

Present scenario of the nuclear deal

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In an article 'Nuclear dilemma: The deal and beyond'¹, I had presented some aspects of the Indo-US civil nuclear energy cooperation, against the backdrop of an agreement between the US and India on 18 July 2005, followed by an understanding reached on 2 March 2006. The article dealt with the basics of fission physics and nuclear technology that underlie nuclear power generation and the jargon that go with it; the Indian three-stage nuclear programme and the need for cooperation with other countries to enlarge nuclear power generation in our country. The article also touched upon concepts, 'safeguards' and the various international treaties and control-regimes that circumscribe use and control of nuclear options. The article continues to serve as an introductory essay; in the following, I shall try to put down some thoughts on what has transpired since then. The article¹ had ended with a note: 'Much needs to be discussed and negotiated at the US Congress, International Atomic Energy Agency (IAEA), Nuclear Suppliers' Group (NSG), etc. for implementation of the "Deal" in the months and years to come'. The status has remained virtually unchanged, except for the passing of the Hyde Act (incorporating certain amendments to the US Atomic Energy Act) by the US Congress and recent discussions between the Indian and US representatives on a draft of the '123 Agreement' (Sec. 123. 'Cooperation with Other Nations', a part of the Nuclear Regulatory Legislation US Atomic Energy Act).

Scientists, who ought to understand and articulate better, the concerns related to the 'Deal' were less informed, sidelined and relegated to the background vis-à-vis the bureaucracy (including scientific bureaucracy), media personnel and political bosses. Scientists came to learn about the bits and pieces through selected 'leaks' and 'interviews' and newspaper articles. I felt like the proverbial 'headless chicken' many a time. New jargon and lexicon were introduced that confuse and confound the public. The nuclear issue is not one to be decided in boardrooms, because it involves, if nothing else, scientific integrity and independence that this country has prac-

tised diligently over the past 60 years. There would be (and there are) certain secrets in this field that cannot be in the 'open-access' domain, purely for national security reasons. That, we all understand and respect. But if one were not to understand 'compromises' surrounding the 'deal', over the next 50–60 years, the country may face a new cycle of constraints, embargoes and controls from the international community; we shall face a new 'isolation'. Therefore, all aspects of the agreement must be discussed in Parliament and scientific forums. Such concerns had been expressed about a year ago by a few eminent nuclear scientists, including three former Chairmen of the Indian Atomic Energy Commission, through an appeal to Indian Parliamentarians. This appeal serves as a touchstone against which all ongoing and future negotiations are to be tested. They had underlined four essentials to be fulfilled (see Box 1). In my opinion, their insis-

tence on the role and right of our Parliament 'to work out and insist on the ground rules for the nuclear deal', is a crucial point that holds good at all stages until the deal becomes implemented or operable.

The American 'generosity' in supporting India's nuclear power generation programme is dictated by, as some would like us to believe: (a) its need for strategic alliance; (b) economic advantage to be realized by increased export of goods and technology to India; (c) access to our 'trained engineers in the nuclear field' (I do not subscribe to this view), and (d) as 'sanctions had not worked so they thought, let us try a new way. Hence this deal'. In this scenario, one has to have a realistic assessment of gains to be realized by India through civil nuclear cooperation, offset against loss of any independence in nuclear programmes to be taken up.

According to a report, the US intention was to allow a selective lifting of restrictions

Box 1. Extracts from Appeal to Parliamentarians

'...it is essential that we insist on the following four central themes:

(a) India should continue to be able to hold onto her nuclear option as a strategic requirement in the real world that we live in, and in the ever-changing complexity of the international political system. This means that we cannot accede to any restraint in perpetuity on our freedom of action. ...

(b) ...Safeguards are understandable where external assistance for nuclear materials or technologies are involved. We have agreed to this before, and we can continue to agree to this in the future too, but strictly restricted to those facilities and materials imported from external sources.

(c) We find that the Indo-US deal, in the form approved by the US House of Representatives, infringes on our independence for carrying out indigenous research and development (R&D) in nuclear science and technology. Our R&D should not be hampered by external supervision or control, or by the need to satisfy any international body. Research and technology development are the sovereign rights of any nation. This is especially true when they concern strategic national defence and energy self-sufficiency.

