



## REPUTATIONAL RISK CONSIDERATIONS IN THE CROSS-BORDER FINANCING OF NUCLEAR POWER PROJECTS

Paul Murphy, Milbank, Tweed, Hadley & McCloy LLP

For lenders in any major infrastructure project, a fundamental question in the financing decision is: “How am I going to get paid back?” (or, to put it in other words, “When am I going to get paid back?”) Such a basic question should come as no surprise to any reader. However, equally important to major international commercial lending institutions and to export credit agencies (ECAs) is the question “Is this a good project?” While the first question is more empirical in nature, as financial modellers can look at project costs, projected project revenues and corporate balance sheets to reach a conclusion as to the financial viability of a project, the second question is much more subjective in nature and falls within the concept of “reputational risk”.

Specific to the nuclear power industry, this subjective analysis – this determination of whether a prospective nuclear power project (NPP) – is a threshold issue that can determine whether or not the NPP is financeable.

While NPPs are not unique as large-scale infrastructure projects that require the mobilisation of multiple billions of dollars in capital, the civilian nuclear power industry is subject to a heightened level of security, given the unique and sensitive nature of nuclear power, the history of several high-profile nuclear incidents, and the international regimes which form an integral part of the global civilian nuclear power industry. As a result, a robust understanding of the scope of this analysis is critical for project developers, host governments and prospective financiers.

As a preliminary matter, it should be noted that, to date, no NPP has ever been project financed – whereby the lenders, under a non-recourse/limited recourse structure, look solely to the revenues generated by the project company (a special purpose vehicle existing solely for the purpose of owning and operating, either directly or indirectly, the revenue-generating asset) to repay the debt, as well as provide a subordinated equity rate of return.

Despite a lack of project finance history in this sector, it is nonetheless relevant to address NPP financing in the context of the project (as opposed to an assessment of a corporate balance sheet alone), considering that many project financing principles are applied to NPPs and that such principles heavily influence the thinking of prospective financiers to a project. The lenders will apply the same sort of rigour to the prospective NPP that they would have applied to a classic project finance structure, principally because of the inherent sensitivities (whether fair or not) surrounding anything nuclear and the expanded reputational risk analysis that will be applied to an NPP. Thus, in attempting to answer the “good project” question, the rigour of the project

finance diligence process is useful. For NPPs in the context of financing, it is still about the project, even if it is a balance sheet deal or a deal that is backed by a sovereign guarantee.

### REPUTATIONAL RISK

This is a topic that can encompass a number of concepts. It is not unique to the nuclear power industry; however, because of the unique characteristics of (and issues facing) NPPs, the idea of “reputational risk” encompasses a wider range and more significant set of considerations. Of note, both commercial banks and ECAs have specific lending guidelines/policies for NPPs. See:

- BNP Paribas’ nuclear policy at [www.bnpparibas.com/sites/default/files/ckeditor-upload/files/PDF/RSE/CSR-Sector-policy-Nuclear-Power.pdf](http://www.bnpparibas.com/sites/default/files/ckeditor-upload/files/PDF/RSE/CSR-Sector-policy-Nuclear-Power.pdf);
- Societe Generale’s nuclear policy at [www.societegenerale.com/sites/default/files/documents/Document%20RSE/Finance%20responsable/Civil%20nuclear%20power%20policy\\_September%202012.pdf](http://www.societegenerale.com/sites/default/files/documents/Document%20RSE/Finance%20responsable/Civil%20nuclear%20power%20policy_September%202012.pdf); and
- Export-Import Bank of the United States’ nuclear policy at <http://exim.gov/generalbankpolicies/environment/ENVIRONMENTAL-AND-SOCIAL-GUIDELINES.cfm#annexA-3>.

Such guidelines must be satisfied for such institutions to provide financing for a prospective NPP. Broadly speaking, these guidelines and further project diligence undertaken by lending institutions, as supported by their external technical and legal advisors, cover a number of issues, which are discussed below.

### INTERNATIONAL STANDARDS AND PRACTICES

Lenders want to know that the prospective NPP will meet internationally recognised standards. Through guidance issued by international organisations like the International Atomic Energy Agency (IAEA) and the World Association of Nuclear Operators (WANO), a wealth of information is available, reflecting a level of openness and cooperation in the nuclear industry thanks to such supranational (IAEA) and industry (WANO) organisations.

