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The nuclear revival and nuclear law: next steps

Introduction

A number of countries are now considering or working towards the first-time introduction of a nuclear power programme. Not all of them, however, are able to provide the national infrastructure or the human resources expertise required for a highly sophisticated technology like nuclear power plants. These countries are clearly in need of assistance. At the same time, the countries (and industry) able to supply such plants, possess the much needed expertise and experience. Beyond contractual or other legal obligations, they could be considered as having a certain degree of responsibility to ensure that these potential “recipient” countries have the means by which to ensure the safe and secure uses of nuclear energy.

In addition, considering the potential transboundary risks that may arise from the use of nuclear energy, “vendor” and potential recipient countries may be considered as sharing a common interest or responsibility to ensure that any world-wide nuclear power plant expansion is carried out within a balanced international nuclear legal framework and is based upon achieving and maintaining a high level of nuclear safety and security world-wide. Further to such interest or responsibilities, there are a number of basic expectations concerning respective roles. Some of these expectations are already addressed by nuclear law in the form of legal obligations, commitments and requirements, as respectively incorporated into the nuclear treaties and other international instruments.

On the brink of a world-wide nuclear revival and taking into consideration potential cross-border risks, as well as certain responsibilities, this paper considers whether there is a need to provide for a more consistent international approach to the development of nuclear power programmes by the adoption of an international legally non-binding instrument concerning potential recipient and vendor countries.

Although acknowledging the importance and relevance of such matters, this paper does not enter into a detailed discussion of the peaceful uses of nuclear energy and the associated non-proliferation issues and potential challenges.

Nuclear law: evolving industry dynamics and shared responsibilities

The objective of nuclear law is to provide a framework to ensure a balance between promoting the benefits, and controlling the risks, of nuclear related activities. The three core branches of nuclear law, as expressed at the national and international level, or the “3Ss” of nuclear law, are safety, security and safeguards, as well as liability for nuclear damage. At the international level, nuclear law comprises legal texts of both “hard law” such as treaties, i.e. conventions, international agreements and protocols, as well as “soft law”, such as IAEA standards of safety, codes of conduct, guidelines, IAEA security guidance, as well as other international instruments. These “soft law” instruments or the provisions thereof may also become “hard law”, for example through a process of incorporation or enactment.

As a highly sophisticated technology, nuclear power plants require a correspondingly sophisticated level of safety and security infrastructure well beyond that needed for other nuclear applications. There are varying levels of radiation protection infrastructure, and the majority of the approximately fifty countries considering or working towards the first-time introduction of a nuclear power programme do not have the needed infrastructure. Despite some having research reactor operation and regulatory experience, as well as knowledge of mining and milling related activities, all are still lacking nuclear power plant regulatory and operating experience. Further, past experience with respect to the establishment and maintenance of regulatory infrastructures for the safety of radiation sources indicates that some countries may face a number of challenges with respect to the regulation of nuclear power plants.

If not properly addressed, this lack of experience and infrastructure may possibly constitute a principal constraint on the success of any future nuclear power programme. Such countries need assistance, for example, in establishing and maintaining a national nuclear legal framework. More pointedly, however, such deficiencies also raise the need for caution. Some countries pursue a nuclear power programme without

fully addressing all the issues. Should countries be left to their own devices in establishing such a national framework? In line with the past development of international nuclear law, there appears to be a need to provide for a more consistent international approach. There are already relevant nuclear treaties and other instruments and various international activities and initiatives focused on these matters, as well promoting international cooperation. But these could also be further enhanced by specific high-level commitments addressing certain key requirements in the context of those countries considering or working towards the introduction of a nuclear power programme.

Vendor countries together with industry may be considered as sharing a certain degree of responsibility to ensure that potential recipient countries have the means by which they can assure that the use of nuclear energy will be conducted in a safe and secure manner. They may play roles as stakeholders in understanding the adequacy of a national infrastructure before supplying nuclear equipment and material. Notwithstanding such a responsibility, there must also be a shared responsibility or interest of the global industry, given that the potential implications of a catastrophic accident or incident anywhere will be industry all-embracing.

Bilateral nuclear cooperation would still appear to be relevant and an overall function of a government, encompassing among others political, economic and commercial considerations. However, the nuclear world of today is significantly different from that when many countries acquired their first nuclear power plant. There are now potential new vendor countries which in turn, present new opportunities and challenges. There are also various transnational corporations with diverse ownership arrangements. These industry enterprises are operating under an umbrella network of strategic alliances and partnerships. Some participate in corporate social responsibility initiatives such as the UN Global Compact and the Global Reporting Initiative. Some also apply the OECD Guidelines for Multinational Enterprises covering business ethics on a wide range of matters.

For a large number of enterprises, non-economic social values (such as corporate social responsibilities or ethics) can be considered as being an integral part of their

business. Although recognizing that some may also carry out nuclear cooperation in light of an approach which applies the notion of a shared responsibility as considered in the context of this paper, the question arises whether independent approaches are alone sufficient. In this regard, it can be asserted that an element of shared responsibility also includes a need for an understanding on the role of vendors which should be complementary to that agreed upon for recipients.