(d) While the sequence of actions to implement the cooperation could be left for discussion between the two governments, the basic principles on which such actions will rest is the right of Parliament and the people to decide. The Prime Minister has already taken up with President Bush the issue of the new clauses recommended by the US House of Representatives. If the US Congress, in its wisdom, passes the bill in its present form, the 'product' will become unacceptable to India, and diplomatically, it will be very difficult to change it later. Hence it is important for our Parliament to work out, and insist on, the ground rules for the nuclear deal, at this stage itself.'

aimed (earlier) at undermining India's indigenous programme in the nuclear field. I feel that reprocessing is India's birthright as much as Swaraj is our birthright. Any deal which denies India either the right to reprocess spent fuel produced by imported reactors or prevent sale of equipment meant for reprocessing, enrichment or heavy water production, if accepted, would jeopardize the future of India's three-stage nuclear programme itself. Nearly three generations of scientists and engineers have toiled over six decades to reach where we are in the nuclear field thanks to two *Mantras*, namely 'indigenization' and 'self-reliance'. Whether we get ourselves subjugated at this stage under the whiff of 'globalization' needs to be carefully examined and debated. The political arena is quite dynamic; what today's Indian and American partners approve may not hold good in perpetuity. If the thrust on self-reliance is softened or negated, it is not easy to resuscitate the machinery.

It appears that the deal envisages setting up safeguarded reprocessing facilities. That is, there would be two sets of facilities: perpetual safeguarded transferred material, safeguarded reactors, safeguarded reprocessing plants under 'prior consent to reprocess nuclear materials', and perhaps even safeguarded fuel production facilities and safeguarded waste disposal sites. Since all facilities would not be safeguarded, there would be a set of unsafeguarded reactors, fuel fabrication facilities, reprocessing facilities and waste disposal sites. One cannot switch the throughputs from one set of facilities to the other. Hence two parallel sets of facilities have to be built, commissioned and maintained; enormous cost escalations are inevitable. In addition, the US (and any or all members of the NSG) is said to 'preserve the rights to terminate cooperation and request the return of transferred items under appropriate circumstances' (perhaps, in the event of another Indian nuclear test).

It is not clear at this stage if IAEA would give concessions to India to realize an 'India-specific safeguards agreement'. If IAEA has to change some of its statutes/guidelines, so also NSG has to change its ground rules, as NSG supports full-scope safeguards. So only the future will tell us if there would be 'India-specific IAEA safeguards', 'India-specific NSG agreement' plus approval from the US Congress. If NSG changes its operat-

ing guidelines, does India have to depend only on the US for its enlargement of civil nuclear programme, is a moot question. However, NSG may not wink unless backed by the US!

Several goals had been set up from around 1980 for nuclear power to be generated (not installed) in our country. Over these decades, it is also seen how 'the goal-posts have been moved' repeatedly as the country fell short in realizing those goals. The bitter truth is that the share of nuclear power in India is barely 3%, and the country ranks 25th amongst some 30 countries that use nuclear power in the world. It is against this fact that one has to look at the timetable that might have been worked out, for generation of nuclear power over the next 5–6 decades with/without the US and international nuclear cooperation; the crux of the timetable hinges on realistic estimates of rate of growth of nuclear installations, against the backdrop of progress of projects like the Koodankulam power station. Our records, of execution of many a major scientific/technological project, show that the gestation periods are far larger when compared with those in many developed countries. This is the reality.

Assuming that all goes well with the 'deal', the incremental growth of nuclear component in the total energy mix in India hinges on several new premises and assumptions: (a) import of uranium fuel to keep our existing safeguarded uranium-based power reactors, on-line, (b) operation of large units of power reactors in the 1000–1500 MWe range (we have no experience in this range so far), and (c) private–public joint enterprise in nuclear power generation, a new strategy by itself.