This concept can be covered in financing documentation by the concept of prudent industry practice, an example definition of which is given here:

Prudent industry practice means the standards, practices, methods and procedures consistent with that degree of skill, diligence, judgment, prudence and foresight which would ordinarily be expected from an international skilled and experienced owner, contractor, equipment manufacturer or, as the case may be, operator, engaged in designing, engineering, constructing, developing, commissioning,

repairing, refurbishing, operating, insuring, maintaining and/or decommissioning a nuclear power plant, in each case taking into account and giving appropriate consideration to all applicable standards and guidelines and local conditions.

A similar concept is international best practice, but the use of “best” can create less flexibility and more subjectivity in a particular case. Consequently, a robust prudent industry practice definition should provide financiers with the necessary level of technical scrutiny. Regardless of the word choice, lenders will work with their external advisers in assessing technical aspects of the project to ensure that the NPP complies with this requirement, especially given the sensitivities (both perceived and real) involved in an NPP.

#### INTERNATIONAL AGREEMENTS

Unlike other members of its peer group – whether the power industry or the infrastructure industry more broadly – the nuclear power industry operates within an international treaty framework that covers a number of subject areas, involving commitments at a member state level. Lenders will want to see that the host government for the NPP is a member state for this recognised set of international treaty commitments and, similarly, the lenders will want to make continued compliance with such treaties a condition of the financing, which necessarily creates a certain disconnect between the borrower (the party subject to the financing covenants) and the host government (the party ultimately responsible for compliance under the treaty).

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These international agreements fall into four key categories: safety (of generation); security (of the physical asset); safeguards (ie, non-proliferation); and nuclear liability (to third parties in the event of a nuclear incident). Specifically, the treaties are as follows (for economy of space and familiarity, this note uses the short titles for each of these treaties):

- Safety – Convention on Nuclear Safety; Convention on Early Notification of a Nuclear Accident; Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management;
- Security – Convention on the Physical Protection of Nuclear Mater (and the Amendment to the same); International Convention for the Suppression of Acts of Nuclear Terrorism;

- Safeguards – UN Treaty on Non-Proliferation of Nuclear Weapons; Safeguards Agreement with IAEA (and host country); Additional Protocol with IAEA (and host country); UN Comprehensive Test Ban Treaty; Nuclear Suppliers’ Group Guidelines; and
- Nuclear Liability – Vienna Convention (1997 Amendments); Paris Convention (relevant only to European countries); Brussels Supplementary Convention (relevant only to European countries); Joint Protocol; Convention on Supplementary Compensation (not yet operative).

When comparing nuclear power to its peer group, this structure of international treaty commitments, as a means of holding the nuclear power industry accountable to a set of uniform obligations, is unparalleled. Moreover, the presence of an international body – the IAEA – which provides a pseudo-governance function for the industry, has no comparison with other forms of power generation or infrastructure. This set of rules, coupled with the presence of the IAEA, provides lenders with a benchmark for assessing the quality of potential NPPs and the commitment of the host government to international standards and practices.

#### PUBLIC ACCEPTANCE AND SUSTAINED GOVERNMENT COMMITMENT

As a result of the nuclear incidents at Three Mile Island (1979), Chernobyl (1986) and Fukushima (2011), NPPs are surrounded by a heightened sensitivity by the general public. NPP risks and the safety case are often misunderstood, and project developers and host governments will need to work with the public in order to develop the necessary level of local support for the project. Such stakeholder engagement will be an ongoing activity for the developers, owners and governments involved; however, such engagement will be critical at the earlier stages (eg, pre-feasibility study, site selection, pre-construction) of the project’s life cycle. The negative consequences of public acceptance is underscored by the histories at Shoreham (Long Island, USA), Bataan (Philippines), Zwentendorf (Austria), Kudankulam 1 and 2 (India), the cancellation of Italy’s civilian nuclear power programme following Chernobyl (and the referendum in 2011 that blocked an attempt by Enel to restart the programme) and, most recently, Germany’s actions following the Fukushima disaster.

Government support is critical to the successful development of NPPs. This support manifests in several fashions:

- Financial support, both from the exporting country (as applicable) and the host country (for both the NPP and the overall civilian nuclear programme);
- Consistent and sustained support in the legal and regulatory framework within the host country;
- Legal regulatory support to facilitate the import/export of nuclear technology;
- Overall leadership in the dialogue with the public regarding the need and accountability for nuclear power, and

- Stakeholder engagement across government agencies, applicable non-nuclear regulatory authorities and industry.

