Shri Meena, please.

[Translation]

You cannot ask question about Rajasthan.

SHRI BHERULAL MEENA : Sir, this is a relevant question.

MR. SPEAKER : Then ask, what is relevant.

SHRI BHERULAL MEENA : Mr. Speaker, Sir, this question is relevant because it was for the shortage of LPG that a country-wide survey was conducted and all possible efforts were made to meet the shortage. All that I want to know from the hon. Minister is whether a survey was conducted in Rajasthan, especially in Barmer area of the State?

[English]

MR. SPEAKER : I am sorry.

[Translation]

SHRI BHERULAL MEENA : Let the reply come.

MR. SPEAKER : No, not like this. This question relates to Nagaland. Why do you link it with Rajasthan.

(Interruptions)

[English]

MR. SPEAKER : This is specific question about Nagaland. He will not have the information. Spending time on this point is a waste.

Conversion of Thorium into Uranium

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*282. SHRI SATYA DEO SINGH :
SHRI VIJAY PATEL :

Will the PRIME MINISTER be pleased to state :

(a) whether possibilities of Atomic Energy Development in the country have increased after getting success in conversion of Thorium into Uranium 233, recently,

(b) if so, the details thereof;

(c) whether any project using alternative nuclear fuel has been commissioned; and

(d) if so, the details thereof?

THE MINISTER OF STATE OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION AND MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI YOGINDER K. ALAGH) : (a) to (d). A Statement is laid on the Table of the House.

STATEMENT

(a) and (b). Yes, Sir. Thorium has been successfully converted into uranium 233 in the Research Reactors in Trombay over the years. The reprocessing of uranium 233 from the irradiated rods also has been carried out both at Bhabha Atomic Research Centre (BARC) and Indira Gandhi Centre for Atomic Research (IGCAR). The R & D work in the Department of Atomic Energy is oriented towards the long term strategy with the current generation of Pressurised Heavy Water Reactors as the first stage, Plutonium Fuelled Fast Breeder Reactors as the second stage and reactors operating on the Thorium-Uranium 233 fuel cycle as the third stage.

(c) and (d). Yes, Sir. Two zero power critical facilities with Uranium-233 fuel Purnima-II and Purnima-III were operated as experiments in BARC. And more recently on October 29, 1996, a 30 KWth research reactor KAMINI using Uranium-233-aluminium alloy fuel fabricated at BARC was commissioned at the Indira Gandhi Centre for Atomic Research (IGCAR) at Kalpakkam. This research reactor will be mainly used as a source of neutrons for neutron radiography of fast reactor fuel elements and also for neutron activation analysis, for reactor physics and for shielding experiments.

[Translation]

SHRI SATYA DEO SINGH : Through this question, I would like to avail an opportunity - and I think the House would also like to join me - to congratulate the Indian scientists and technicians who have achieved success through indigenous research in commissioning KAMINI reactor. It has been estimated that we have Thorium reserves of over four lakh tonnes in the country. Based on these estimates, we can generate 3.5 lakh MW of electricity during the next 300 years. The KAMINI reactor developed indigenously is, perhaps, the only reactor of its type in the world. This research was undertaken in BARC and Indira Gandhi Centre for Atomic Research and the scientists working in these two centres deserve to be congratulated. The target set for the 9th Five Year Plan for the generation of atomic energy (electricity) through the use of Thorium - Uranium 233, experiment of which has been done in the KAMINI reactor, is merely 3 per cent which comes to 800 MW in all. This atomic reactor is environment friendly and it has opened new vistas for meeting the shortage of electricity in the country. Keeping in view the success in generation of electricity with the use of Thorium, I would like to know whether Government would consider increasing the generation of atomic energy during the 9th Five Year Plan and, if so, the steps proposed to be taken in this regard?