A more harmonized international approach

On the brink of the world-wide nuclear revival and taking into consideration the potential cross-border risks, as well as certain responsibilities, it is proposed that the international nuclear community should consider whether there is a need for a more harmonized international approach to the development of nuclear power programmes, by the adoption of an international legally non-binding instrument.

Any such approach will need to allay any anxiety that it would be an unnecessary constraint on trade. It will also need to be viable from a commercial perspective. The extent to which it may be considered as an unreasonable hindrance of potential recipient countries' "inalienable" right to use nuclear energy for peaceful purposes will also need to be determined. Further, such an approach will need to be recognized as not constituting a dilution of the obligations and ultimate responsibilities of recipient countries with respect to nuclear power plant safety and security. At the same time, it should be highlighted that such an approach could help to further establish a level playing field for vendor countries and industry. It could also help in avoiding the future establishment of inconsistent and fragmented national nuclear legal regimes.

Legal form

In connection with the agreed outcome of this approach, possible legal formats could include agreed "principles", "guidelines" or a "code of conduct". The same as for the IAEA Code of Conduct on the Safety and Security of Radioactive Sources (the "Radioactive Sources Code"), the text could be adopted under the auspices of the IAEA by the Board of Governors and

endorsed by the General Conference. It could also be further supported by additional voluntary and legally non-binding “political” commitments to the IAEA Director General.

The proposed instrument could consolidate and build upon a number of established norms in the form of nuclear rules (obligations), standards (requirements) and principles, as provided for in the relevant provisions of the various international nuclear legal instruments. For example, the Convention on Nuclear Safety, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and the Convention on Physical Protection of Nuclear Material (and the IAEA recommendations entitled *The Physical Protection of Nuclear Material and Nuclear Facilities*), as well as the IAEA safety standards and guidance in other texts, such as the IAEA document entitled *Milestones in the Development of a National Infrastructure for Nuclear Power*.¹ Such an approach would not be dissimilar to that of the two other IAEA codes of conduct (the Radioactive Sources Code and the Code of Conduct on the Safety of Research Reactors), or that concerning those nuclear safety treaties, some of the provisions of which are based on relevant IAEA safety standards.

Scope

For the purpose of this paper, a description of the possible scope of such an understanding is limited and there are potentially a wide range of other areas that could be addressed, such as the need for public (and other stakeholders) consultation. A question, however, concerns to what extent, if at all, could political, economic and commercial considerations also be recognized, keeping in mind their potential sensitivities. Where should the line be drawn in seeking to establish a consistent international approach? For example, peaceful use considerations aside, are the political stability of a potential recipient country or regional stability issues upon which there can be an international consensus that vendors should consider these matters prior to offering or during bilateral nuclear cooperation?

Being neither definitive nor exhaustive, an instrument providing for a more consistent international approach could both reaffirm well-established norms (set forth in the provisions of nuclear treaties, IAEA safety standards and other instruments and texts, such as the IAEA milestones guidance document) and establish new principles. For example, that the governments of countries need to:

- (a) demonstrate a long-term commitment to the safe and secure (and peaceful) implementation of the nuclear power programme.
- (b) join and implement relevant nuclear treaties. Such actions will be viewed as an important “confidence building measure” on the national, regional and international levels respectively. Also, being a positive assurance to the public, neighbouring countries and the international nuclear community of a country’s intentions concerning its nuclear power programme.
- (c) establish and maintain a national nuclear legislative and regulatory framework and develop, promulgate and bring into force a nuclear law and as necessary other relevant laws, such as in the areas of environmental protection, foreign investment, financial legislation and land use control etc. It could also be highlighted that the nuclear law should, in principle, be in force prior to proceeding with an invitation to bid.
- (d) establish or designate a regulatory body entrusted with the implementation of the framework. The need to take appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy could, among others, also be identified.
- (e) formulate safety principles (i.e. radioactive waste management, decommissioning, emergency preparedness and response) and security principles, including, physical protection of nuclear material and facilities; establish compensation mechanisms for nuclear damage; establish regulatory control systems (i.e. licensing, inspection and enforcement); and establish import and export controls of nuclear material and items.
- (f) encourage and assist recipient countries in establishing certain key aspects of the basic

¹ IAEA documents No. INFCIRC/449; INFCIRC/546; INFCIRC/274/Rev.1 and INFCIRC/225/Rev.4 (Corrected), respectively. Also, IAEA Nuclear Energy Series No. NG-G-3.1.

infrastructure and recognise that they are making a long-term commitment to such countries. Whereas an element of shared responsibility includes the need for recipient countries to establish and maintain a national nuclear infrastructure, it may also be considered to include the need to consider the provision of long-term assistance to such countries in their efforts in this regard.

- (g) consider measures to address the specific needs of recipient countries, such as training of the regulatory body staff, site and operation inspections, domestic participation of industry and research cooperation.
- (h) promote cooperation between their regulatory body and those of recipient countries with the aim of strengthening such co-operation, as well as the functioning of recipient countries' regulatory bodies.