At this juncture, when a copy of the '123 Agreement' between the US and India is made public by the MEA, in this short article, the major issues related to the recent discussion are briefly outlined. It is stated that 'the text of the agreement is frozen (already) and "non-negotiable". Neither India nor the US can make any changes in it'. The Government is assuring that the agreement will not have any adverse impact on three contentious issues, namely (a) India's strategic interests; in other words, perhaps, it means Indian's right to test atomic weapons as and when needed, (b) guarantee for lifetime fuel supply to sustain the three-stage nuclear power programme, and (c) India's right to reprocess fuel that would be imported and used in safeguarded

power reactors. However, political pundits would like to look at the fine print of the text that relates this 123 Agreement to the US Atomic Energy Act (1954) and the Hyde Act (2006–07). Several issues are said to have been covered under objections raised earlier (in 2005): 'no compromise on our strategic security and nuclear sovereignty; no compromise on our independent decision-making foreign policy and the fate of large-scale public funds if the US stopped fuel supply to our reactors'.

Our past experience is that, in 1978, the Americans denied fuel supply to the Tarapore reactors after India conducted a nuclear test in May 1974, although there was an agreement in place at that time for no stoppage of supply of fuel to the reactors for their 25-year lifetime. However, the problem was overcome by development of MOX fuel for the reactors as well as by other means. So the 123 Agreement in its present *Avatar* has to be carefully examined against ramifications of the Hyde Act (see Appendix). The 123 Agreement should be read in conjunction with the Hyde Act and not in isolation.

India commissioned a plutonium reprocessing plant by mid 1960s. Since then, India has built additional reprocessing facilities. Nevertheless, as one goes through import of uranium, reprocessing of fuel based on such imported uranium may have to be carried out in one or more 'multinational facilities rather than in a national Indian facility', according to American dictates.

Although it was envisaged that 'full' civil nuclear energy cooperation was our goal in all our discussions so far, it is not clear if this covers import of technologies and equipment needed for reprocessing, enrichment and heavy water. It may be that they will be subjected to safeguards also. If this scenario were true, it means that embargoes continue as far as requirements for un-safeguarded facilities are concerned under the Hyde Act. One can only imagine cost and manpower escalations involved in running two parallel sets of facilities, as already stated, one for safeguarded fuels and one for un-safeguarded fuels.

India is placed in an unenviable position vis-à-vis any type of fuel that the country depends on, be it coal, oil, natural gas or nuclear fuel. Our dependence on import of liquefied natural gas, crude oil and coal has been increasing year after year, and the control valves of these

supplies are in the hands of various overseas suppliers and countries. The taps at our end can go dry anytime at the turn of the control valves, due to economic and political reasons. So far, we have entertained considerable independence as far as nuclear fuel and technology are concerned. However, this situation is prone to change, as we go for global nuclear supplies. We have tasted the effects of embargoes in this field over the past three decades. The Damocles' sword, of turning-off supplies would always exist for India, being a country of burgeoning population and insatiable and increasing thirst for energy. India is expected to behave politically, economically and socially with its mix of major religions of the world. Any internationally unacceptable events like a future nuclear test or large-scale ethnic conflicts or cross-border conflicts could trigger a reaction from the suppliers.

What is so special about the 123 Agreement? It is part and parcel of the 1954 US Atomic Energy Act (its Section 123) and is aimed to serve as a template for all agreements that the US would like to arrive at with any country (generally being a signatory to the NPT) that would go for civil nuclear cooperation with the US. The US has signed such agreements with more than 25 countries, including China and Japan. Hence the basic concept is common to all countries; however, there are several clauses that are country-specific. Clauses have been revised from time to time in the light of amendments to statutes of IAEA or decisions of Board of Directors of IAEA as well as the American laws. India, although a non-signatory of the NPT, is no exception to this general approach of the US.

The India-specific 123 Agreement differs from the earlier US agreements with other countries. Even laymen have to get acquainted with the details of the Agreement, although it is couched in legal terms and language, to understand and appreciate the far-reaching implications. It is for this reason that I have quoted in the following, a few clauses.

Text of the 123 Agreement

The present text, released by the Ministry of External Affairs, Government of India (<http://meaindia.nic.in/pressrelease/2007/08/03pr01.pdf>) running to 22 pages and based on 17 Articles, covers:

- A preamble that is India-specific.
- Article 1 dealing with Definitions. These definitions are crucial and have to be referred in the context of what follows in the rest of the text to understand full implications.
- Article 2 – Scope of Cooperation. 'Each Party shall implement this Agreement in accordance with its respective applicable treaties, national laws, regulations, and license requirements concerning the use of nuclear energy for peaceful purposes.'

