiatives being taken by the DAE to promote such courses and research activities in universities in the nuclear sciences. The Committee, however, express concern that such activities are limited to just a few universities and few research projects. Given the ambitious programme of the Government to increase the power generation through nuclear sources and many nuclear reactors likely to come up in the near future, there will be requirement of trained manpower in the coming years. It is important that the DAE expands its outreach programmes with universities and encourages formal studies in nuclear sciences as soon as possible so that the Country has a pool of trained manpower when it is needed. The Committee, therefore, recommend that the DAE should undertake necessary steps to ensure that such research support and funding are extended to universities in all parts of the Country. Necessary financial allocation should also be made for this purpose and also for starting formal studies in nuclear sciences in different universities.

Reply of the Government

Board of Research in Nuclear Sciences (BRNS) and aided institute under the aegis of DAE has been extending the financial & technical support to various universities across the country for building research environment & infrastructure, and creating a pool of scientific & technical man power to meet DAE mandate. Total 320 research projects have been sanctioned in two years span of 2016-2018 with total budget of Rs.9060 lakh

BRNS is also providing financial supports to various educational schemes implemented by Homi Bhabha National Institute (HBNI) Mumbai, for the formal education in Nuclear Sciences.

CHAPTER - IV

RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH GOVERNMENT'S REPLIES HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

Observation/Recommendation (Sl. No. 22)

Environmental Pollution: The Committee note that nuclear technologies also have application in addressing the issue of environmental pollution in our urban areas. Air pollution is one of the major problems facing the urban population today and a large number of people in cities suffer from various diseases on account of air pollution. The Committee have been informed that nuclear technology can be applied for sucking out CO₂ particles from atmosphere in small scale and can also help in removing bacteria and other pollutants from air which will improve air quality in the cities. The Committee, therefore, recommend that DAE may give wide publicity to their technologies which are useful for addressing atmospheric pollution in cities. The DAE may also give publicity about the availability of consultation mechanism for the benefit of State Governments.

Reply of the Government

DAE in general and BARC in particular has developed various spin off technologies in the fields of environmental pollution control, agriculture, solid waste management, water purification and health care that are beneficial to entrepreneurs and society. The various water purifier technologies specific to different water pollutants and stand alone domestic water filter technologies sans electricity have been transferred to industries to fulfil our societal needs. DAE has developed a wide range of cost effective, import substitute healthcare instruments. Bhabhatron, a Cobalt-60 tele-therapy machine for cancer treatment is in good use in many hospitals across India and has also been exported to other neighbouring countries. Nisargruna Bio gas plants for generating energy from kitchen waste have been set up in various municipal corporations with the support of respective state governments. More than ninety such useful technologies are now available for transfer to industry on non exclusive basis.

Comments of the Committee

(Please see para no. 1.22 of Chapter - I)

Observation/Recommendation (Sl. No. 23)

Research activities and capacity building: India is advocating peaceful use of atomic energy. The Committee appreciate that with its successful record of nuclear power generation and research for more than five decades, India has achieved expertise in the field. The Committee are of the opinion that India should make efforts to become a hub for disseminating technologies for peace time uses in the field of agriculture, health, water purification, solid waste management, etc. and export the same to other friendly countries. This will not only generate revenue but also make the DAE a self-reliant Government Department.

Reply of the Government

The complete list of these technologies under eight categories is displayed in BARC website with descriptions of their salient features. The modalities for transferring the know-how to industry are also detailed in the website and all queries related to technology transfer are regularly answered. Public awareness and urge for entrepreneurship are created by conducting outreach programmes, exhibitions and through DAE Technologies Display and Dissemination Facilities (DTDDFs) that are functional in reputed educational institutions in states across all over India. Active efforts are undertaken by DAE/BARC for promoting these technologies in the vernacular languages also for better reach to our society.

Comments of the Committee

(Please see para no. 1.25 & 1.26 of Chapter - I)

CHAPTER - V

**RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH FINAL REPLIES ARE
STILL AWAITED**

-NIL-

**NEW DELHI;
22 September, 2020
Bhadrapada 31, 1942 (Saka)**

**GIRISH BHALCHANDRA BAPAT,
CHAIRPERSON,
ESTIMATES COMMITTEE.**

**MINUTES OF THE ELEVENTH SITTING OF THE COMMITTEE ON ESTIMATES
(2019-20)**

The Committee sat on Wednesday, the 18th March, 2020 from 1500 hrs. to 1515 hrs. in Committee Room No. 'D', Parliament House Annexe, New Delhi.

