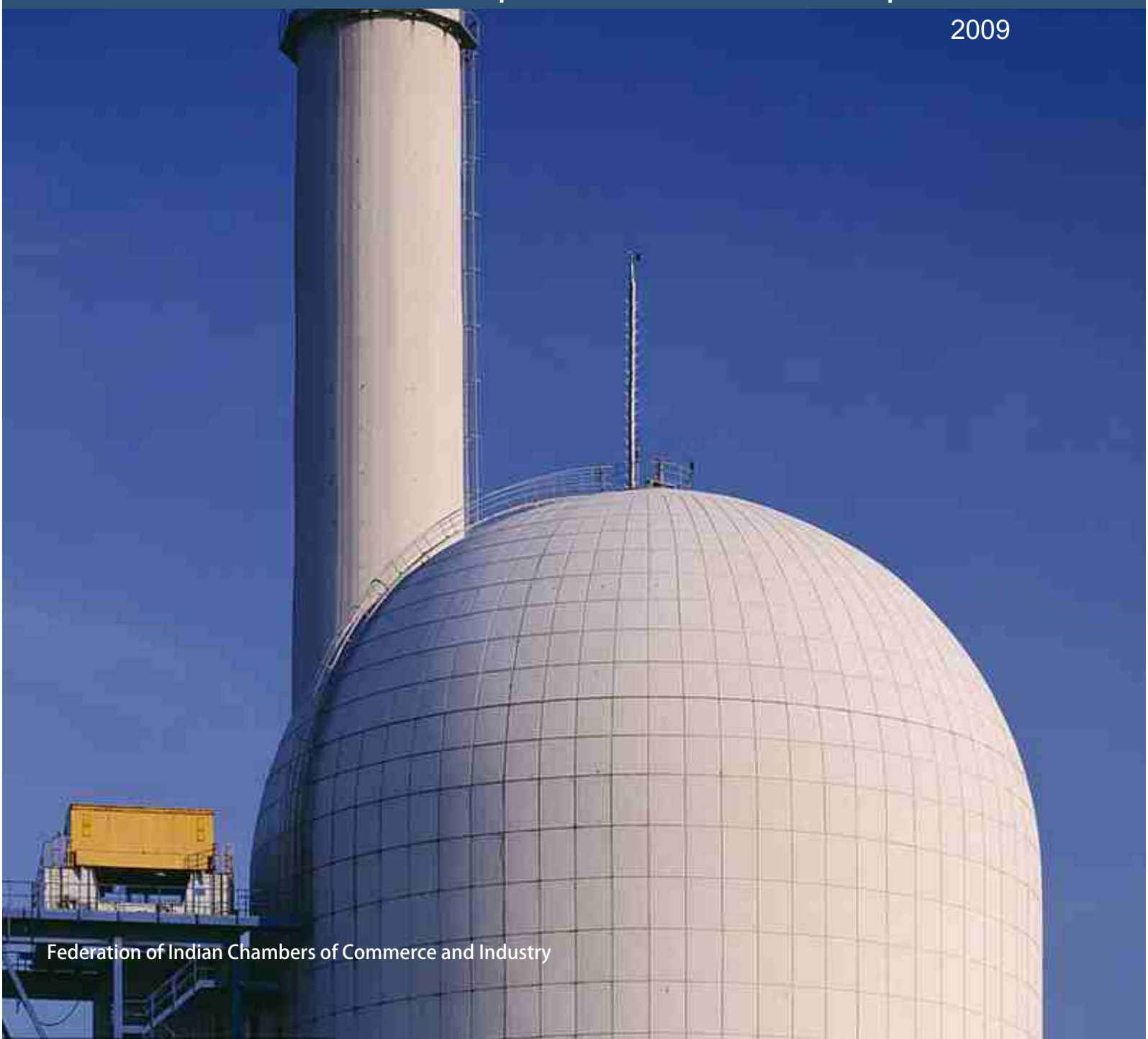
FICCI

FICCI Working Group On Civilian Nuclear Energy

Report Of The Utilities Sub Group – Part I

2009



Federation of Indian Chambers of Commerce and Industry

Contents

EXECUTIVE SUMMARY

This paper and the recommendations contained herein endeavour to map the private participation in nuclear power generation in India. The thrust of the recommendations remain fostering private inclusion with sufficient performance guarantee to provide an impetus for the national Nuclear Power Agenda.

1.0 Amendment of Atomic Energy Act & its implementation for private sector participation

- With a view to facilitate and foster private participation in all mainstream and ancillary fields relating to nuclear power generation it is imperative that the Atomic Energy Act, 1962 **("Act"**) be amended;
- Specific policy for the enforcement of the Act providing for institutional and capacity building support from the government and its undertakings is vital, including:
    - Enumeration, identification and drawing up a measurable work plan by the Government in relation to key areas;
    - Laying down preliminary pre-qualifications for selection of appropriate private participants, taking into account ascertained factors;
    - A Road-map/Model for achieving full privatization within a definite time frame be drawn up by the Government, including addressing competency development issues, after consultation with all participants;
- **Qualification criteria for utilities and performance guarantee**
- Possessing requisite financial strength, safety management plan, a detailed and well charted course of action, long-laid inventory, decommissioning details may be set out as a precursor for any entity to enter into the business of nuclear power generation;
- Qualification criterion laid down should be deemed to have been satisfied if possessed by any party individually or collectively as part of Joint Venture/Consortia. Due consideration may be given to experience within the non-nuclear power generation sector as well as outsourced work undertaken.
- Care and caution may be mandated for ensuring long term/life-time commitment by providing for:
    - a clear period of responsibility in relation to the plant attaching it with the operator/license holder;
    - regulations and safeguards as to the ability of the government to award installation part-wise clearance;
    - provision for performance guarantees from license holders to ensure time bound performance/execution of projects.
- Committee has suggested a prequalification list for minority partnership prior to amendment of Act as well as an additional list of competencies required for full privatisation.

[1] *Kindly note:* Any reference to private companies or their participation in this report shall include within its ambit, Indian Public Sector Undertakings currently engaged in non-nuclear activities.

- **License transfer**
  - License transfers by operating entities may be dealt with vide appropriate bye laws providing for checks and balances.
  - Public involvement, project scrutiny by an expert board and inquiry into the fitness of both the entities involved in the transfer are some measures that are recommended to ensure a strong, transparent and fair regulation.
  - Concerns as to license transfer need to be addressed without impeding profitability, consolidation benefits in terms of cheaper electricity rates to citizens and a right of return on investments for an entrepreneur;

2.0 Foreign Direct Investment

- General parameters for Foreign Direct Investment **("FDI")** may be set out by the Department of Industrial Policy and Promotion **("DIPP")**, with every request for inward foreign investment to be reviewed for approval on a case-to-case basis;
- A special committee may be established for scrutinizing and evaluating such proposals for foreign investment, consisting of nominees of the Department of Atomic Energy **("DAE")** and the Foreign Investment and Promotion Board **("FIPB").**

3.0 Civil Nuclear Liability

- Fostering confidence and security in prospective participants in the Indian nuclear sector through a definite Civil Nuclear Liability ("CNL") framework is recommended;
- A CNL regime capably equipped with features such as jurisdiction of courts of the native country, sole party liability, capping of the liability amount, governmental contribution towards liability, redress of international and trans-boundary claims, which are eminently mandated by any modern CNL framework, is recommended;
- Therefore, considering the international CNL regimes and the respective domestic legislation and jurisprudence in this arena, it is recommended that India becomes a party to and ratifies the Vienna Convention on Civil Nuclear Liability ("VC") as an immediate step and the Convention on Compensation for Supplementary Compensation of 1997("CSC") as a long-term objective to align India with the global best practices;
- Domestic legislation dealing with CNL may incorporate the following:
  - Single point liability for the operator of the nuclear installation ("Operator");
  - Liability of non-operators transferred to the Operator;
  - Exceptions to liability to include standard force-majeure provisions with specific emphasis on terrorist and anti-social activities;
  - Capping of liabilities according to internationally adhered benchmarks may be adopted with the government prescribing the threshold limit;
  - Prescribed liability for the plant must be benchmarked to the risk-magnitude of the installation. Factors such as technology utilized, the siting and demographic of the plant and its operations to be taken into consideration whilst formulating a policy in this context;
  - Financial security, upto the prescribed threshold limit, to be maintained by the Operator by the way of insurance or any other manner deemed fit by the Government;
  - State liability to provide for claim amounts awarded by a competent court over and above the liability of the operator;

- Clear and precise definition of 'nuclear incident' and 'nuclear installation';

- It is recommended that the Government of India ratifies the VC on an immediate basis and the CSC later on in a phased manner deemed fit, supplemented by incorporating appropriate internationally-accepted provisions in the consequent /parallel CNL domestic legislation.

4.0 Fuel Policy of the Government of India

- Fuel security and abundance is essential for achieving the energy targets set for the country and efficacious operations of nuclear installations;

- Owing to the sensitivities involved and akin to the international practices in this regard, it is appropriate that nuclear fuel, its supply and spent fuel reprocessing remains the proprietary concern of the Government of India;

- The appropriate costs for the fuel supply and guarantee(s) from the government's end securing the event of failure to supply shall be as determined by the regulations in this regard and/or agreements entered with the respective utilities.

5.0 Availability of Nuclear sites to private utilities

- Governmental support is imperative considering the delicate and risky nature of acquisition of sites in India and its outcome;

- Adequate policy and guidelines for siting of all nuclear installation including utilities should be incorporated by the government;

- Acquisition and site development measures may be undertaken in the following manner:

  - SSC to locate and analyze the site as per the requisite siting guidelines;

  - Public hearing to be held as a precursor to acquisition;

  - Quantum of compensation to be determined according to the prevailing guidelines and market prices;

  - Government to acquire the land with ownership and title standing transferred to a government owned Special Purpose Vehicle, created specifically for the respective NPP;

- The quantum and mode of payment of compensation for land acquisition & prior associated services rendered by Government needs to be laid down by specific guidelines. Time-barred processing and disbursal of claims with stringent standards may be maintained;

- Any dispute resolution mechanism can be favourably supplemented by:

  - Public hearings with open objection period from the affected class of persons;

  - A specialized dispute resolution forum for nuclear;

  - Appeal provisions for review in extraordinary circumstances;

  - Judgment and procedural limitation periods;

1.0 AMENDMENT OF ATOMIC ENERGY ACT & ITS IMPLEMENTATION FOR PRIVATE SECTOR PARTICIPATION

1.1 Suggested Amendments

1.1.1. The Drivers/Objectives for privatisation:

(a) Timely achievement of the targets set by the Government shall stand catalyzed by supplementing present efforts by private funding and their contribution in other areas. Multifold increase is then possible in all three resources namely men, material and money.

(b) Further broad basing of the industry which would help in making India an important future International player, especially in the context of Global Nuclear Renaissance. These can be in areas of export of Reactors, Supply Chain, HRD, expert services etc.

(c) Add further professionalism, quick decision making, Financial & Project management skills etc. by bringing in value addition by private players.

(d) Provide an alternative to foreign technology player who may prefer entry into the Indian domestic market by partnering with private Indian players.

1.1.2 Addressing of apprehension w.r.t target capacity addition by private sector

There may be apprehension in the mind of policy makers that the private sector may not perform well once allowed in nuclear sector due to its poor performance in the past in the thermal energy sector. It is only after understanding the various policies and due diligence that any new business opportunity is realized by businesses. The committee analysed the reasons for unsatisfactory performance in Thermal sector and compared these in the context of likely performance by private sector in Nuclear. This analysis is brought out below

(i). Coal linkage was poor i.e. allocation of coal was not adequate. In case of Nuclear, since life time fuel supply is ensured, this aspect will not impact Nuclear Power Project development and performance.