This clause is central, in my opinion, to the entire operation of the Agreement. Many have pointed out that such a clause does not appear in the US–China Agreement. This clause implies that the Agreement is subservient to American laws, including the recently enacted Hyde Act, and any act that US may enact in future.

Although it is stated that the cooperation includes '*full* (emphasis mine) civil nuclear cooperation', the implications of the word '*full*' are not defined, leaving ambiguity in defining the scope of the agreement. Specifically, the agreement is silent as far as reprocessing and other crucial equipment or technology are concerned. So also it is not clear how 'lifetime of a facility' is defined; does it include lifetime of a refurbished facility also?

- Article 3 – Transfer of Information, including information related to 'research on controlled fusion, including bilateral activities and contributions towards multilateral projects such as the International Thermonuclear Experimental Reactor (ITER)'. In my opinion, this is not a major gain to India as controlled thermonuclear power generation is a dream still to be realized.
- Article 4 – Nuclear Trade. This Article covers trade between the US and India and also trade between 'third countries'. It also recognizes that 'the reliability of supplies (on time) is essential'. The Article also mentions that 'authorizations, including export and import licences... should not be used to restrict trade'. Procedures to be followed in the event of refusals or delays are also touched upon.
- Article 5 – Transfer of nuclear material, non-nuclear material, equipment, components and related technology.

Para 5.2 states:

'Sensitive nuclear technology, heavy water production technology, sensitive nuclear facilities, heavy water production facilities and major critical components of such facilities may be transferred under this Agreement pursuant to an amendment to this Agreement. Transfers of dual-use items that could be used in enrichment, reprocessing or heavy water production facilities will be subject to the Parties' respective applicable laws, regulations and license policies.'

There is ambiguity in what is meant by 'amendment to the Agreement'. What has prevented such anticipated amendments not to have been included in this draft itself? Once again, it reiterates that the transfers are subject to 'respective applicable laws'. Whereas the US has in place laws dealing with withdrawal of such transfers, there are no Indian laws that can counteract such withdrawals.

Para 5.6 covers an important aspect of concern to India:

'(a) The United States has conveyed its commitment to the reliable supply of fuel to India. Consistent with the July 18, 2005, Joint Statement, the United States has also reaffirmed its assurance to create the necessary conditions for India to have assured and full access to fuel for its reactors. As part of its implementation of the July 18, 2005, Joint Statement, the United States is committed to seeking agreement from the US Congress to amend its domestic laws and to work with friends and allies to adjust the practices of the Nuclear Suppliers' Group to create the necessary conditions for India to obtain full access to the international fuel market, including reliable, uninterrupted and continual access to fuel supplies from firms in several nations.

'(b) To further guard against any disruption of fuel supplies, the United States is prepared to take the following additional steps:

'(i) The United States is willing to incorporate assurances regarding fuel supply in the bilateral US–India agreement on peaceful uses of nuclear energy under Section 123 of the US Atomic Energy Act, which would be submitted to the US Congress.

‘(ii) The United States will join India in seeking to negotiate with the IAEA, an India-specific fuel supply agreement.

‘(iii) The United States will support an Indian effort to develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India’s reactors.

‘(iv) If despite these arrangements, a disruption of fuel supplies to India occurs, the United States and India would jointly convene a group of friendly supplier countries to include countries such as Russia, France and the United Kingdom to pursue such measures as would restore fuel supply to India.

‘(c) In light of the above understandings with the United States, an India-specific safeguards agreement will be negotiated between India and the IAEA, providing for safeguards to guard against withdrawal of safeguarded nuclear material from civilian use at any time as well as providing for corrective measures that India may take to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies. Taking this into account, India will place its civilian nuclear facilities under India-specific safeguards in perpetuity and negotiate an appropriate safeguards agreement to this end with the IAEA.’

It is clear that at every stage of operation of this Agreement, India has to have tripartite negotiations and submissions to the US; our indebtedness to the US is in perpetuity.