PRESENT

Shri Girish Bhalchandra Bapat – Chairperson

Members

2. Kunwar Danish Ali
3. Shri Pradan Baruah
4. Shri Sudarshan Bhagat
5. Shri P.P. Chaudhary
6. Shri Nand Kumar Singh Chauhan
7. Shri P.C. Gaddigoudar
8. Shri Dilip Ghosh
9. Dr. Sanjay Jaiswal
10. Shri Dharmendra Kumar Kashyap
11. Shri Dayanidhi Maran
12. Shri K. Muraleedharan
13. Dr. K.C. Patel
14. Col. Rajyavardhan Singh Rathore
15. Shri Vinayak Bhaurao Raut
16. Shri Magunta Srinivasulu Reddy
17. Shri Rajiv Pratap Rudy
18. Shri Francisco Sardinha
19. Shri Prathap Simha
20. Smt. Sangeeta Kumari Singh Deo
21. Shri Parvesh Sahib Singh
22. Shri Sunil Dattatray Tatkare

SECRETARIAT

1. Smt. A. Jyothirmayi - Additional Director
2. Shri Sujay Kumar - Deputy Secretary

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee. The Committee then took up for consideration and adoption of the following draft Report(s):

(i) Action Taken Report on the Recommendations/Observations contained in the 31st Report (16th Lok Sabha) of the Committee on Estimates on the subject 'Import of Uranium for Nuclear Plants' pertaining to the Department of Atomic Energy; and

(ii) ***

3. The Committee after due deliberations adopted *** the draft Report(s) without any modifications. The Committee also authorised the Chairperson to make any consequential changes and finalize the draft Reports on the basis of factual verification by the concerned Ministry and present the same to Lok Sabha.

The Committee, then, adjourned.

MINUTES OF 4th SITTING OF THE COMMITTEE ON ESTIMATES (2020-21)

The Committee sat on Monday, the 21st September, 2020 from 1200 hrs. to 1330 hrs. in Committee Room 'B', Parliament House Annexe, New Delhi.

PRESENT

Shri Girish Bhalchandra Bapat - Chairperson

Members

2. Kunwar Danish Ali
3. Shri Sudharshan Bhagat
4. Shri Ajay Bhatt
5. Shri P.P. Chaudhary
6. Shri P.C. Gaddigoudar
7. Shri Nihal Chand Chauhan
8. Shri Dharmendra Kumar Kashyap
9. Shri Mohanbhai Kalyanji Kundariya
10. Shri Dayanidhi Maran
11. Shri K. Muraleedharan
12. Dr. K.C. Patel
13. Col. Rajyavardhan Singh Rathore
14. Shri Rajiv Pratap Rudy
15. Shri Francisco Sardinha
16. Shri Prathap Simha
17. Smt. Sangeeta Kumari Singh Deo

SECRETARIAT

- | | | | |
|----|---------------------|---|---------------------|
| 1. | Dr. Kavita Prasad | - | Joint Secretary |
| 2. | Smt. B. Visala | - | Director |
| 3. | Smt. A. Jyothirmayi | - | Additional Director |
| 4. | Shri R.S. Negi | - | Deputy Secretary |

WITNESSES

- | | | | |
|----|-----|-----|-----|
| 1. | xxx | xxx | xxx |
| 2. | xxx | xxx | xxx |

3. xxx xxx xxx

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee and briefed them about the agenda of the sitting viz. (i) Consideration and adoption of the draft report(s) and (ii) xxx xxx xxx

3. The Committee then took up for consideration and adoption of the following draft Reports:

(i) xxx xxx xxx

(ii) xxx xxx xxx

(iii) Action Taken Report on the Observations/Recommendations contained in the 31st Report (16th Lok Sabha) of the Committee on Estimates on the subject 'Import of Uranium for Nuclear Plants' pertaining to the Department of Atomic Energy.

4. The Committee after due deliberations adopted the above 03 draft Action Taken Reports without any modifications and authorised the Chairperson to finalize them in the light of the factual verification by the concerned Ministry and present the same to Lok Sabha.

5. xxx xxx xxx

6. xxx xxx xxx

7. xxx xxx xxx

8. xxx xxx xxx

9. xxx xxx xxx

The Committee, thereafter, adjourned.

ANALYSIS OF THE ACTION TAKEN BY GOVERNMENT ON THE OBSERVATIONS/RECOMMENDATIONS CONTAINED IN THE THIRTY-FIRST REPORT OF THE COMMITTEE ON ESTIMATES (SIXTEENTH LOK SABHA)

(i)	Total number of Observations/Recommendations	25
(ii)	Observations/Recommendations which have been accepted by the Government (Sl. Nos. 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 21 & 24)	16
	Percentage of Observations/Recommendations	64%
(iii)	Observations/Recommendations which the Committee do not desire to pursue in view of the Government's reply (Sl. No. 3, 14, 15, 19, 20, 25 & 26)	7
	Percentage of total Observations/Recommendations	28%
(iv)	Observations/Recommendations in respect of which Government's replies have not been accepted by the Committee (Sl. Nos. 22 & 23)	2
	Percentage of total Observations/Recommendations	8%
(v)	Observations/Recommendations in respect of which final replies of Government is still awaited.	Nil
	Percentage of total Observations/Recommendations	Nil