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To

Dr. Sekhar Basu

Secretary

Dept of Atomic Energy (DAE)

Govt of India

Dear Dr Basu,

Subject:- Price of imported uranium for the nuclear power projects being set up

During the coming decade, DAE is planning to set up a large number of nuclear power projects based on imported reactors and imported fuel. From what I gather from the news reports appearing time and again, DAE proposes to augment the domestic nuclear power generation capacity to more than 55GWe. This will significantly increase the requirement of imported uranium. Has DAE made any assessment of the trends in the global price of uranium and its likely impact on the cost of nuclear power?

As of now, there are 437 commercial nuclear reactors (generation capacity of 372 Gwe) operating in the world, requiring 1.6 KT of uranium. New nuclear power projects based on 68 reactors of larger capacities ranging around 1,000-1,600 MWe are under construction. Additionally, nuclear power projects based on another 150 large-sized reactors are at the planning stage. In addition to India, countries such as China and South Korea are going ahead aggressively to augment their respective nuclear power capacities. Several countries in the Middle East are also joining the nuclear power fraternity. In other words, the demand for uranium is going to increase in leaps and bounds, if the planned nuclear power generation capacity materialises as scheduled.

Are there adequate uranium resources available globally? What proportion of those resources can be extracted readily? Can the extractable uranium resources match up to the steeply escalating demand? These questions are important from our point of view as India's future nuclear power scenario will critically depend on the price in foreign exchange it will be forced to pay for the uranium it is going to import.

According to well researched studies, the demand for uranium is likely to be anywhere within a range of 90-140 KT by 2035, whereas the supply of it can at best be around 70-110 KT by then. The supply side estimates are somewhat optimistic and they may have to be adjusted downwards if the globally available uranium deposits were to be assessed as per the United Nations Framework Classification (UNFC) which takes into account resource extractability based on environmental and other constraints.

In any case, the supply of uranium will fall short of the demand significantly, leading to a sharp escalation in the global prices. Some researchers forecast a **tripling** of the uranium price in dollars during the next two decades. Depending on the foreign exchange value of the Indian rupee at that time, the adverse impact of this on the domestic price of electricity can be far worse.

This is not the end of the story, as there are other disturbing aspects of the global uranium market.

First, neither in the case of the reactors nor in the case of the uranium fuel, India will have the opportunity to determine the prices through competitive bidding procedures as India's nuclear power development programme is based exclusively on bilateral agreements which leave no scope for such a transparent price discovery. India will therefore necessarily pay a heavy price, more than what the market would have required, for both imported reactors and imported uranium.

Second, sensing an impending scarcity situation, the few global companies active in uranium mining are trying to monopolise supplies, create artificial shortages and gain undue advantages. Several of them are moving towards vertical integration of activities involving uranium mining, processing of the ore and conversion of uranium compounds into fuel rods, which will reduce global competition and further harden the uranium price the world over.

Third, as a result of increasing public opposition to all mining activity including uranium mining, there have been both time and cost overruns in uranium mining projects. Such delays will continue to plague the uranium mining industry and add to the global cost of mining uranium in the coming decades.

Has DAE made any prudent assessment of these trends? Is it not incumbent on the part of DAE to forewarn the government and the domestic electricity consumers of the impending cost escalation in

the case of electricity generated from the nuclear power plants being set up at various locations in the country?

I request DAE to examine this concern with the seriousness it deserves. In my view, if these trends are taken into account, the cost of nuclear power is going to be prohibitively high.

Considering the fact that the recent Indo-US agreement would literally absolve the foreign reactor manufacturers of any liability whatsoever that may arise in the event of a Fukushima-like accident attributable to reactor design shortcomings, the new nuclear power projects being set up will cripple the economy in case such an accident were to take place ***even at one location***. Would it be prudent for the DAE to go ahead with such an ambitious capacity expansion that will not only be highly expensive but also patently unsafe?

Regards,

Yours sincerely,

E A S Sarma

Former Secretary to GOI

Visakhapatnam

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