- Article 6 – ‘Nuclear Fuel Cycle Activities’ refers to activities that may be carried out. Specifically it states that:

‘(i) Within the territorial jurisdiction of either Party, enrichment up to twenty per cent in the isotope 235 of uranium transferred pursuant to this Agreement, as well as of uranium used in or produced through the use of equipment so transferred, may be carried out.

‘(ii) Irradiation within the territorial jurisdiction of either Party of plutonium, uranium-233, high enriched uranium and irradiated nuclear material transferred pursuant to this Agreement or used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred may be carried out.

‘(iii) With a view to implementing full civil nuclear cooperation as envisioned in the Joint Statement of the Parties of July 18, 2005 the Parties grant each other consent to reprocess or otherwise alter in form or content nuclear material transferred pursuant to this Agreement and nuclear material and by-product material used in or produced through the use of nuclear material, non-nuclear material, or equipment so transferred. To bring these rights into effect, India will establish a new national reprocessing facility dedicated to reprocessing safeguarded nuclear material under IAEA safeguards and the Parties will agree on arrangements and procedures under which such reprocessing or other alteration in form or content will take place in this new facility. Consultations on arrangements and procedures will begin within six months of a request by either Party and will be concluded within one year. The Parties agree on the application of IAEA safeguards to all facilities concerned with the above activities. These arrangements and procedures shall include provisions with respect to physical protection standards set out in Article 8, storage standards set out in Article 7, and environmental protections set forth in Article 11 of this Agreement, and such other provisions as may be agreed by the Parties. Any special fissionable material that may be separated may only be utilized in national facilities under IAEA safeguards,

‘(iv) Post-irradiation examination involving chemical dissolution or separation of irradiated nuclear material transferred pursuant to this Agreement or irradiated nuclear material used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred may be carried out.’

- Article 7 – Storage and Retransfers
- Article 8 – Physical Protection
- Article 9 – Peaceful Use
- Article 10 – IAEA Safeguards
- Article 11 – Environmental Protection
- Article 12 – Implementation of the Agreement.

Specifically Article 12 states:

1. This Agreement shall be implemented in a manner designed:
 - (a) to avoid hampering or delaying the nuclear activities in the territory of either Party;

(b) to avoid interference in such activities;

(c) to be consistent with prudent management practices required for the safe conduct of such activities; and

(d) to take full account of the long-term requirements of the nuclear energy programs of the Parties.

2. The provisions of this Agreement shall not be used to:

(a) secure unfair commercial or industrial advantages or to restrict trade to the disadvantage of persons and undertakings of either Party or hamper their commercial or industrial interests, whether international or domestic;

(b) interfere with the nuclear policy or programs for the promotion of the peaceful uses of nuclear energy, including research and development; or

(c) impede the free movement of nuclear material, non-nuclear material and equipment supplied under this Agreement within the territory of the Parties.

3. When execution of an agreement or contract pursuant to this Agreement between Indian and United States organizations requires exchanges of experts, the Parties shall facilitate entry of the experts to their territories and their stay therein consistent with national laws, regulations and practices. When other cooperation pursuant to this Agreement requires visits of experts, the Parties shall facilitate entry of the experts to their territory and their stay therein consistent with national laws, regulations and practices.’

Once again the last of these clauses refers to national laws.

- Article 13 – Consultations
- Article 14 – Termination and Cessation of Cooperation.

This Article has drawn the attention of the media more than any other Article, perhaps, as it will have repercussions in the event of disruption of cooperation. The Article states:

1. Either Party shall have the right to terminate this Agreement prior to its expiration on one year’s written notice to the other Party. A Party giving notice of termination shall provide

the reasons for seeking such termination. The Agreement shall terminate one year from the date of the written notice, unless the notice has been withdrawn by the providing Party in writing prior to the date of termination.