(ii). Water allocation was not undertaken properly for the Thermal plants. Water allocation is guaranteed as part of site selection for Nuclear Sector.

(iii). Land acquisition process was very slow. For the present, the committee has recommended continuation of present policy of siting and land acquisition by GOI/ DAE/ NPCIL and hence this is not expected to pose a problem.

(iv). Problem due to Supply Chain Management - In the context of Thermal Power plants, the only supplier - BHEL could not meet the schedule due to heavy targets. Consequently, the Private sector had to resort to Chinese companies which had issues with quality assurance. It has been observed that Supply Chain Management could pose a problem in Nuclear sphere as well. Therefore, it is critical that manufacturing capability in the country be assessed & action has to be taken to avoid growth being dwarfed due supply shortage.

(v). Achieving financial closures - Financial closures was getting delayed due to the extended time taken in finalising tariff bidding process for the Thermal Power Projects. Unless 60% of sale is finalised, financial closure of the project will not take place. Since the committee has recommended having Nuclear Power Plant by nomination, at least initially, with the existing arrangement of fixing the tariff to be continued, such a problem will not exist for the Nuclear Power Plant.

(vi). Problems due to transportation of a large quantity of coal - due to unavailability of railway wagons. In case of Nuclear, fuel quantity is very small and transportation should not pose as a bottleneck.

(vii). Problems associated with recovery of dues from state electricity boards. This has improved due to following

a. Formation of SERC's & CERC.

b. Many SEB's have been reformed into various corporations like Generation, Transmission, and Distribution etc and their bankability has improved.

Since the Electricity Act Amendment, 2003 and due to Mega power and UMPP policies, there is a step improvement in the growth compared to earlier performance in Private sector contribution in thermal capacity addition. This can be seen from the following table as per details given by MOP, compiled by Infraline Energy Research:

Central sector	State Sector	Private Sector	Total
21290 MWe	19420.4 MWe	27965.5 MWe	68675.9 MWe

Hence it can be seen that after Electricity Act 2003 revision, share of private sector and its performance has gradually improved and today private sector share is the maximum under construction.

In light of the above stated, it can be seen that several issues that retarded progress in the Thermal sector and are common to Nuclear Power Plants have been removed or reformed. Further, some issues are not relevant to nuclear industry. Nuclear industry is well established in India. More over, a huge domestic market (63000 MWe by 2032), global renaissance, Nuclear being one of the most important future source of energy, much improved public acceptance, Streamlined regulatory system in India etc have induced many private players to plan entry into Nuclear. This would require detailed planning in the areas of Supply chain, Project management, HRD etc.

It is thus strongly felt that the performance of private sectors in fulfilment of capacity addition targets and subsequent operational performance would certainly be achievable.

1.1.3 Suggested amendments to the Atomic Energy Act - Private Sector participation vis-a-vis Atomic Energy Act:

A weak and non-supportive policy environment can deter the private sector from entering into the nuclear power production arena. Further, it has been observed that there exists a component of regulatory costs, majority of which is due to unanticipated delays and uncertainty which contributes to the risk of investing in nuclear facilities. Considerable construction-time and risk-reduction benefits are conferred by improved regulation. Shortening the construction period and reducing the risk premium, by way of effective policies, can have a combined effect of reducing a nuclear plant's levelized cost of electricity significantly. An efficacious regulatory regime with well thought out policies commensurate with the needs of

the industry, augment its growth and efficiency.

The Atomic Energy Act, 1962 ("Act") is the principal legislation covering almost all facets of nuclear power production currently in India. With the nuclear power generation being entirely restricted to governmental participation, the tenor of the enactment was towards enabling the government alone to carry out these activities. With the nuclear sector in India being opened up for private participation, it is imperative that a complete review with a view to amend the Act is undertaken.

The focal point while amending the Act should be maintaining a balance between commercial interests and effective implementation of the national power capacity augmentation programme in a competitive environment, amongst other pressing concerns. Therefore, the Committee recommends that the Act may be amended immediately.

[Please find attached the suggested Amendments are as attached in Annexure-I below]

1.2 Suggested Government of India Policy for Implementation of the Present and amended Acts

1.2.1. The Nuclear Industry has several unique features requiring a special culture, knowledge, expertise and experience in the organisation to run them safely, reliably and viably. More over support would be required from state and central governments as well government undertakings mainly DAE units. These could be in the areas such as nuclear security, radioactive waste management(& later decommissioning), fuel related issues[2] , research & development support, emergency preparedness, health physics, environmental survey laboratory, siting/site approval[3] , human resource development (including initial training), regulatory interfacing and compliance, life cycle management. In addition, to achieve acceptable capabilities in the sixteen areas mentioned in the Item 1.2.2 below, will take time. Thus the policy for operationalizing privatisation, as a part of the Act, should have well thought out, gradual steps giving adequate time to put in place systems for a successful implementation of the reform in the nuclear sector.

1.2.2. For realizing participation by Indian private companies in the nuclear sector, (Either by themselves or with a Partner having requisite expertise) they would require them to build capacity and be competent in the following areas:

(a). Capability to be technology provider, either directly or through a partner.

(b). Site selection & site development (Initially to be with Government).

(c). Project management till commercial operation, i.e. including but not limited to:

(i) Pre-project activities.

(ii) Experience in procurement of nuclear components (EPC packages).

(iii) Experience in construction of nuclear plant.

(iv) Experience in commissioning of nuclear plant.

(d). Experience in operation of nuclear plant and life cycle management (Should be able to operate safely, reliably & viably) throughout the life of the plant.

(e). To meet AERB requirements (including quality oversight) & other statutory stipulations (including setting up of good safety management system, organisation, systems, procedures etc) as per AERB codes & guides.

[2]Please refer to Item 3.0 below.
[3]Please refer to Item 4.0 below.

(f). Setting up of good safety management system, organisation, procedures and utilities responsibility to adherence to best practices.

(g). Nuclear safety and Nuclear security

(h). Radiological Safety.

(i). Experience in Radio-active waste disposal system including spent-fuel management at the Nuclear Power Plant.

(j). Decommissioning of Nuclear plant (Decommissioning can best be done by GOI using funds to be provided by Utilities).

(k). Training and licensing of operating persons of private company, which can be part of Governmental/DAE efforts atleast initially.

(l). Adherence to national policies, bilateral agreements, NSG Waiver, India specific IAEA safeguards international conventions & requirements etc, as may be deemed fit by the government.

(m). International interaction and experience in trans-border transactions including key tie-up ventures.

(n). Related R & D and assurance of R & D back-up during continuance of operations, whether by back to back guarantees or as prescribed otherwise.

(o). Technical support including corporate support in business, project & asset management.

(p). Corporate support in other services.

(q). Quality maintenance and assurance, with the requisite oversight of a special cell constituted for this end within the AERB.

**Note:* *(1) Items (a) & (j) can be addressed later.*

(2) These are in addition to the 10 parameters included in Preliminary pre qualifications list below.

The above may be in addition to known Governmental Policies such as Closed Nuclear Cycle, Reprocessing rights of Imported spent fuel, Life time fuel supply, Gradual Indigenisation and absorption of technology.

On the issue pertaining to models for private participation, are possible vide public private partnership where the expertise, know-how, culture, good practices etc. can be transferred from the public sector to private players.

1.2.3 Preliminary pre-qualifications, prior to amendment of Act and/ or during initial stages following the amendment of Act, whether possessed individually or collectively as part of a Joint Venture or consortia, (also refer to Annexure-IV) for private sector participation are suggested as below:

(a) Experience in power generation business like project management, including power plant operations and management;

(b) Past track record in project execution;

(c) Regulatory adherence including life time commitment;

(d) Safety performance;

(e) Previous 3 years balance sheets and Profit and Loss account;

(f) Financial strength;

(g) Experience in executing the PPP projects / JV projects / Metro projects with government organisations;

(h) Experience in international business and international partnerships;

(i) Corporate governance;

(j) Social responsibility.

As an additional observation, the committee is encouraged by the progress in four new age sectors namely Aviation, Insurance, Retail and Telecommunication, There are cases where private sector companies with no obvious synergy and past experience have made successful forays. Thus the committee suggests that, if any company is assessed to have a combination of competencies to achieve similar success as above, they may also be considered.

In the entire exercise, it is imperative that the government handholds and facilitates capacity building for the private participants. Additionally, it is suggested that the government approach may highlight mutual sharing of manpower/skills to enable for Indian industry participation. It may be noted that work undertaken in relation to power projects (whether nuclear based or otherwise) under an outsourcing contract from the main licensee may also be deemed as sufficient for consideration under the qualifications mentioned hereinabove.

[For detailed Qualification Criteria & licence transfer issues, please refer to Annexure-IV]

1.2.4 Enabling provisions to enact rules

Following the amendment of the Act, enabling provision to enact rules, legal and regulatory frameworks, procedures and systems may be established to cover following areas:

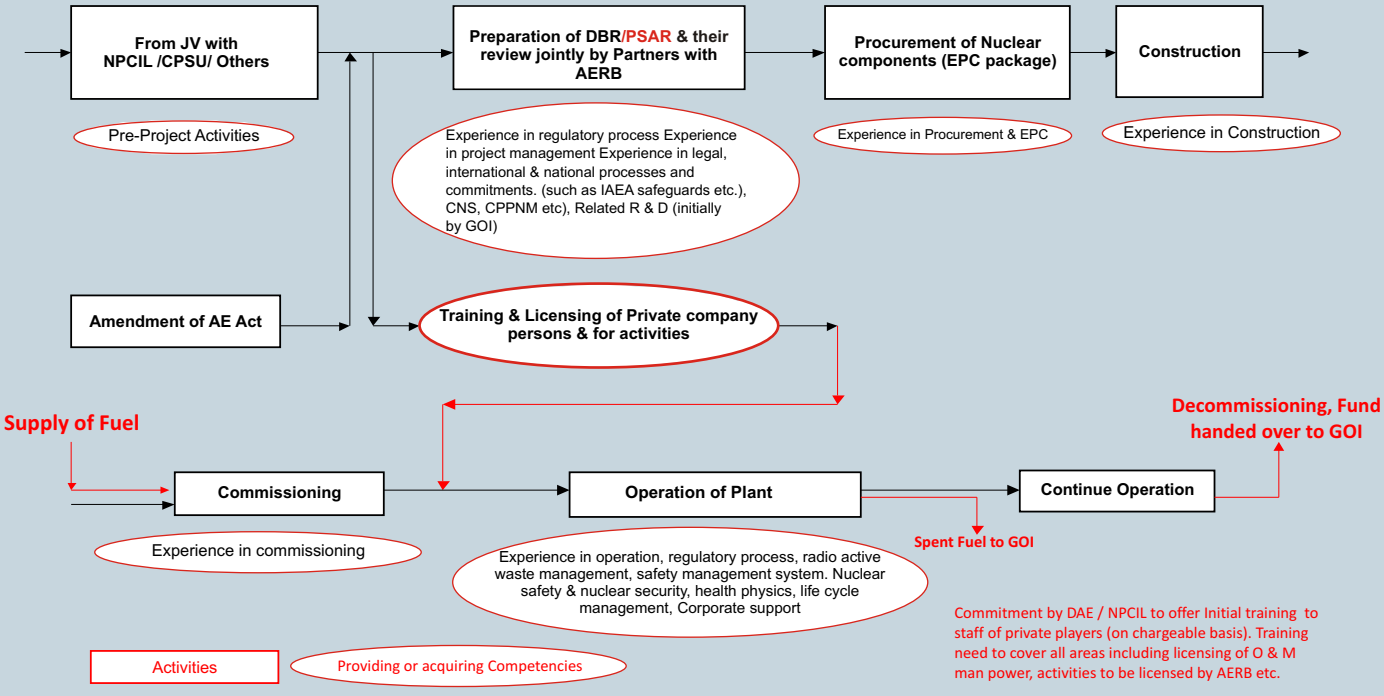
1. Rules to implement various provision of the amended Act.
2. Legal framework to ensure adherence to national commitments, such as provisions of IAEA safeguards, convention on Nuclear safety, liability, CPPNM, export control, Nuclear material accounting systems etc.
3. Regulatory & Legal framework to support AERB.
4. Stipulations of NSG waiver.
5. Implications and enforcement of commitments made by Government of India under bilateral Agreements concluded with other nations.
6. Legal, regulatory and procedural framework to ensure life time commitment as licensees of AERB *(it may be noted that once a Nuclear power Plant starts, the radioactivity is a long term phenomena and life time commitment is to be guaranteed).*
7. Fuel & Heavy Water would be a property of GOI and legal framework is required to institutionalise the same.
8. Quality of equipment and systems, at least of Safety, Safety related and Safety support systems shall meet the classification mandated by AERB with respect to safety, Quality, Seismic, etc. AERB is to be empowered to ensure this in the face of trend to import cheap equipment/ over simplified systems.