[English]

SHRI YOGINDER K. ALAGH : I am very grateful to the hon. Member for bringing it to the attention of the House that the Kamini Reactor is a very great achievement of Indian nuclear science. I would like to inform him that in the Ninth Five Year Plan the Department of Atomic Energy proposes to produce a

prototype fast breeder reactor of 500 MW. The design for the reactor is already underway both on the fabrication of the equipment itself as well as on the control equipment. We are liaising with the industry for this purpose. We are designing internally control equipment and other things. It is hoped that we would have perfected our own design for a 500 MW reactor by the end of the Ninth Five Year Plan. The fast breeder reactor with power plant of about 500 MW will cost us a fairly substantial amount of money. It will use plutonium as a fuel, but it will also generate Thorium 233 with which then subsequently by developing the technologies which the Kamini Reactor has developed we will be able to develop advanced pressurised heavy water reactors (AHWR) so that we can operationalise this into the Ninth Five Year Plan. We have every intention of taking this major breakthrough and pushing ahead with an atomic energy plant based on this. However, in the Ninth Five Year Plan itself, we would also be developing power reactors based on the available technology and we have plans for raising the capacity through nuclear power.

[Translation]

SHRI SATYA DEO SINGH : Mr. Speaker, Sir, through you, I would like to tell the hon. Minister that generation of electricity in the country has, in fact, gone down instead of going up. This new atomic research will not only push up electricity generation but will also benefit our security forces and universities. The Prime Minister is present here. I want his attention also. The hon. Minister has just now said that atomic energy generation will require additional funds. Although, funds are needed for all items of work, yet I would request that the hon. Minister should assure the House that money for this purpose would be made available.

One more question I would like to ask with the hope that the hon. Prime Minister would accept my appeal and would make the required funds available for the development to atomic energy. Right now, UP is passing through a severe power crisis which poses a big problem for the farmers. Generation of electricity is coming down which is causing an adverse effect on the economic situation of the country. I would like to know from the hon. Minister whether he would formulate a scheme for setting up an atomic reactor in eastern UP?

AN HON. MEMBER : For entire UP.

SHRI SATYA DEO SINGH : Other parts of the country are already having these reactors; I am specifically asking for eastern UP to which I belong. There is no atomic reactor there. Keeping in view the backwardness of and power shortage in eastern UP, will the Government consider setting up of an atomic reactor in that part of the country; if so, the time by which it is expected to be done?

[English]

SHRI YOGINDER K. ALAGH : Sir, the Atomic Energy Commission had given a presentation to the Prime Minister and the Prime Minister has visited our atomic energy research establishments at Mumbai. This is very encouraging to the scientists and we have every hope that in the Ninth Five Year Plan we will be able to persuade the Planning Commission to meet our legitimate requirement of resources which will be available for the two atomic power plants, which we plan to set up with Russian collaboration, the other projects which we hope to complete, as also the prototype fast breeder reactor - which I have mentioned in reply to the hon. Member - which is in the research and development stage and on which we hope to start fabricating at the end of the Ninth Five Year Plan. We have every hope that we will be able to get these resources in the finalised version of the Ninth Five Year Plan. The siting of atomic power projects is done by technical expert groups and there has been some preliminary work done but I would request that these problems - because they involve both techno-economic as well as many other considerations of safety and so on - should be left to the concerned scientific groups which make an assessment of the location.

SHRI VIJAY PATEL : Sir, as a result of the ageing of the power plant and equipment, the present power plants have become obsolete and they are hazardous too. Uranium-233 has proved to be the most economical, safe, efficient, pollution-free fuel. Therefore, I would like to know what amount would be saved by establishing the power plants which the hon. Minister has just now mentioned.

SHRI YOGINDER K. ALAGH : Sir, in the initial phase atomic power particularly for a country like India which has to develop it entirely of its own resources, does cost some money. Our preliminary estimates are that even the prototype fast breeder reactor will cost us something like Rs. 2500 crore which means that its financial cost will be somewhat higher than the existing alternative sources of energy. However, our experience is that as we stabilise these technologies and as we get into larger applications, costs go down. So, I am hoping that the new technologies which will emerge from the Kamini Reactor will be competitive in terms of meeting our requirements. As the hon. Members has said, they also will use our scarce thorium resources which will be made available, let us say, after we have perfected these technologies for hundreds of years, to meet our requirements.