- '2. Before this Agreement is terminated pursuant to paragraph 1 of this Article, the Parties shall consider the relevant circumstances and promptly hold consultations, as provided in Article 13, to address the reasons cited by the Party seeking termination. The Party seeking termination has the right to cease further cooperation under this Agreement, if it determines that a mutually acceptable resolution of outstanding issues has not been possible or cannot be achieved through consultations. The Parties agree to consider carefully the circumstances that may lead to termination or cessation of cooperation. They further agree to take into account whether the circumstances that may lead to termination or cessation resulted from a Party's serious concern about a changed security environment or as a response to similar actions by other States which could impact national security.
- '3. If a Party seeking termination cites a violation of this Agreement as the reason for notice for seeking termination, the Parties shall consider whether the action was caused inadvertently or otherwise and whether the violation could be considered as material. No violation may be considered as being material unless corresponding to the definition of material violation or breach in the Vienna Convention on the Law of Treaties. If a Party seeking termination cites a violation of an IAEA safeguards agreement as the reason for notice for seeking termination, a crucial factor will be whether the IAEA Board of Governors has made a finding of non-compliance.
- '4. Following the cessation of cooperation under this Agreement, either Party shall have the right to require the return by the other Party of any nuclear material, equipment, non-nuclear material or components transferred under this Agreement and any special fissionable material produced through their use. A notice by a Party that is invoking the right of

return shall be delivered to the other Party on or before the date of termination of this Agreement. The notice shall contain a statement of the items subject to this Agreement as to which the Party is requesting return. Except as provided in provisions of Article 16.3, all other legal obligations pertaining to this Agreement shall cease to apply with respect to the nuclear items remaining on the territory of the Party concerned upon termination of this Agreement.

- '5. The two Parties recognize that exercising the right of return would have profound implications for their relations. If either Party seeks to exercise its right pursuant to paragraph 4 of this Article, it shall, prior to the removal from the territory or from the control of the other Party of any nuclear items mentioned in paragraph 4, undertake consultations with the other Party. Such consultations shall give special consideration to the importance of uninterrupted operation of nuclear reactors of the Party concerned with respect to the availability of nuclear energy for peaceful purposes as a means of achieving energy security. Both Parties shall take into account the potential negative consequences of such termination on the on-going contacts and projects initiated under this Agreement of significance for the respective nuclear programmes of either Party.
- '6. If either Party exercises its right of return pursuant to paragraph 4 of this Article, it shall, prior to the removal from the territory or from the control of the other Party, compensate promptly that Party for the fair market value thereof and for the costs incurred as a consequence of such removal. If the return of nuclear items is required, the Parties shall agree on methods and arrangements for the return of the items, the relevant quantity of the items to be returned, and the amount of compensation that would have to be paid by the Party exercising the right to the other Party.
- '7. Prior to return of nuclear items, the Parties shall satisfy themselves that full safety, radiological and physical protection measures have been ensured in accordance with their existing national regulations and that the

transfers pose no unreasonable risk to either Party, countries through which the nuclear items may transit and to the global environment and are in accordance with existing international regulations.

- '8. The Party seeking the return of nuclear items shall ensure that the timing, methods and arrangements for return of nuclear items are in accordance with paragraphs 5, 6 and 7. Accordingly, the consultations between the Parties shall address mutual commitments as contained in Article 5.6. It is not the purpose of the provisions of this Article regarding cessation of cooperation and right of return to derogate from the rights of the Parties under Article 5.6.
- '9. The arrangements and procedures concluded pursuant to Article 6(iii) shall be subject to suspension by either Party in exceptional circumstances, as defined by the Parties, after consultations have been held between the Parties aimed at reaching mutually acceptable resolution of outstanding issues, while taking into account the effects of such suspension on other aspects of cooperation under this Agreement.'

- Article 15 – Settlement of Disputes
- Article 16 – Entry of Force and Duration
- Article 17 – Administrative Arrangement.

In the agreed minutes, that has been attached to the Agreement, certain understandings shall also become an integral part of the Agreement:

Agreed Minute:

'During the negotiation of the Agreement for Cooperation between the Government of India and the Government of the United States of America Concerning Peaceful Uses of Nuclear Energy (the Agreement) signed today, the following understandings, which shall be an integral part of the Agreement were reached.

Proportionality

'For the purposes of implementing the rights specified in Articles 6 and 7 of the

Agreement with respect to special fissionable material and by-product material produced through the use of nuclear material and non-nuclear material respectively, transferred pursuant to the Agreement and not used in or produced through the use of equipment transferred pursuant to the Agreement, such rights shall in practice be applied to that proportion of special fissionable material and by-product material produced that represents the ratio of transferred nuclear material and non-nuclear material respectively, used in the production of the special fissionable material and by-product material to the total amount of nuclear material and non-nuclear material so used, and similarly for subsequent generations.