Apart from the above stated, there are many impending issues that need further deliberation in detail. For example, in case of Indian private companies owning Uranium assets abroad, there would be a need to enforce, ab-initio from the mines till the Nuclear power plants and thereafter, non-proliferation, material accounting, nuclear security/ physical protection, IAEA safeguards and such other measures deemed fit in future. Such activity and consequent enforcement may involve probable approval from GOI/DAE. It is suggested that material details for the approvals/clearances in the above stated illustrative situation, amongst other issues,

may be chalked out by a joint task force set up by GOI/ DAE with representatives from GOI & Indian Industry.

1.2.5. Financing of support services - The support services rendered by State & Central governments through various organisations including DAE, as mentioned in the Para 1.2.1 above, could be on chargeable basis for which details can be worked out.

POSSIBLE MODEL FOR COLLABORATIONS IN THE NUCLEAR SECTOR
PRIOR TO AND AFTER AMENDMENT OF ACT



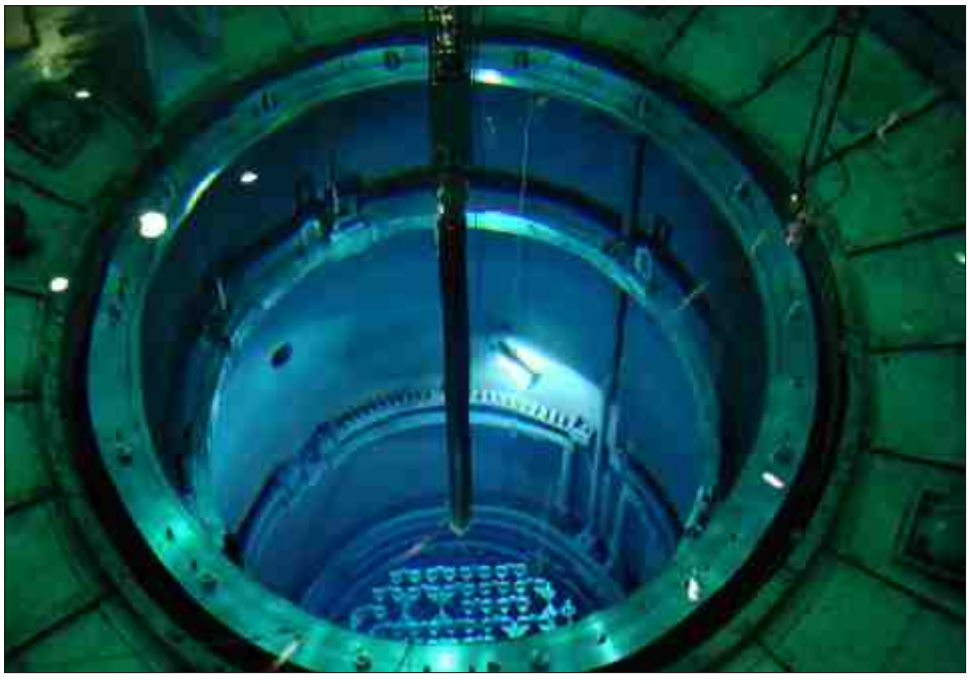
2.0 Foreign Direct Investment In Utilities

The nuclear sector, particularly the utilities require large amounts of investment. Although minimum financial capabilities may be set out in the qualification criterion for participation by private utilities, it will not be feasible to completely rule out raising foreign capital.

General parameters for allowing FDI may be enumerated by the DIPP[4] . Considering the nature of the sector and the national interests involved, such FDI may be limited to financial participation in Greenfield projects an equity basis only. Owing to the impact of the industry on the economy as a whole, every request for FDI may be scrutinized on a case-to-case basis, under the approval route. The authority vested with the power to examine each request for FDI may be a combination of personnel from the FIPB, DAE and the AERB. This composition would enable subjective satisfaction of the financial and technical aspects of the FDI and the parties concerned.

The lock-in period, minimum capitalization issues, capability assessment of the investing party for such FDI may be enumerated by specific rules and regulations issuable by the DIPP or any other appropriate authority vested with such powers.

[Note: The committee recommendations in relation to FDI are limited in its applicability to the private industry Greenfield projects only and not in connection with Government or PSU owned companies/projects]



[4] Under the FDI policy formulated by DIPP and the sectoral/sub-sectoral caps for FDI prescribed therein.

3.0 Civil Nuclear Liability

Civil nuclear liability **("CNL")** for damage arising out of a nuclear incident remains a major concern for all participants in the nuclear power sector. Learning from the experiences/framework of various international CNL regimes in countries having significant amounts of nuclear power infrastructure/activities, and reviewing the respective domestic laws and jurisprudence in this regard, the Committee recommends the approach outlined herein below with respect to CNL[5] .

3.1 International Conventions in operation

The crux of the international CNL regime is constituted by the Paris Convention **("PC")** and the Vienna Convention **("VC"),** supplemented by the more recent Convention on Supplementary Compensation for Nuclear Damage **("CSC")**.[6] These treaties, similar in most respects, apart from technical variations subject to interpretation, provide for all CNL following a nuclear incident to be channelled through the operator of the relevant nuclear installation **("Operator").**

The original text of the PC sets out a minimum threshold of the liability at 15 million Special Drawing Rights **("SDR")** and does not address the trans-boundary effect that nuclear damage might have. On the other hand, the VC in its original form stipulates 3 million SDR as the minimum threshold liability and was silent on trans-boundary claims. Although the two conventions have been revised lately[7] and a Joint Protocol on the application of the Paris & the Vienna Convention, 1992 **("JP")** has been drawn, there have been very few signatories, let alone ratifications, to the conjoined CNL regime. It is pertinent to note that adherence to the JP alone (which mandates ratification to the VC or PC as a precursor for membership) may not be sufficient for effective participation in an international CNL regime. It may be noted that the VC explicitly declares non-application of the convention to nuclear installations being used for military/non-peaceful purposes[8] , which feature is absent in the PC.

The CSC allows parties to the VC or the PC or any other states whose domestic CNL legislations are not repugnant to the CSC Annex, to become a member. Therefore CSC ensures an *'umbrella provision'* of sorts[9] , acting as a free-standing instrument which provides countries with an opportunity to participate in the international CNL regime, even if they are not a party to PC or VC[10] .

---

5 Please find detailed observations with regard to a domestic CNL legislation in Annexure II attached herewith.

6 Paris Convention on Third Party Liability in the Field of Nuclear Energy of July 29, 1960; supplemented by the Convention on jurisdiction and the enforcement of judgments in civil and commercial matters-1968 Brussels Convention [1990] OJ C189/2; Vienna Convention for the protection of the ozone layer [1988] OJ L297/10; both supplemented by the 1997 Convention on Supplementary Compensation for Nuclear Damage, available at: http:// www.iaea.org/Publications/Documents/Conventions/supcomp.html [Accessed December 11, 2008].

7 Paris Convention was supplemented by the Brussels Convention in 1963 and revised by amendment in 2004. The Vienna Convention underwent revisions in 1997.

8 Revised Article I B of the VC.

9 Article XII of the CSC - 'Exercise of Options', allows for reciprocal treatment of the rights of the parties under the VC, PC and the CSC respectively.

10 France and Britain, though not signatories to the CSC, are parties to the Vienna and Paris Conventions respectively.

3.2 Advantages in conforming to the VC & CSC

There is an impending need to establish a definite CNL regime with regard to jurisdiction of courts of the native country, sole party liability, capping of the liability amount, governmental contribution towards liability, redress of international and trans-boundary claims. Both, the VC and the CSC, remain a perfect blend incorporating all these features.

Additionally, CSC provides for commitment from Member States to contribute funds for a nuclear incident within a Member's territory for amounts greater than the liability of the Operator and the government prescribed by the domestic law of the Member. In the event that such funds are called to cover the liability for nuclear incident in any other Member State, India's contribution would currently stand at less than Rs. 33.70 Crores[11] . As opposed to the unlimited exposure to such contingent fund provided by the revised PC [12], CSC prescribes the maximum amounts retrievable from a Member.

Although the operation of the CSC is restricted until 5 states having a total installed nuclear power capacity in excess of 400,000 units ratify and deposit an instrument, this position may not stand for eternity[13] . India's ratification would ensure that whenever the CSC would come into force, the Indian nuclear program would be favourably aligned to a well-thought out, modern and internationally received CNL framework. However, as an immediate step, it is critical that India becomes a part of the VC, to bolster confidence to the industry by adherence to the long-standing CNL regime.

A domestic CNL legislation disconnected from any international system would not fulfil /suffice to resolve international and cross-border claims, their enforcement and procedural issues that may potentially arise. The VC & CSC incorporate inherent jurisdiction to the courts of the country where the incident has occurred instead of the complex conflict of laws determination by courts in various jurisdictions. Ratification and acceding to these conventions, whether together or in a phased manner, will also allow prospective participants to factor liability into the cost of power as liability is ascertainable, before plunging into mainstream nuclear power generation.

The VC & CSC have to be viewed as instruments that would enable a sound domestic CNL jurisprudence and better integrate India into the system of international nuclear commerce, foster superior competition for contracts and facilitate the greater ability to engage in international trade. The Committee members recommend ratification of the VC on an immediate basis and the ratification of the CSC as a long-term objective, both being supplemented by the enactment of a CNL legislation incorporating appropriate CNL provisions.

[Please refer to Annexure II for more detailed comments on a domestic CNL legislation]

[11] Based on IAEA's online CSC calculator - India's liability in the unlikely event of a nuclear incident of large proportions = 4.7 million SDR's. This is based on the current installed capacity of 14000 units approx.

[12] Under the Brussels Supplementary Convention of 2004.

[13] PCurrent members possess a total of 319,256 units [USA (311681), Romania (4375) & Argentina (3200)]. With India aiming to have an installed capacity of 63,000 units in the near future, this total would stand at 382256 units. The figure would stand further augmented by increase in installed capacity by USA and other states that may become Contracting Parties, since India's entry would bolster confidence in other countries

4.0 Fuel Policy of Government of India

Guarantee of fuel supply for life time is one of the important issues discussed and agreed to in the NSG waiver and various bilateral agreements. The committee recognizes the sensitive issues that are related to the fuel such as IAEA safe guards, nuclear security, (sabotage and unauthorized removal of nuclear materials), non-proliferation, material accounting etc.