PROF. P.J. KURIEN : I also join the hon. Members in congratulating our scientists for the technology innovation that is very much suitable to our country. There is a large potential for nuclear energy innovation and we all want that the Government should start using this potential.

I would like to ask one question that in view of what happened in Chernobyl - of course, about the Chernobyl disaster, all of us know - whether our atomic reactors have been subjected to a strict monitoring with regard to the safety aspect. Secondly, the question of dumping of nuclear wastes itself is a serious problem even to the developed countries. How are we going to tackle it? May I know whether the Ministry is looking into this aspect also?

SHRI YOGINDER K. ALAGH : The Atomic Energy Regulatory Board has prepared a detailed report on the safety steps that have to be taken and we have put a very distinguished Indian scientist, Dr. Rama Rao as the chairman of the Board. They have all the powers. If they face any problem about the working of any reactor, I would say that all the recommendations of the Board have been fully taken into account; most of the short term recommendations have already been implemented; and the action plan for most of our nuclear agencies has been produced, for seeing to it that the medium and the long term safety recommendations of the Atomic Energy Regulatory Board are implemented *(Interruptions)*

[Translation]

KUMARI UMA BHARATI : Mr. Speaker, Sir, he is putting his hand repeatedly into his pocket, what is that he is looking for?

[English]

MR. SPEAKER : Do you want to see it!

SHRI YOGINDER K. ALAGH : I want to assure the hon. Member that as far as the old reactors are concerned, the recommendation of switching them over to zirconium alloys has already been taken into account and at present, most of our reactors are running with a good plant load factor. But the Rajasthan Atomic Power Plant has been shut down for mandatory repairs; RAPP has been shut to switch to implement these recommendations.

[Translation]

Refinery Projects

*283. SHRI N.J. RATHWA : Will the PRIME MINISTER be pleased to state :

(a) whether any schemes have been formulated in regard to the refinery projects by oil companies in collaboration with some foreign oil companies;

(b) if so, the details thereof.

(c) the details of the progress made in this regard so for;

(d) the equity participation of the foreign oil companies under the said schemes and the details of the equity of the public and others; and

(e) the time by which the said project is likely to be completed?

[English]

THE MINISTER OF STATE IN THE MINISTRY OF PETROLEUM AND NATURAL GAS (SHRI T.R. BAALU) : (a) to (e). A statement is laid on the table of the House.

STATEMENT

(a) to (e). Madras Refineries Limited was set up in 1965 as joint venture with NIOC (13%)* and Amoco India Inc. (13%)* and Cochin Refineries Limited was also set up in 1963 as joint venture with Phillips Petroleum Company Ltd. (25%)*. The present shareholdings of these Companies are as under :

(i) **Madras Refineries Limited**

Government of India	53.75%
National Iranian Oil Co.	12.21%
Others	34.04%

(ii) **Cochin Refineries Limited**

Govt. of India	55.04%
Govt. of Kerala	5.08%
Others	39.88%

Government in 1992, approved setting up 3 Joint Venture Refineries each with a capacity of 6.0 MMTPA to be located in Eastern India, Central India and Western India by IOC, BPCL and HPCL respectively, with private parties from India or abroad. Recently, in pursuance of this policy, LOIs have also been granted to HPCL and BPCL for setting up refineries in Joint Venture in Punjab and Uttar Pradesh respectively. The details of the equity participation in these Joint Venture Refineries are as under :

PSU	26%
Joint Venture Partner	26%
Public	48%

The details of progress of these projects is as follows :

1. IOC/Kuwait Petroleum Corporation	Eastern India Refinery Project	DFR for the project is yet to be received from IOC
2. BPCL/Oman Oil Company	Central India Refinery Project.	Project sanctioned in Dec'95 To be mechanically completed in 1999.
3. HPCL/Oman Oil Company	Western India Refinery Project	Proposal is under process for investment approval.