By-product material

‘The Parties agree that reporting and exchanges of information on by-product material subject to the Agreement will be limited to the following:

(1) Both Parties would comply with the provisions as contained in the IAEA document GOV/1999/19/Rev.2, with regard to by-product material subject to the Agreement.

(2) With regard to tritium subject to the Agreement, the Parties will exchange annually information pertaining to its disposition for peaceful purposes, consistent with Article 9 of this Agreement.’

Conclusion

The draft 123 Agreement released by the MEA recently, is a major step in the thrust towards Indo-US civil nuclear cooperation. This article has touched on some concerns at this stage regarding the issues that underlie the Agreement. It is obvious that the Agreement has to be read in conjunction with US Atomic Energy Act, the Hyde Act, the NSG guidelines and operative clauses and the IAEA safeguard clauses that have to be tailored for India; the US has an important stake and role to play in this. As a matter of caution and out of fear of the unknown, one may note that India may find itself like a fly in a spider’s web, entangled inextricably and in perpetuity, that may affect our present nuclear independence. Parties may come and go and governments may come and go. However, this

long-term commitment of future governments and our people needs to be discussed in depth in public forums, especially in our Parliament before the next step is taken. North Korea, Iran and Iraq are examples of countries that have been feeling the heat now and then; we should not be caught in a similar trap. The situation appears rather fluid-like. On one side there are voices that reiterate: ‘All the objections have been addressed in the deal’, ‘This agreement does not in any way restrict our strategic autonomy’, ‘It (the deal) is a practical solution that meets all our requirements’, ‘This is as good a text as one can possibly get’, etc. On the other hand, we hear other voices: ‘The agreement will bind India to the US in a manner that will seriously impair our independent foreign policy and strategic autonomy’, ‘Put the nuclear deal on hold’, ‘123: rethink before we go forward’, ‘...If the US were to terminate all cooperation and suspend all fuel and equipment transfers, India would be stuck both with IAEA inspectors on its entire civil programme and with lack of access to an alternate supplier’, etc. I am bewildered like R. K. Laxman’s common man. Repeated assertions do not establish the truth either side. An informed enlightened debate, discussion and analysis to bring clarity is the need of the hour.

I wish to end this note by quoting from P. K. Iyengar and M. R. Srinivasan (both former Chairmen, Indian AEC) in *The Hindu* dated 31 May 2007:

‘... the price we are being asked to pay by the US is too high: no testing, no reprocessing, no guarantees of future fuel supplies... There is another solution to the problem of generating more nuclear power: rapid expansion of the indigenous programme with more capital for more reactors, greater exploitation of our uranium resources, greater urgency to our fast breeder programme and thorium utilization’ (P. K. Iyengar).

‘...it is clear the US has no intention of going beyond the bounds of the Hyde Act, a possibility the scientists had clearly foreseen. Under Secretary Burns is suggesting that India make compromises to enable conclusion of the Agreement. The fact is India has already made all the compromises it could make... If the only way to do so is to amend the Hyde Act, then the US

should plan to do so rather than ask India to make any more compromises’ (M. R. Srinivasan).

Appendix – The Hyde Act

The Hyde Act can be accessed in the URL: www.usinpac.com/wordfiles/IndiaNucCoopBill.pdf

The Act was approved by the US Congress in December 2006 and is India-specific as the US–India nuclear cooperation is concerned. A reading of the entire Act is important and educative as it spells out in detail, various scenarios that are envisaged and included in the Act, which are likely to be binding to the US and Indian governments during implementation of the 123 Agreement. Here a few samplings are quoted from the Act:

Section 102 refers to:

‘(12) any commerce in civil nuclear energy with India by the United States and other countries must be achieved in a manner that minimizes the risk of nuclear proliferation or regional arms races and maximizes India’s adherence to international non-proliferation regimes, including, in particular, the guidelines of the Nuclear Suppliers Group (NSG); and

‘(13) the United States should not seek to facilitate or encourage the continuation of nuclear exports to India by any other party if such exports are terminated under United States law.’