Hence, the committee recommends that the present practice of fuel being the property of the government may be continued. The adequacy of fuel supply to a utility must be backed by financial guarantee from the government's end to ensure smooth and continuous operations. Further, the requisite costs for such fuel supply may stand determined by the appropriate regulations enacted and/or commercial arrangements entered with the individual utilities respectively.

Considering the complexity & sensitiveness of fuel handling and processing technology, coupled with the fact that viable reprocessing is possible in fuel amounts greater than 400 tonnes per year (consumption of fuel could be 30 tonnes per year) and the eminent concern relating to efficient running of the national reprocessing facility, the committee is of the view that spent fuel reprocessing be exclusively handled by the GOI/ DAE vide the national facility for reprocessing of spent fuel.

This committee is not addressing issues related to front end of the fuel cycle as of now.

5.0 Availability of Nuclear Sites to Private Utilities

5.1 Siting of Nuclear Power plant has to fulfil the requirement brought out by siting code issued by Atomic Energy Regulatory Board (AERB). Other requirement like techno economic issues, power evacuation & grid stability, nuclear security need also to be addressed. There are also issues related with state & Central governments such as Emergency preparedness, Rehabilitation etc. Further, political decision making is also involved. The site selection committee, appointed by Government of India is responsible for some of these aspects. Thus, the committee recommends that the site selection and acquiring of the same may be left, at least as of now, to Government of India.

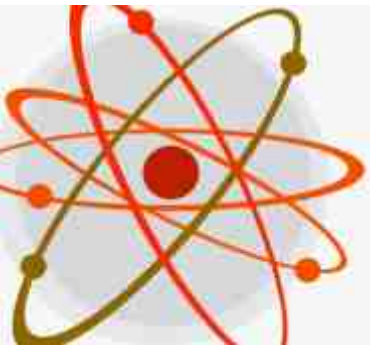
5.2 The Generation 3/3+ reactors (including all 4 technologies likely to be imported by India), as well as future indigenous designs, will have additional safety features to fulfil the AERB requirements at lesser exclusive distances than the current fixed distance. Hence AERB may be requested to have a technical review to reduce the exclusion zone distance and merge the sterilised zone with emergency planning zone as this will take care of the objective of having sterilized zone and request state authorities to modify Emergency Preparedness manuals.

[Please refer to Annexure-III for more details on siting]

ANNEXURE I:
PROPOSED AMENDMENTS
TO THE ATOMIC ENERGY ACT

Section	Text of Original Act	Changes proposed
Section 2	**Section 2** **No such definition**	*New insertion* (aa) "Company" means a company registered under the Companies Act, 1956.
Section 3 (a)	**3. General powers of the Central Government** Subject to the provisions of this Act, Central Government shall have power - + (a) to produce, develop, use and dispose of atomic energy either by itself or through any authority or Corporation established by it or a Government company and carry out research into any matters connected therewith;	*Amendment* (a) To produce, develop, use and dispose of atomic energy to carry out research into any matters connected therewith either by itself or through any authority or corporation established by it, or a ~~Government~~ Company, or any institution authorized by the Central Government for all or any of the said purposes. (bbb) To authorize a Company to undertake all activities mentioned under Sub-section (a), (b) and (bb);
Section 3 (f)	(f) to provide for the production and supply of electricity from atomic energy and for taking measures conducive to such production and supply and for all matters incidental thereto either by itself or through any authority or corporation established by it or a Government Company;	*Amendment* (f) to provide for the production and supply of electricity from atomic energy and for taking measures conducive to such production and supply and for all matters incidental thereto either by itself or through any authority or corporation established by it or a ~~Government~~ Company;
Section 9	**9. Power to do work for discovering minerals.** (1) The Central Government may, subject to the provisions of this section, do on, over or below the surface of any land such work as it considers necessary for the purpose of discovering whether there is present in or on the land, either in a natural state or in a deposit of waste material obtained from any underground or surface working, any substance from which in its opinion any of the prescribed substances can be obtained, and the extent to which such substance is so present. (2) Before any powers are exercised under sub-section (1) in relation to any land, the Central Government shall serve on every owner, lessee and occupier of the land a notice in writing specifying the nature of the work proposed to be done and the extent of the land affected, and the time, not being less than twenty-eight days, within which and the manner in which objections can	*Insertion* (1) The Central Government may, subject to the provisions of this section, do on, over or below the surface of any land such work as it considers necessary for the purpose of discovering whether there is present in or on the land, either in a natural state or in a deposit of waste material obtained from any underground or surface working, any substance from which in its opinion any of the prescribed substances can be obtained, and the extent to which such substance is so present. (2) Before any powers are exercised under sub-section (1) in relation to any land, the Central Government on every owner, lessee and occupier of the land a notice in writing specifying the nature of the work proposed to be done and the extent of the land affected, and the time, not being less than twenty-eight days, within which and the manner in which objections can be made thereto, and no such powers shall be exercised otherwise than in pursuance of the notice or before the expiration of the time specified therein for making objections. (3) The Central Government may, after giving the person making the objection an opportunity of appearing before and being heard by a person appointed by the Central Government for the purpose, and after considering any such objection and the report of the person so

Section	Text of Original Act	Changes proposed
	be made thereto, and no such powers shall be exercised otherwise than in pursuance of the notice or before the expiration of the time specified therein for making objections. (3) The Central Government may, after giving the person making the objection an opportunity of appearing before and being heard by a person appointed by the Central Government for the purpose, and after considering any such objection and the report of the person so appointed, make such orders as it may deem proper but not so as to increase the extent of the land affected. (4) Compensation shall be determined and paid in accordance with section 21 in respect of any diminution in the value of any land or properties situate thereon resulting from the exercise of powers under this section.	appointed, make such orders as it may deem proper but not so as to increase the extent of the land affected. (4) Compensation shall be determined and paid in accordance with section 21 in respect of any diminution in the value of any land or properties situate thereon resulting from the exercise of powers under this section. (5) <u>The Central Government may authorize a Company to undertake all work under sub-section (1) in respect of any land and the compensation payable by such Company to the owner, lessee or occupier shall be as determined by agreement between the parties.</u>
Section 11 - A	**11-A Compulsory acquisition not sale** For the removal of doubts, it is hereby declared that the compulsory acquisition of any mineral, concentrate or other material under sub-section (2) of section 6, or of any substance, minerals, equipment or plant under sub-section (1) of section 11, shall not be deemed to be a sale for any purpose whatsoever.	*Omission*
Section 18	**Section 18. Restriction on disclosure of information** (1) The Central Government may by order restrict the disclosure of information, whether contained in a document, drawing, photograph, plan, model or in any other form whatsoever, which relates to, represents or illustrates - (a) an existing or proposed plant used or proposed to be used for the purpose of producing, developing or using atomic energy, or (b) the purpose or method of	*Amendment* **Section 18. Restriction on disclosure of information** (1) ~~The Central Government may by order restrict~~ The disclosure of information, whether contained in a document, drawing, photograph, plan, model or in any other form whatsoever, which relates to, represents or illustrates - (a) an existing or proposed plant used or proposed to be used for the purpose of producing, developing or using atomic energy, or (b) the purpose or method of operation of any such existing or proposed plant, or (c) any process operated or proposed to be operated in any such existing or proposed plant. shall, subject to this section, be restricted



Section	Text of Original Act	Changes proposed
	operation of any such existing or proposed plant, or (c) any process operated or proposed to be operated in any such existing or proposed plant. (2) No person shall - (a) disclose, or obtain or attempt to obtain any information restricted under subsection (1), or (b) disclose, without the authority of the Central Government, any information obtained in the discharge of any functions under this Act or in the performance of his official duties. (3) Nothing in this section shall apply - (i) to the disclosure of information with respect to any plant of a type in use for purposes other than the production, development or use of atomic energy, unless the information discloses that plant of that type is used or proposed to be used for the production, development or use of atomic energy or research into any matters connected therewith; or (ii) where any information has been made available to the general public otherwise than in contravention of this section, to any subsequent disclosure of that information.	(2) The Central Government shall constitute a national level body to which every request for disclosure of information contained under sub-section (1) shall be made, which request would be rejected or approved. (3) The decision of the national level body under sub-section (2) shall be conclusive and binding. (4) The national level body under sub-section (2) shall be vested with such powers and duties, to carry its functions efficiently, as may be prescribed by the Central Government. (3) Nothing in this section shall apply - (i). to the disclosure of information with respect to any plant of a type in use for purposes other than the production, development or use of atomic energy, unless the information discloses that plant of that type is used or proposed to be used for the production, development or use of atomic energy or research into any matters connected therewith; or (ii) where any information has been made available to the general public otherwise than in contravention of this section, to any subsequent disclosure of that information.
Section 20 (1) & (2)	**20. Special provision as to inventions** (1) As from the commencement of this Act, no patents shall be granted for inventions which in the opinion of the Central Government are useful for or relate to the production, control, use or disposal of atomic energy or the prospecting, mining, extraction, production, physical and chemical treatment, fabrication, enrichment, canning or use of any prescribed substance or radioactive substance or the ensuring of safety in atomic energy operations. (2) The prohibition under sub-section (1) shall also apply to any invention of the nature specified in that sub-section in respect of which an application for the grant of a patent has been made to the Controller of Patents and Designs appointed under the Indian Patents and Designs Act, 1911, before the commencement of this Act and is pending with him at such commencement.	*Amendment* **S.20** The Central Government shall, by appropriate notification in this regard, frame a specific policy for Intellectual Property in the nuclear sector, which policy may be amended by notification from time to time.

Section	Text of Original Act	Changes proposed
Section 22	**22. Special provisions as to electricity** (1) Notwithstanding anything contained in the Electricity (Supply) Act, 1948, the Central Government shall have authority - (a) to develop a sound and adequate national policy in regard to atomic power, to co-ordinate such policy with the Central Electricity Authority and the State Electricity Boards constituted under sections 3 and 5 respectively of that Act and other similar statutory corporations concerned with the control and utilization of other power resources, to implement schemes for the generation of electricity in pursuance of such policy and to operate either by itself or through any authority or corporation established by it or a Government Company, atomic power stations in the manner determined by it in consultation with the Boards or Corporations concerned, with whom it shall enter into agreement regarding the supply of electricity so produced; (b) to fix rates for and regulate the supply of electricity from atomic power stations either by itself or through any authority or corporation established by it or a Government Company in consultation with the Central Electricity Authority. (c) to enter into arrangements with the Electricity Board of the State in which an atomic power station is situated either by itself or through any authority or corporation established by it or a Government Company, for the transmission of electricity to any other State; Provided that in case there is a difference of opinion between the Central Government or such authority or corporation or Government Company as the case may be, and any State Electricity Board in regard to the construction of necessary transmission lines, the matter shall be referred to the Central Electricity Authority whose decision shall be binding on the parties concerned.	*Amendment and Insertion* (1) Notwithstanding anything contained in the Electricity Act, 2003, the Central Government shall have authority — (a) to develop a sound and adequate national policy for nuclear power generation in regard to atomic power addressing issues including, inter-alia, prescription of rates for supply of electricity through an appropriate authority, equitable consideration in providing for tariffs by taking into account the commercial cost of generation, carbon credit and trade in nuclear power generation; (b) to implement the schemes for generation of electricity in pursuance of the policy and to operate atomic power station either by itself or through any authority or corporation established by it or a Government Company; (c) to license any company to implement the schemes for generation of electricity in pursuance of the policy and to operate atomic power stations; (d) to develop and determine the policies and guidelines for allowing any company to participate in front-end and back-end fuel processing or re-processing activities, whether in India or abroad; (e) to license any company to undertake activities relating to mining of prescribed substances or otherwise mentioned under Section 9 of this Act, and to determine rules and regulations in this regard;[14] (1A) The Central Government or a Company may enter into arrangements, with the Central Transmission Utilities or with the appropriate State Transmission Utilities in which an atomic power station is constructed, either by itself or through any authority or corporation established by the Government, or a Government Company or a Company authorized by the Government for the transmission of electricity to any other state or states;

Section	Text of Original Act	Changes proposed
S. 24-A	**No such provision**	*New Insertion* **24-A. Act to have overriding effect. -** The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force.
S. 30 (1) (o)	**No such provision**	*New Insertion* **30 (1) (o).** Prescribing and regulating front-end and back-end fuel processing/re-processing activities, including, inter-alia, material accounting standards, safeguards, export/import of fuel, and punishments for violations/contravention.
S. 30 (1) (p)	**No such provision**	*New Insertion* **30 (1) (p).** the composition of the national level body under Section 18 (2), its investigative powers, duties, process of scrutinizing requests and such other details as may be deemed fit for the efficacious operation of the body.