With respect to points (a)-(e), the instrument should establish complementary provisions providing that as far as reasonably practicable, such actions need to be considered by vendor countries (and industry) prior to offering or during bilateral nuclear cooperation, as appropriate. Interestingly enough, in this context, the supplementary Guidance to the Radioactive Sources Code on the import and export of such sources provides for a similar mechanism (as does the Joint Convention (and Euratom Council Directive 92/3)).

Increased role of international initiatives, organisations and other bodies

Further to the need for a more harmonized international approach, there would also appear to be a need for an increased role for international initiatives, organizations and bodies, such as the IAEA. The IAEA can play an important role in the development of a nuclear power programme and has an important role in leveraging bilateral and international nuclear cooperation but there is also a need for its role to be enhanced.

Although the IAEA has a statutory role to act as an intermediary in securing reactors on behalf of its Member States, this role has rarely been used, vendors and recipient countries opting instead for bilateral cooperation. Although the mandatory application of

IAEA safety standards to most of the world's nuclear activities, as a result, never materialized to the extent initially foreseen, such standards can still become binding, for example, upon request to bilateral operations or to a country's nuclear power programme. Also, IAEA advisory missions and review services, such as the Integrated Regulatory Review Services, are available to provide the means by which to assess activities based on the requirements of IAEA safety standards.

There are also various relevant international, multinational, and bilateral initiatives and activities concerned with infrastructure development and international cooperation. For example, the Multinational Design Evaluation Programme which aims to enhance international cooperation among regulators and has included at its early phase the sharing of design certification information. There are also the important multinational networks: among operators, the World Association of Nuclear Operators, and among regulators, the International Nuclear Regulators Association and the Western European Nuclear Regulators' Association. Further, there are also new initiatives such as the establishment of the national institution, the Agency France Nuclear International, as well as the Japanese proposed International Initiative on 3s-Based Nuclear Energy Infrastructure, and relevant actions of the European Union (EU) such as the Joint Declaration on Priorities for Energy Cooperation between the EU and Jordan. Better utilising the review process of the Convention on Nuclear Safety has also been suggested as being a possible mechanism for sharing steps and actions with potential recipient countries but this process may have limitations. Finally, although it may be useful to consider past examples of vendor countries assisting in building the necessary infrastructure, their relevance in today's environment will need to be assessed.

On a final note, as the status of countries' progress in the development of the nuclear power infrastructure may need evaluating, the IAEA is preparing an assessment tool which follows the approach set out in the IAEA milestones guidance document. The aim is to enable countries to consistently evaluate the infrastructure issues which can facilitate the progress of the programme.

Further consideration

If considered that there is no need for an instrument as proposed in this paper or even that there are no shared responsibilities, then the question arises whether it would be better to opt for turnkey delivery of the nuclear power programme, in particular, the regulatory infrastructure. This question, however, raises many issues and may not fit well with an understanding that countries should possess the capacity to safely and securely manage and use nuclear power on their own while benefiting from various international cooperation mechanisms. At the same time, such an approach does not rule out countries eventually acquiring regulatory and operating experience and may even help to facilitate the expansion of nuclear power, subject of course to suppliers being willing to carry out such a role and being able to secure the needed human resources and provide the key infrastructural aspects, which in any case may be critical challenges.

There are of course a number of possible contracting and ownership arrangements. At the same time, there have been suggested or are being implemented some other possible alternative approaches to the establishment of the nuclear legal framework, such as a country adopting the framework of a vendor or other country, or arranging to contract with a foreign enterprise to advise on the establishment of a regulatory body or even possibly for such a foreign enterprise to “act” as this body. Distinct of any contractual arrangements, such as a turnkey delivery or possible alternative contracting strategies such as Build Own Operate (BOO) and Build Own Operate Transfer (BOOT) which may possibly relieve recipient countries of certain actions, the emphasis needs to remain that such countries are still ultimately responsible for ensuring that they have the ability to make certain the safe and secure regulation of their nuclear power plants. It is against this concept which these options will likely be measured.

Conclusion

A focus on certain responsibilities and taking into consideration the potential cross-border risks leads to the conclusion that the international nuclear community should consider whether there is a need for a more harmonized international approach to the development of nuclear power programmes by the adoption of an international legally non-binding instrument concerning potential recipient and vendor countries.

The basis for such an instrument could be the various nuclear treaties and other international legal instruments and texts. Such an instrument would be consistent with nuclear law’s on-going process of international cooperation culminating in internationalization, as well as harmonization and standardization of national nuclear laws. This will go hand-in-hand with an increased role of international bodies such as the IAEA. At the same time, any outsourcing or turnkey approach would have to be judged against the country’s ability to regulate the safety and security of its nuclear power plant.

To move forward, any future discussion would require full participation of the international nuclear community, in particular, representatives of the key stakeholders - potential recipient and vendor countries and, importantly, the nuclear industry.

The views expressed in this paper are those of the author alone and do not necessarily represent those of the IAEA.