Section 103:

‘(4) Strengthen the NSG guidelines and decisions concerning consultation by members regarding violations of supplier and recipient understandings by instituting the practice of a timely and coordinated response by NSG members to all such violations, including termination of nuclear transfers to an involved recipient, that discourages individual NSG members from continuing cooperation with such recipient until such time as a consensus regarding a coordinated response has been achieved.

‘(5) Given the special sensitivity of equipment and technologies related to the enrichment of uranium, the reprocessing of spent nuclear fuel, and the

production of heavy water, work with members of the NSG, individually and collectively, to further restrict the transfers of such equipment and technologies, including to India.

‘(6) Seek to prevent the transfer to a country of nuclear equipment, materials, or technology from other participating governments in the NSG or from any other source if nuclear transfers to that country are suspended or terminated pursuant to this title, the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), or any other United States law.’

Under Section 103(b) it states: (The policies of the US are to)

‘(1) Achieve, at the earliest possible date, a moratorium on the production of fissile material for nuclear explosive purposes by India, Pakistan, and the People’s Republic of China.

‘(2) Achieve, at the earliest possible date, the conclusion and implementation of a treaty banning the production of fissile material for nuclear weapons to which both the United States and India become parties.

‘(3) Secure India’s – (A) full participation in the Proliferation Security Initiative.’

In addition to the civil nuclear cooperation, the Hyde Act covers even certain India’s issues of foreign relations also. It is these that are becoming contentious issues among various political parties in India. For example, Article 103(b)(3) mentions:

‘(4) Secure India’s full and active participation in the United States efforts to dissuade, isolate, and if necessary, sanction and contain Iran for its efforts to acquire weapons of mass destruction, including a nuclear weapons capability and the capability to enrich uranium or reprocess nuclear fuel, and

the means to deliver weapons of mass destruction.’

I shall not go into these and other aspects anymore, although they are important issues affecting India’s declared foreign policy. Coming back to other important notings in the Hyde Act, we have

‘(7) Pending implementation of the multilateral moratorium described in paragraph (1) or the treaty described in paragraph (2), encourage India not to increase its production of fissile material at unsafeguarded nuclear facilities.

‘(10) Any nuclear power reactor fuel reserve provided to the Government of India for use in safeguarded civilian nuclear facilities should be commensurate with reasonable reactor operating requirements.’

The American President is required to submit to the US Congress a report concerning, among other things:

‘(D) A description of the steps that India is taking to work with the United States for the conclusion of a multilateral treaty banning the production of fissile material for nuclear weapons, including a description of the steps that the United States has taken and will take to encourage India to identify and declare a date by which India would be willing to stop production of fissile material for nuclear weapons unilaterally or pursuant to a multilateral moratorium or treaty.

‘(E) A description of the steps India is taking to prevent the spread of nuclear-related technology, including enrichment and reprocessing technology or materials that can be used to acquire a nuclear weapons capability, as well as the support that India is providing to the United States to further United States objectives to restrict the spread of such technology.’

Under termination of nuclear transfers to India:

‘(A) In General – Notwithstanding the entry into force of an agreement for cooperation with India arranged pursuant to Section 123 of the Atomic Energy Act of 1954 (42 U.S.C. 2153) and pursuant to this title, and except as provided under subparagraph (B), exports of nuclear and nuclear-related material, equipment, or technology to India shall be terminated if there is any materially significant transfer by an Indian person of (i) nuclear or nuclear-related material, equipment, or technology that is not consistent with NSG guidelines or decisions, or (ii) ballistic missiles or missile-related equipment or technology that is not consistent with MTCR guidelines.

(G) Under Reporting to Congress:

(1) Information on nuclear activities of India – The President shall keep the appropriate congressional committees fully and currently informed of the facts and implications of any significant nuclear activities of India, including: (A) Any material noncompliance on the part of the Government of India... (C) significant changes in the production by India of nuclear weapons or in the types or amounts of fissile material produced; and (D) changes in the purpose or operational status of any unsafeguarded nuclear fuel cycle activities in India.’

These are only a few random samplings. Interested readers may access the document in its entirety, lest one gets skewed misrepresentations.

1. Rao, K. R., *Curr. Sci.*, 2006, **90**, 759–762.

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