Kindly note: the above table and amendments therein are only reflective of the immediate changes for consideration. Issues such as non-patentability for any apparatus, machine or device in relation to atomic energy are also pertinent concerns amongst the Indian industry (as under Section 20 of the Act & Section 4 of the Patents Act, 1970).

ANNEXURE II:
Domestic Legislation Dealing with CNL

As a natural corollary to the liberalization of the nuclear sector in India, the government of India is mooting the idea of a CNL Bill. Aligning to any international CNL treaty would involve the enactment of a domestic CNL legislation with appropriate provisions. There being no explicit statute or legislation in India, either creating or limiting liability of persons engaged in nuclear installations till now, liability would stand determined by courts, pursuant to actions in tort. The directions and observations of the Hon'ble Supreme Court in *Charan Lal Sahu's case*[15] should serve as the object and purpose for enacting such CNL legislation, viz:

- The basis for damages in case of leakages and accident should be *statutorily fixed* taking into consideration the nature of damages inflicted, the consequences thereof and *the ability and capacity of the parties to pay*[16]. Such law should also provide for deterrent or punitive damages.
- A law should be enacted to ensure immediate relief to victims – viz. by providing for the constitution of tribunals regulated by special procedure for determining compensation to victims of industrial disasters or accident.
- The law should also provide for interim relief to victims during the pendency of proceedings.
- The law should provide for the establishment of a statutory 'Industrial Disaster Fund', contributions to which may be made by the government and industries, whether they are of transnational corporations or domestic undertakings, public or private. The Public Liability Insurance Act has been constituted pursuant to this, but it excludes damage from accidents caused by radioactivity.

In this regard, it is important to consider the following issues before the finalization of CNL legislation is undertaken:

1. Incorporation of terms of bilateral treaties

1.1 The nuclear sector is characterized with a few players with concentrated technical know how and experience. Most of these entities are either state owned or backed by the state. The possibility of some countries opting to enter into bilateral treaties for access to local technology and resources cannot be ruled out.

1.2 Section 90 of the Indian Income-tax Act, 1961 enables the central government to enter into an agreement with the government of any country outside India, for certain specified purposes, and central government via notifications in the official gazette is entitled to incorporate the terms of such agreements into the Income-tax Act.

1.3 Keeping in mind the outcome of any negotiations with and stand that may be taken by other contracting states, it is imperative that the Proposed Bill is sensitive towards such developments without having to resort to the lengthy amendment process. Such a buffer can be created by enacting a provision similar to Section 90 of the Income-tax Act, whereunder the provisions of the Bilateral Treaties, to the extent that they relate to a civil nuclear liability regime for foreign suppliers from a specified state, may be incorporated through the means of a notification in the official gazette. Incorporation of such suitable text would allow the government greater flexibility without legislative interludes.

[15] Charan Lal Sahu vs. Union of India, AIR 1990 SC 1480 - Examining the validity and intent of the Bhopal Gas Disaster (Processing of Claims) Act, 1985.

[16] This is akin to the rule in MC Mehta vs. Union of India, AIR 1987 SC 1086 (and is not restricted merely to compensation for damage, irrespective of the ability of the party to pay).

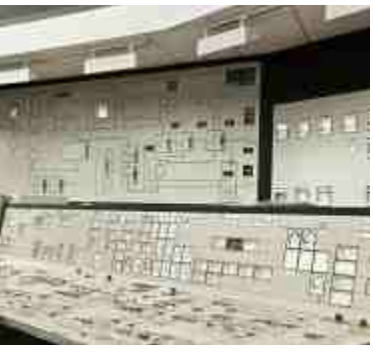
2. Liability for nuclear damage

2.1 Party liable

The issue of ascertaining the right party for imposing liability in the event of a nuclear incident is a pertinent consideration. A perusal of the international practices and statutes in respective countries shows that there are principally three different approaches to the question of ascertaining liability:

- Sole Liability of Operator – This model is followed by France, Russia[17] and United Kingdom[18], amongst others, wherein the Operator licensed for an installation is exclusively liable on a strict no-fault basis for all property and third-party damage which may be caused by a nuclear incident. In such a scenario, the supplier or the manufacturer cannot be held liable regardless of the fact that whose product or service caused the nuclear incident.

- Economic Channelling of Liability – The concept of channelizing the liability of all the relevant suppliers, manufacturers and service providers etc. through the operator is another approach to CNL. Such model of passing through liability is akin to countries like United States[19] and Italy[20] and is similar in terms of the end result to sole liability mechanism cited above. The channelling clause primarily ensures firstly, that the Operator is required to compensate the victim for a nuclear damage and secondly, the victim shall turn to one source for compensation instead of having to identify several possible sources and causation. In a nutshell, the Operator would be solely liable for all damages, irrespective of his right to receive them later from other parties involved.



The above cited two approaches stand characterized by the understanding that since the Operator's nuclear installation is the core reason of all the activities around it, such entity should have the responsibility to pay for any damages arising.

- No specific law dealing with liability – The third approach, akin to the state of affairs in China[21], is branded by not having a clear CNL legislation or practice. Although the exact Chinese position is not clear, the "reply" is in line with an administrative order in adherence to the VC and PC although not ratifying them directly. Operation of CNL without the benefit of precise legal provisions open a pandora's box, since this would allow actions in tort and result in an exercise not fruitful for all involved, in the event of a nuclear incident.

The lessons learnt from the unfortunate incidents of Bhopal Gas tragedy[22] and the Methane gas release in Delhi[23] must be implemented even more vigorously in the context of nuclear installations, wherein an incident can have far reaching consequences/damage. The following factors have to be considered for determination of liability:

- Nuclear damage usually results in large scale adverse effects and consequently, a multitude of claimants.

---

[17] Russian Federal law on use of Atomic Energy.

[18] The Nuclear Installations Act 1965 as amended by the Energy Act 1983.

[19] Price Anderson Act, 1957 of the Atomic energy Act 1954, as implemented by the Nuclear Regulatory Commission.

[20] SAct No. 1860/62 on the Peaceful Uses of Nuclear Energy.

[21] Per the normative document issued by the State Council in 1986.

[22] Leakage of Methyl iso-cyanide from the UCC plant in Bhopal at midnight causing huge losses of property and life including genetic disorders. Subsequently litigated in Union Carbide Corporation v. Union of India 1988 MPLJ 540 amongst a host of other cases.

[23] Leakage of Oleum gas in the Shri Ram fertilizer factory in Delhi, litigation and strict liability arisen in the case of M.C. Mehta vs. Union of India, AIR 1987 SC 1086.

- The interludes involved with a large of number of parties often results in confusion amongst claimants as to whom they should proceed against and apply for damages.
- Attribution and fixing fault to a party is a lengthy and technical process.

Therefore, it is advisable that the liability for nuclear damages in India be solely attached to the Operator of the nuclear installation. This rationale is further augmented by the fact that any activity, whether it is in respect of supply or services is being utilized only for the Operator and not otherwise. Any degree and extent of sharing of burden of liability from an incident may be left for the parties to themselves ascertain by way of private contracts.

In order to establish clear accountability and liability for nuclear damage and to provide for effective allocation of responsibility of the operator, it is suggested that the Proposed Bill may designate *'person or entity licensed for operating and controlling the nuclear installation by the government under the Atomic Energy Act' as* "Operator".

2.3 Liability for transportation:

Nuclear power generation involves transportation and handling of radioactive fuels from enrichment site/port of shipment to the plant and to appropriate reprocessing or disposal facilities in India or abroad. It has been noted that the transportation and handling of radioactive material is a highly sophisticated procedure but not free from the possibility of errors.

In order to give effect to the internationally accepted principles of sole Operator liability, it is essential that there be absolute waiver to agencies responsible for transportation and the liability of non-operators stands transferred to the Operator alone, on account of a deemed agency of the operator. This should further trickle down to non-operators not being mandated to hold any minimum net worth or compulsory insurance requirements, which is characteristic in most countries[24].

3. Exceptions to Liability

It is imperative to indemnify the industry and the participants from any damage arising from any circumstance beyond control through normal diligence that is expected at nuclear installations. Explicitly laying down the conditions carving out exceptions to liability for nuclear damage is carrying the concept of liability to its logical end. Internationally accepted principles including those set out in the VC & CSC; suggest the declaration of the following events as exceptions to the Operator's liability:

(i) acts of armed conflict;

(ii) hostilities;

(iii) civil war or insurrection; and

(iv) incident caused directly due to a grave natural disaster of an exceptional character.

4. Limits of Liability, Financial Security and State Guarantee:

4.1 Limits of Liability:

The capping of liabilities is an internationally recognized phenomenon of a legislation regulating CNL. Mechanisms adopted globally may be mirrored by the Indian legislation, currently the limits contemplated under the international conventions[25] are:

(i) 300 million SDRs[26] per nuclear incident;

(ii) 150 million SDRs per nuclear incident, where public funds (to cover up to 300

[24] USA, France, United Kingdom, Japan, Russia and Canada;

[25] Incorporating from the VC and the CSC respectively.

[26] SDRs or 'Special Drawing Rights' is an international reserve asset created by International Monetary Fund in 1969 under the Bretton Woods fixed exchange rate system. Currently, 1 SDR is equivalent to 1.48416 US$. Therefore the liability for the operator of a nuclear installation would be approximately Rs. 2150 crores.

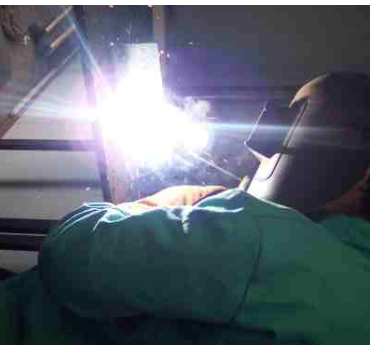
million SDRs) are made available by the central government to cover each nuclear incident.

However, the cap on these limits may be subject to the government's discretion.

4.2 Allocation of risk factor to plant for liability limits:

It is understandable that all nuclear installations may not be put on the same platform as they differ in terms of technology and investment, amongst other factors. The amount of maximum threshold of liability for the operator needs to be sensitive to the project details. Otherwise smaller projects may be ignored by potential participants on account of liability being higher than actual investment and/or return on investment.

Thereby, it is advisable that the CNL legislation provides for extent of liability being determined at the time of grant of license/permit by the Central Government to the establishment of a nuclear installation, depending upon the degree of risk associated with such nuclear installation. Clear principles and factors in relation to the determination of the degree of risk need to be chalked out considering, inter-alia, the following heads:



- Technology utilized by the plant – including the reactor, cooling system, dome construction types;
- Siting of the plant – the degree of risk it stands exposed in the event of natural disaster i.e. location near seismic zones, tide mapping for coastal areas, floods and proximity to other important installations/highways etc;
- Demographic of the plant and its operations – the population around the plant and projected populace during the term of functionality of the plant;

United Kingdom[27] prescribes site licensees that are subject to a lower limit of liability[28]. Essentially, the sites prescribed are the smaller installations[29]. They are prescribed by reference to the type and designed thermal output of any nuclear reactor with its associated fuel, and by reference to the activity of other radionuclide which may also be present. The regulations provide for cases where nuclear material of different levels of activity is present, as well as for overall limits of mass for fissile material[30].

Therefore, it is feasible that the proposed legislation may accommodate for such lower liability by including an enabling provision in the statute. The factors to be considered for such reduction and the precise procedure may be left to regulations, as deemed fit by the government from time to time.

4.3 <u>Financial Security:</u>

The prescribed liability limits would be futile unless the operators are mandated to hold separately, funds equivalent to the maximum liability amount. This ensures the sufficiency and quick disbursal of funds, and prevents a situation where the Operator shows inability to pay, bankruptcy etc. The international CNL framework, including majority of CNL legislations provide for such funds to be maintained separately by way of insurance or guarantee.

Following the Supreme Court's Judgement in *Charan Lal Sahu vs. Union of India*[31], it is imperative that:

"If the enterprise is permitted to carry on a hazardous or dangerous activity for its profit,

[27] Per the Nuclear Installations (Prescribed Sites) Regulations 1983 [S.I. 1983, No. 919].

[28] under Section 16(1) of the Nuclear Installations Act 1965, as amended by the Energy Act 1983.

[29] Regulation 3, Nuclear Installations (Prescribed Sites) Regulations 1983 [S.I. 1983, No. 919].

[30] Regulation 3(3) and (5), Nuclear Installations (Prescribed Sites) Regulations 1983 [S.I. 1983, No. 919].

[31] AIR 1990 SC 1480.

the law must presume that such permission is conditional on the enterprise absorbing the cost of any accident arising on account of such activity as an appropriate item of its overheads."

It is in the best interest of the public at large that each Operator be required to maintain, financial security which at any time covers at least the maximum liability of that Operator for one nuclear incident. Additionally, in order to ensure the ability of any entity or person suffering damages on account of a nuclear incident to recover damages from the Operator, the Proposed Bill may incorporate minimum net-worth requirements to be maintained by any Operator of a nuclear installation. The above may be supplemented by quarterly check of accounts and deterrent fines along with cancellation of license on non-maintenance of funds, to ensure compliance.

4.4 State Financial Security:

A nuclear incident has a much wider span and far-reaching consequences than conventional industrial accidents. It is both impractical and commercially unfeasible to hold the Operator to be liable for all the amount of the claims arising from a nuclear incident. Prescription of unlimited liability with the Bhopal Gas tragedy case[32] in the hindsight would serve as a great deterrent for all potential entrants. However, this unfeasibility should not deprive the public at large to redress the damage caused to them. Keeping this in mind, the proposed Bill may ideally contemplate that the Central Government would bear liability for nuclear incidents in the following circumstances:

(i) Where the Central Government has permitted the Operator to maintain a financial security lower than the limitation of liability on the Operator for a nuclear incident; and

(ii) Where a court or duly constituted tribunal of competent jurisdiction (by whatever name called) determines that the actual damages caused are in excess of the limitation on the Operator's liability, all additional liability over the limitation placed on the Operator should be borne by the central government.

Additionally, while the Bill would account for CNL in case of a nuclear incident, the accident arising due to error in design etc. may be taken care while signing an agreement between technology provider and host country (Government owned/Private company).

5. 'Nuclear Installation' and 'Nuclear Incident':

Since the above regime in relation to CNL would be applicable to nuclear installations, it is essential to ensure that the definitions of nuclear installation and nuclear incident are precise.

Nuclear Installation

It is vital to clearly ascertain the installations where in the liability act for nuclear incident would be applicable, restricting the liability from the CNL legislation only to certain Operators.

In United Kingdom, the identified installations liable to pay damages are[33]:

- an installation manufacturing fuel elements for the production of atomic energy from enriched uranium, plutonium or any alloy or chemical compound containing them;
- an installation used for producing alloys or chemical compounds from enriched uranium or

[32] supra F.N. 16 above.

[33] Prescribed by the 1971 Regulations [Regulation 3];

plutonium or for producing enriched uranium or plutonium from any alloy or chemical compound containing them;

- an installation for the incorporation of enriched uranium or plutonium, or any alloy or chemical compound containing them, in devices designed for subsequent irradiation in a reactor or to form part of a nuclear assembly;
- an installation comprising a nuclear assembly for the production of neutrons, which contains enriched uranium, plutonium or any alloy or chemical compound of them and in which a controlled chain reaction can be maintained with an additional source of neutrons;
- an installation for processing irradiated nuclear fuel;
- an installation for the storage of fuel elements, irradiated nuclear fuel or bulk quantities of other radioactive matter produced or irradiated in the course of producing or using nuclear fuel;
- an installation involved in the extraction of plutonium or uranium by the treatment of irradiated material, or in the enrichment of uranium;
- an installation for the production of radioisotopes from nuclear material.

In the United States, there exists mandatory coverage for all facilities licensed by the Nuclear Regulatory Commission[34]. This includes all:

- nuclear power reactors, including research, educational and test reactors; and
- potentially includes commercial reprocessing facilities;

It may be noted that any uranium enrichment facility built after 1990 is specifically barred from Price-Anderson Act coverage for the licensee[35]. Further, the NRC has the authority to extend the coverage to other nuclear installations, such as fuel fabrication facilities, but has not yet done so. Only nuclear power reactors with a rated capacity of 100 MWe or more are included in the mandatory retrospective premium pooling system. The research, educational and test reactors are covered by insurance that they are required to purchase and by federal indemnification of USD 500 million, if needed.

Canada defines nuclear facilities as including reactors, particle accelerators, uranium processing plants, waste management facilities and, because their level or risk falls within the range of other nuclear facilities, plants that possess, process or use large quantities of radioactive material[36]. The Canadian Nuclear Safety Commission is empowered under the Nuclear Safety and Control Act to designate nuclear facilities as “nuclear installations” for the purposes of the Nuclear Liability Act.

The French approach is slightly different with respect to the authorities categorizing nuclear installations as major installations and other installations. Major nuclear installations are defined currently as and include[37]:

- nuclear reactors, except for those forming part of a means of transport;
- particle accelerators;
- plants used for preparing, manufacturing or converting radioactive substances, and in particular for manufacturing nuclear fuels, separating isotopes, reprocessing spent fuel or processing waste;
- facilities for storing, stockpiling or using radioactive substances, including waste (with characteristics defined by the order).

[34] Under Sections 103 and 104 of the Atomic Energy Act, unless Congress specifically provides otherwise;

[35] Per new Section 193 of the Atomic Energy Act In 1990.

[36] As per Section 2, Nuclear Safety and Control Act.

[37] Per the Implementing the Act of 2 August 1961, Decree No. 63-1228 of 11 December 1963 on nuclear installations (as amended in 1973, 1985, 1990 and 1993) lays down the criteria governing major nuclear installations (installations nucléaires de base – INB).

Although global practices differ in terms of categorizing the installations, but remain similar in terms of excluding ancillary nuclear installations, such as those undertaking activities for extraction and processing for yellow cake uranium. Exclusion of such installations would enable greater participation with the appendage of financial commitments not being applicable. It is advisable to adopt the French model of leaving the regulation and specifications to the government, allowing the statute to address the future technologies and methods in the nuclear field.

Nuclear Incident

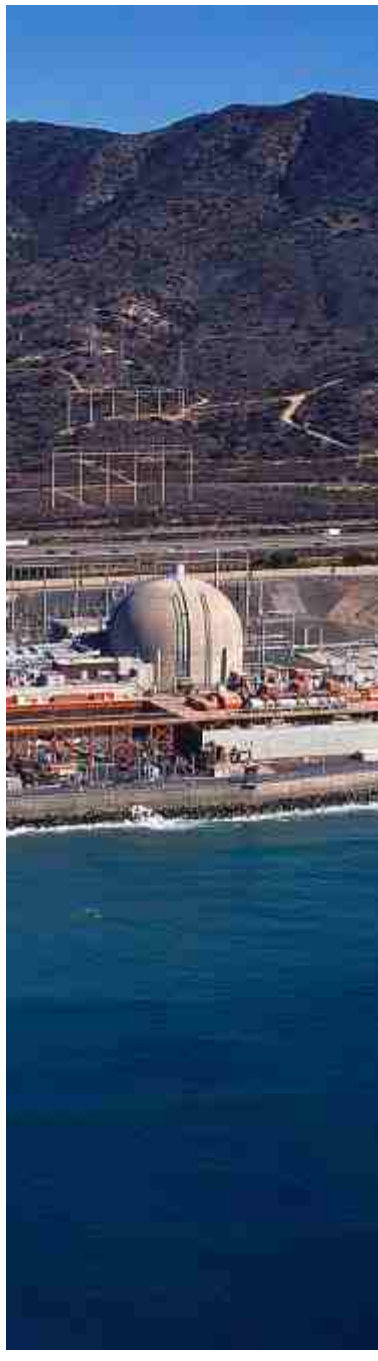
The definition of nuclear incident shall determine the eventualities in which the operator of a nuclear installation shall be liable for damages. Whilst ascertaining the following would form the bedrock of consideration:

- Probable trans-boundary effects of a nuclear incident to be mapped within the definition[38] - giving people from outside the jurisdiction of the country's territory but affected by the incident to have rights;
- Nature of damage, i.e. any:
  - Injury;
  - Sickness;
  - Disease;
  - Death;
  - Loss or damage to property;
  - Loss or use of property;
- It would have to indicate the cause of the abovementioned damage, i.e. arising out of or resulting from:
  - Toxic;
  - Explosive;
  - Other hazardous properties of source, special nuclear material or by-product material;
- Viability of inclusion of "precautionary evacuation[39]" even when no "nuclear incident" occurred, considering the costs and efforts undertaken as a result of an evacuation. This can be restricted by limiting such application for costs of evacuation only if the event poses imminent danger of bodily injury or property damage;

In this regard, clear definitions which may be based on the globally accepted principles[40] would be advisable for the sake of compliance with international standards whilst giving regulatory powers to the government to fine tune the application as mandated.

Conclusion –

An undefined CNL regime remains one of the major barriers to entry for private players and the appropriate legislative action in this regard is imperative. A clear and unambiguous legislation in adherence to international principles of CNL would strengthen the resolve of prospective investors and participants and foster growth without compromising on the security of the state and its population.



[38] As undertaken by US [Price-Anderson Act], France [per the Vienna and Brussels Convention] and other countries.

[39] Concept akin to the US law, as amending the Price Anderson Act in 1988.

[40] Set out in the VC & the CSC with the Annex thereto.

ANNEXURE III:
Availability of Sites to the Private Sector

Nuclear power production requires, apart from the sites for the NPP's, other nuclear installations to be put in place. This combined infrastructure which is critical for getting the nuclear economy going requires massive amounts of land to be made available for setup. Procuring and making available the land at the ideal locations is critical to achieve the overall objective of providing low cost electricity. The availability of sites, especially in a country with widely dispersed demographics like India, is an empirical question.

4.1 SITING

Siting is the process of selecting a suitable site for a facility, including appropriate assessment and derivation of the related design bases.Although the nuclear installations are varied in their function, risk and size, it is essential that there are certain basic guidelines that are followed before any site is approved. This is especially relevant in case of a NPP and other installations handling radioactive materials. Important factors affecting selection of site for major industrial installations, including nuclear power plants (NPPs) are availability of required infrastructure, economics, sociological aspects, general safety in terms of its impact on the public and environment, technical feasibility and finally engineerability of the site. Safety of the plant personnel, public and the environment from radiological hazard is the most important consideration for siting of nuclear power plants. Guidelines akin to the AERB criterion for siting[41] need to be established for all nuclear installations handling radioactive materials. Certain key factors to be considered while granting approval/selecting a site for nuclear installations could be:

4.1.1 Amount of land required and inspection of zones-

For NPPs, the 'site' includes the area surrounding the plant enclosed by a boundary, which is under effective control of the plant management. Current mandatory requirement of AERB siting code is that an exclusion zone of at least specified mandatory radius around the plant is to be established and this area should be under the exclusive control of the station wherein public habitation is prohibited. Though the exclusion zone distance could be greater than the specified mandatory radius depending on the land acquisition and future expansion plans, the radiation dose limits for public are specified by AERB at the specified mandatory radius from the plant.

The above is consistent with the IAEA and International benchmarks[42] for zoning of areas around the NPP's.

4.1.2 Impact of External events on the installation –

Like any other facilities, nuclear power plants are also designed to withstand the loading effects due to hazards from external events. This exercise would include:

(a) Seismic activity in and around the site and appropriate structure for the same;

[41] Criterion as laid down in the AERB 'Monograph on siting of Nuclear Power Plants', 1999 edition; AERB formulates safety requirements for nuclear and radiation facilities to assess their safety during siting, design, construction, commissioning, operation and decommissioning stages. The Board issues Codes and Standards for regulating nuclear and radiation safety and associated quality assurance requirements. Several safety guides and manuals have been published by AERB for implementing the safety requirements of these Codes and Standards.

[42] Canada - 'Site Evaluation for new Nuclear Power Plants' - Canada Nuclear Safety Commission, October 2007; Also see Finland - 'Safety criteria for siting a Nuclear Power Plant' - STUK, Helsinki, July 11, 2000.

(b) Soil testing and checking for strata below the site for the purpose of sifting and stability checks, including surface faulting;

(c) Response and vulnerability of the site as regards natural hazards such as flooding, shoreline and river bank erosion and other locationally pertinent geological hazards;

(d) Human activities relating to industry, military, mining, transportation, etc. in the region of the proposed site may have the potential to challenge the safety of NPP. It is therefore necessary to collect information regarding all human activities in the region of interest at siting stage of the nuclear power plant and evaluate their impact on the proposed plant under various postulated worst-case scenarios and design the NPP to withstand the effect, if necessary.

(e) Development of security-related physical protection objectives for new NPPs including gathering information about the NPP's proposed siting location in order to study threats or issues presented by the geographical location and characteristics of the proposed site.

4.1.3 Impact of the plant on site, environment and public-

(a) Radiological impact – i.e. radionuclide released from an NPP during normal operating conditions and under accident conditions eventually reach humans through various pathways.; and

(b) Conventional pollution;

(c) Population demographics – both current and future settlement trends in and around the NPP site.

4.1.4 Factors affecting implementation of emergency measures in the public domain-

For safe operation of NPPs, prevention, control and mitigation of various postulated accidents have to be considered. Further, every NPP is also required to formulate comprehensive emergency plan, termed as emergency preparedness plan, which will help ensure public safety during those low frequency events, which can have a significant radiological impact in public domain.

While preparing the off-site emergency management plan, inputs/information of the State government machinery, evacuation routes including road and railway network in Emergency Preparedness Zone, communication facilities, buildings for sheltering both inside and outside Emergency Preparedness Zone, medical facilities, transport facilities, etc are assimilated and emergency management plans are prepared.

Remote Sites – It may be noted that remote sites are to be evaluated with respect to the anticipated time required to implement essential response services, including how long it will take for off-site armed responders to reach the NPP. This aspect supports early identification of the need for establishing an on-site nuclear response force capability to ensure that a trained response group is in position during the construction phase of possible target sets, such as vital areas that are part of the NPP[43].

For the above exercise to be a success, it is essential that various nuclear installations be categorized on the basis of degree of risk associated with it in terms of radioactivity[44]. Such classification providing for differing factors is assigned for various nuclear installations would feasible since not all nuclear installation can be placed on the same platform.

[43] Per Para 9.11 of the 'Site Evaluation for new Nuclear Power Plants' – Canada Nuclear Safety Commission, October 2007.

[44] For e.g. the recent Tata Singur factory dispute over allocation of land after acquisition and payment of compensation.

4.2 ACQUISITION

As it may be witnessed from above, establishment of a NPP requires large tracts of land. Owing to the contentious nature of land acquisition exercise in India[45] it is ideal that the government undertake the land acquisition for NPPs. Such acquisition on part of the government for the private participants may broadly function analogous to the current policy followed for Ultra Mega Power Projects in India. The broad steps which can be broken down in this respect would be:

- Site Selection Committee[46] ("SSC") locates and analyzes the site as per siting guidelines laid down;
- Upon approval of the SSC, a public hearing[47] is held as to the amount of land required for the project and inviting any objections;
- Quantum of compensation is determined adhering to several evaluations and based on the market prices in the area;
- Land is acquired by the government;
- Ownership and title to the land stands transferred to a government owned special purpose vehicle ("SPV"), created specifically for the respective NPP;
- Upon selection of an ideal operator for the NPP, through allocation mechanisms deemed fit, the government transfers the ascertained share to the private participant. Consequently, the SPV is a Joint Venture ("JV") between the government and the private party or a majority private or fully private entity undertaking nuclear power plant operations and management. Concrete guidelines/criterion may be evolved by the Central Government for selection of the appropriate party from the pool of private players offering/with a keen desire to participate.

For the above mechanism to work suitably well and be able to adjust to the site specific requirement, a nodal agency may be created or appointed within the DAE for the purpose of site selection assistance, acquisition and consequent overseeing of transfer[48]. This would also provide the private participants with a single window of contact and cut down on interludes which form a critical part of the project cost.

For nuclear installations apart from the NPP and not involving radiological emissions, it may be feasible that the private participants themselves undertake siting and acquisition. It has to be understood that internationally, the regulatory bodies are only involved with giving clearances after due evaluation of the proposed sites[49] submitted and selected by private participants.

However, it is suggested that the process of land acquisition for a nuclear installation or non-nuclear facilities related to a nuclear installation (e.g., township for NPP personnel) should be done by GOI.

---

[45] For e.g. the recent Tata Singur factory dispute over allocation of land after acquisition and payment of compensation.

[46] With a member from the AERBand submitting its final recommendations to the Prime Ministers Office through the Department of Atomic Energy.

[47] Such public hearing should not be restricted to MOEF clearances only. The ultimate purpose is to conduct a referendum of sorts to avoid future dispute as to acquisition of land, siting of the plant and the compensation determinable. Many large scale projects have been delayed considerably due to lengthy litigation on behalf of the residents/settlers in an area.

[48] As the Power Finance Corporation under the UMPP model.

[49] Canada – Nuclear Safety Commission acting through the Nuclear Safety and Control Act, Paragraphs 3 (a) through (k) of the Class I Nuclear Facilities Regulations requires the applicant for a license to submit relevant details of the site for approval and issuance of license; The NRC USA approves licenses for nuclear installations on the basis of details submitted by the licensee and mandates that the license be in possession or reasonably be in expectation of possession of the site submitted for review.

4.3 COMPENSATION

The government should address the determination of quantum and payment mechanism by making specific guidelines in this respect. For avoidance of litigation[50], it is best that clear time-barred regulations be devised and made applicable with the most stringent standards for the benefit of the persons relocated.

4.4 DISPUTE RESOLUTION

It is important that clear cut dispute resolution mechanism be laid out before any land acquisition and relocation exercise is undertaken in respect of nuclear installations. Absence of comprehensible provisions in this regard would impede both, the acquisition process as well as the rightful demand of the land owner to get his case heard. In this respect, the following may be pertinent for consideration:

- Holding of a public hearing before acquiring the land – this is a well recognized concept in France, wherein conduct of a declaration of public interest procedure, carried out by means of a public interest inquiry leading to a decree declaring the installation to be of public interest for the purpose of initial compliance and setup would serve as an ideal conflict avoidance mechanism[51];
- Specialized dispute resolution forum especially constituted for land acquisition cases in relation to nuclear installations – including any objections that may arise in relation to the siting and harmful effects flowing from it;
- Appeal provisions with right to approach the High Court only in extraordinary circumstances;
- Time limited judgment with few exceptions providing for extensions;

Siting of Nuclear Power plant has to fulfil the requirement brought out by siting code issued by Atomic Energy Regulatory Board (AERB). Other requirement like techno economic issues, power evacuation & grid stability, nuclear security need also to be addressed. There are also issues related with state & Central governments such as Emergency preparedness, Rehabilitation etc. Further, political decision making is also involved. The site selection committee, appointed by Government of India takes care of all of these. This, the committee recommend s the site selection and acquiring of the same may be left, at least as of now, to Government of India.

[50] Narmada Valley Dam case – the project was delayed by more than a decade owing to the litigation in respect of relocation and compensation to be given to the land owners affected.

[51] In France, all important major nuclear installations, such as Électricité de France (EDF) power plants, are subject to the declaration of public interest procedure, which is carried out by means of a public interest inquiry which follows the same rules as public inquiries. This procedure leads to a decree declaring the installation to be of public interest; however this decree does not exempt the future operator from compliance with the licensing procedure for establishment of the nuclear installation by decree.

ANNEXURE IV:
Qualification Criteria for Utilities

Radioactivity is long lasting, typically for nuclear fuels and its ancillary/residual products. Therefore, the need for committed participants with sufficient financial and technical competence must be evaluated before any NPP license is awarded. A well thought out licensing qualification criteria with the ability to span changes and developments on a long-term basis is mandated for the Indian space.

The Health and Safety at Work etc Act 1974 ("HSW Act") and the Nuclear Installations Act 1965 ("NIA") chart out the main qualification criteria for any nuclear installation proposed to be established in the United Kingdom. Within the Health and Safety Executive ("HSE"), the nuclear licensing function is delegated to the Nuclear Installations Inspectorate ("NII"), which therefore has the responsibility for granting licenses and attaching appropriate conditions. NII also makes judgments on the acceptability of responses made by licensees to the requirements of those conditions. Amongst other things, it is mandated that a licensee must provide for the following information[52]:

- safety management prospectus;
- description of the installation or activities to be licensed;
- indication of the status of activities at the site[53] ;
- map of the site and, for a new site, its location with details of population type and density around the proposed site. Annex 2 provides a specification for the site map which will form part of the nuclear site license;
- details of the ownership of the site or arrangements for its leasing;
- license condition compliance statements and top tier arrangements;
- the submission or review of adequate safety cases;
- statement of decommissioning arrangements;
- details of emergency arrangements; and
- terms of reference for the Nuclear Safety Committee.

Under the United States nuclear regime, office of the NRC has to undertake the responsibility of issuance of licenses and coordinating the multitude of approvals that a utility is required to procure. Apart from the technical compliances, it is evident that the authorities also ensure financial capabilities by prescribing supply of details as to[54] :

- actual possession or reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs;
- actual possession or reasonable assurance of obtaining the funds necessary to cover estimated operation costs for the period of the license;
- estimates of the total construction costs of the facility and related fuel cycle costs, and indication as to the source(s) of funds to cover these costs;
- total annual operating costs for each of the first five years of operation of the facility;

[52] Health and Safety Executive ("HSE") Manual as revised in 2007.

[53] In relation to the Justification of Practices Involving Ionizing Radiation Regulations 2004.

[54] Per the Combined License Application Acceptance Review Checklist [NRC - C.IV.1].

- assurance of decommissioning funds[55] including estimation and methods by which the licensee endeavors to fulfill the fund obligations, i.e. [56]:
  - prepayment;
  - deposits into an external sinking fund, escrow account, or government fund that is segregated from the future licensee's administrative control, provided that either of the following conditions is met:
    - The licensee establishes its own rates and thereby recovers all of its decommissioning costs or is regulated by an external ratemaking authority, such as a public service commission, and recovers all decommissioning costs through traditional cost-of-service ratemaking regulation;
    - The licensee receives a Federal or State government-mandated non by passable wires charge that will cover all decommissioning costs.
  - a surety method;
  - insurance;
  - a parent company guarantee;
  - for a Federal licensee, a statement of intent containing a cost estimate for decommissioning and indicating that funds will be available for decommissioning when necessary;
  - certain acceptable contractual obligations;
  - any other mechanism, or combination of mechanisms, that provides, as determined by the NRC, assurance of decommissioning funding equivalent to that provided by the above methods.
- additional or more detailed information respecting its financial arrangements and status of funds if the information is regarded as inappropriate. This may include information regarding a licensee's ability to continue the conduct of the activities authorized by the license and to decommission the facility;

Further, propriety information must be furnished in case of a newly formed entity applying for a license, to ensure that the authorities are equipped with the knowledge about:

- the legal and financial relationships it has or proposes to have with its stockholders or owners;
- the stockholders' or owners' financial ability to meet any contractual obligation to the entity which they have incurred or proposed to incur;
- any other information considered necessary by the Commission to enable it to determine the applicant's financial qualification.

A concrete structure for eligibility conditions must be put in place for the technical and financial screening of license applications. In the current India context[57] , such conditions should be made applicable to the SPV which acquires the land before any license apart from land related clearances are granted. Inclusion of Canadian[58] concept of enumeration of the financial and

[55] N C.IV.5.4 Decommissioning Funding Assurance; Also see The regulations in 10 CFR 50.75, "Reporting and Recordkeeping for Decommissioning Planning," describe the NRC's requirements for decommissioning funding assurance, which differ depending on whether the applicant will be a regulated entity in a cost-of-service environment or an unregulated entity in a competitive market.

[56] C.IV.5.4.1 Estimates of Funding Requirements.

[57] As per the draft JV structure proposed by the Government Source: Publically available news content.

[58] Per Regulation 3 (1) of the Nuclear Safety and Control Act, General Nuclear Safety and Control Regulations, P.C. 2000-782 31 May, 2000.

organizational structure of the licensee and other holding companies or related entities, with a complete flowchart of funds, even for existent entities[59] is needed to provide greater security.

Further, anti-trust requirements need to be addressed and reviewed seriously before the license is granted[60] . The concerned regulations also need to be sensitized as to the possibilities of amendment of a license or construction permit respectively[61] .

5.1 LIFE TIME COMMITMENT

Care and caution needs to be exercised not only for the operational phase of a NPP, but also for a considerable period after that. Globally, NPP participation is characterized by lifetime commitment, however there are varying practices in this regard.

The United Kingdom[62] laws lay down that nuclear site licenses are granted for an indefinite term and one license may cover the lifetime of an installation from design, siting, construction, commissioning, operation, and modification through to eventual completion of decommissioning. During the grant of license, the NIA allows HSE to attach conditions to a licensee in relation to the handling treatment or disposal of nuclear materials. The period of responsibility[63] in relation to a nuclear site license means the period beginning with the grant of the license and ending with whichever of the following dates is the earlier, that is to say the date when:

1.1.4 HSE gives notice in writing to the licensee that in the opinion of [HSE] there has ceased to be any danger from ionizing radiations from anything on the site or, as the case may be, on that part[64] thereof;

1.1.5 a new nuclear site license in respect of a site comprising the site in question or, as the case may be, that part thereof is granted either to the same licensee or to some other person.

Such a clear concept of period of responsibility, supplemented with the appropriate regulations and ability to identify and clear a part of the NPP enclosure could be duly incorporated in any executive effort on this front by the Indian authorities. Further, R & D assurance/back-up must be mandated during the period that the NPP license is active, either by way of financial guarantees from outsourced R & D provider or as otherwise deemed fit.

5.2 LICENSE TRANSFER

The transference of NE operator's license, and consequently the NE generation facility is a contentious issue world over. It is not unusual that companies may be desirous of transferring licenses for corporate veiling to limit liability during the last stages of the plant and/or in the event of an accident. However, an overcautious approach in this regard should not impede the free economic rights of private parties to consolidate and the consequent benefits of such actions to the general public at large on account of cheaper tariffs.

---

[59] General Application Requirements

3. (1) (k) the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the Act and the regulations made under the Act, including the internal allocation of functions, responsibilities and authority.

(m) any other information required by the Act or the regulations made under the Act for the activity to be licensed and the nuclear substance, nuclear facility, prescribed equipment or prescribed information to be encompassed by the license.

[60] Although in US this has been waived after the US Energy Policy Act, 2005 has been enacted.

[61] As under US law [64 FR 53614, Oct. 4, 1999; 72 FR 49504, Aug. 28, 2007].

[62] HSE publication 'Nuclear Site Licenses under the Nuclear Installations Act 1965 (as amended in 2007) - Notes for Applicants' [HSG120], issued in 1994. www.hse.gov.uk/nuclear/.

[63] Under Section 5(3) of Nuclear Installations Act 1965.

[64] Under Section 3 (6) of Nuclear Installations Act 1965, HSE has been vested with the power to grant a variation excluding part of the site from the licensed area, simultaneously ending the licensee's period of responsibility for that part of the site.

One methodology to tackle license transfer can be to lay down that a license is not transferable and is granted in respect of a specific site[65] . This approach is supplemented by providing for surrender of license or a replacement license. Under surrender, depending upon the circumstances, the licensee may be required to retain responsibility for certain aspects associated with the site. Another corporate body, if it demonstrates capability to hold a license may be granted a replacement for already licensed sites. Before a replacement license is granted, HSE considers the same evaluation criteria that it would for an initial licensing, but takes a proportionate approach and focuses particularly on those aspects of the licensing basis that are the subject of the change.

The concept of license transfers and mergers is well accepted in the United States, with the law permitting the following:

- indirect transfers, such as the establishment of a holding company over an existing licensee;
- direct transfers, such as transfer of an ownership interest held by a non-operating minority owner; and
- the complete transfer of the ownership and operating authority of a single or majority owner.

Generally, license transfers are considered as not involving the type of technical issues that would impact operation. Plant personnel, procedures, and policies typically are not part of a license transfer or merger. The clear regulations and procedures[66] have been established to ensure that there is due public consultation, notification and invitation of objections, hearing requests[67] , and that financial protection requirements and indemnity agreements[68] are in place.

Further, NRC's regulation[69] requires that licenses granted by the NRC shall not be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person unless the Commission gives its consent in writing. Therefore, typical staff review of such applications, characterized as requests for restructuring and organizational change, largely consists of ensuring that the ultimately licensed entity has the capability to meet the financial qualification and decommission funding aspects of the NRC regulations.

Permission granted for license transfer has to be supplemented by[70] public display of Commission correspondence with the applicant or licenses related to the application, Federal Register notices, the NRC staff Safety Evaluation Report, any NRC staff order affecting the license transfer application and the hearing record and decision if a hearing is held

In general, license transfers have to be viewed as changes in ownership of facilities at a corporate level as they do not involve any changes to plant operations or significant changes in personnel of consequence to the continued reasonable assurance of public health and safety. However, sufficient precautions must be taken to avoid legal mischief on the part of the companies compromising the ultimate interest of the consumer and the nation.

[65] Sections 3(1) and 1(1) of the Nuclear Installations Act 1965.

[66] CNRC (USA) Regulations - 10 CFR 50.80 - General guidance for transfer of licenses.

[67] NRC (USA) Regulations - 10 CFR Part 2, Subpart M.

[68] NRC (USA) Regulations - 10 CFR 50.140.

[69] NRC (USA) Regulations - 10 CFR 30.34(b).

[70] NRC (USA) Regulations - 10 CFR 2.1303

Public involvement, generally and in particular in relation to transfer activities, must be a cornerstone of strong, fair regulation of the nuclear industry. The public should be invited to comment on proposed regulations in addition to observing or participating in certain workshops and meetings. A minimum lock-in period before transfer is allowed and rights of lenders also needs to be addressed in this regard. Further, under the current JV structure suggested by the government, it is apt if appropriate minority rights of the private JV partner as to license transfer on approval are asserted.

Concerns with respect to license transference should be addressed without in any manner compromising profitability, consolidation benefits in terms of cheaper electricity rates to citizens and right to return on investments for an entrepreneur.

Nuclear Task Force Members List

1. **Mr. S K Jain**
   CMD — **Chairman**
   Nuclear Power Corporation of India
2. **Dr. V K Chaturvedi**
   Director (NPL)
   Nuclear Power Inititative Department
   Reliance Energy Ltd.
3. **Mr. V K Seth**
   OSD (Nuclear Power Initiative Group)
   Reliance Infrastructure Ltd.
4. **Mr. A R Gore**
   OSD (Nuclear Power Initiative Group)
   Reliance Power Ltd.
5. **Mr. S.A. Bohra**
   Advisor
   Tata Power Co. Ltd.
6. **Mr. G.R. Srinivasan**
   Advisor (Nuclear Power Business)
   GMR Energy Ltd.
7. **Mr. O P Goyal**
   Power Specialist
   GMR Energy Ltd.
8. **Mr. Ajit Kumar**
   General Manager (Nuclear)
   NTPC Ltd.
9. **Mr. Anil V. Parab**
   General Manager - Nuclear Equipment
   Larsen & Toubro Ltd.
10. **Mr. Kaustubh Shukla**
    Chief Operating Officer - Industrial Products Division
    Godrej & Boyce Mfg. Co. Ltd.
11. **Mr. P.K. Agarwal**
    General Manager (Marketing)
    Bharat Heavy Electricals Ltd.
12. **Mr. V.K. Sharma**
    President - Operations
    Gammon India Ltd
13. **Mr. Sushil Kumar Chhada**
    Advisor (Energy)
    Bharat Forge Limited
14. **Mr. Raghunath D**
    Director
    Avasarala Technologies Ltd.
15. **Mr. K.S. Reddy**
    General Manager (QA)
    MTAR Technologies Pvt. Ltd.
16. **Mr. S K Shirguppi**
    Director Operation (Sales & Marketing)
    Rolta India Ltd.
17. **Mr. Pradeep Ganorkar**
    Sr. General Manager (Marketing) Special Products Division
    Walchandnagar Industries Ltd.
18. **Mr. Sudhinder Thakur**
    Executive Director (Corporate Planning)
    Nuclear Power Corporation of India Ltd
19. **Mr. M K Chowdhury**
    Associate Director (Procurement)
    Nuclear Power Corporation of India

20 **Mr. M.K. Kannan**
Associate Director (Business Development)
Nuclear Power Corporation of India Ltd

21 Mr. Suhaan Mukerji
Principal Associate
Amarchand & Mangaldas & Suresh A. Shroff & Co. Advocates & Solicitors

SECRETARIAT

22 Mr. V K Topa
Advisor to Secretary General
FICCI

23 Mr. Vivek Pandit
Additional Director
FICCI

24 Ms. Tavleen Kaur
Deputy Director
FICCI