Unpredictable government action, as evidenced most recently with Germany's post-Fukushima decision in 2011 to immediately and permanently shut down multiple NPPs that

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were older, and to revoke operating licence extensions for the remaining NPPs that were allowed to remain in operation, creates uncertainty for financing entities who are trying to model NPPs and to determine the levelised cost of electricity and projected revenues over a long operating period. Thus, lenders will have to assess whether the host government has a sustained, long-term commitment to nuclear power.

The host government, through a commitment to transparency, engagement and international practices (in the areas of safety, security, safeguards and nuclear liability), can create the necessary alignment between the public and the nuclear power programme. As noted above, changing public attitudes (United States, Germany, Italy, Japan, Austria, India and the Philippines) can have dramatic impacts on individual projects (United States, India, the Philippines and Austria) and overall nuclear power programmes (Germany, Italy, Japan and Austria).

#### HOST COUNTRY NUCLEAR REGULATORY AUTHORITY

Lenders do not have the ability to monitor the NPP on a constant basis. Through their technical adviser, the lenders can make assessments of the project at various points in time, but the lenders look to the host country nuclear regulatory authority to monitor the NPP during development, construction and operation. The nuclear regulator must be the “adult in the room” during the course of the project, and the lenders will want to have confidence in the regulator to exercise proper oversight and authority, stepping in when the safety case is put in jeopardy.

In order to play this oversight role, the nuclear regulatory authority must be independent within the host government's structure. Further, the key technical personnel that staff the regulator must not only be experienced as nuclear regulators, but also understand the technology that they are to regulate. In addition, the nuclear regulatory authority must have the tools – the authority and resources – to take regulatory action. Finally, despite the independence, the competence and the means, the nuclear regulatory authority must clearly demonstrate

the willingness to act – to take corrective measures – when the situation warrants such intervention.

This combination of factors is critical to the regulatory role. Lenders will need to review the capabilities of the host country's nuclear regulator, making a determination as to whether such regulator serves the requisite “confidence-building measure” for the NPP. Within this evaluation, the lenders will also want to assess predictability, given that regulatory uncertainty – in the form of delays and changes – has been one of the main contributing factors to projects running over budget and over schedule. Thus, while the lenders will place great importance on the regulatory function from a safety perspective, the lenders will also look to see that regulatory risk is properly allocated and mitigated within the overall project development plan. Finally, it should be noted that for newcomer countries this evaluation will be particularly challenging, and the host governments will need to take

additional programmatic measures in terms of regulatory and human resources development, as well as risk allocation with regards to the project, to instill confidence in the regulatory process.

#### SUSTAINABILITY

Sustainability analysis involves both environmental and social considerations. Such matters have risen in importance to the financial community in recent years, and non-governmental organisations have used such topics to attack potential and existing NPPs. Such matters will necessarily bring project life cycle considerations to the lenders' analysis of the project, as lenders will look to see that the NPP planning includes a spent fuel/nuclear waste plan and a decommissioning plan, demonstrating the lenders' desire to look beyond the tenor of the debt. Sustainability, in particular, is a combination of both art and science, where there is often no clear solution that is measurable and quantifiable. Instead, the compliance plan can be qualitative, not quantitative, and thus much more difficult to resolve.

Sustainability considerations can be applied through a number of mechanisms, each a function of the financial institution and/or the location of the project. For example, the Equator Principles (<http://equator-principles.com/>) are a credit risk management framework for determining, assessing and managing environmental and social risk in project finance transactions. Related policies applied to NPPs include:

- The International Finance Corporation's (IFC's) Performance Standards on Social and Environmental Sustainability and the IFC's Environmental Health and Safety Guidelines, which the IFC requires its clients to apply in order to manage environmental and social risks and impacts, as part of the IFC's overall commitment to sustainable development;
- The OECD's Revised Council Recommendations on Common Approaches on the Environment and Officially Supported Export Credits, which are a set of recommended common approaches for OECD member states with respect

to addressing environmental issues relating to exports of capital goods and services and the locations to which these are destined; and

- ECA-specific environmental and social guidelines (see above, regarding the Export-Import Bank of the United States; for the Japan Bank for International Cooperation, see [www.jbic.go.jp/en/efforts/environment](http://www.jbic.go.jp/en/efforts/environment)).

Each of these guidelines will be applied in varying degrees, depending on the types of lending institutions involved in the lender group, but, for planning purposes, project developers will need to evaluate each of these criteria at an early stage of the project – preferably before bid solicitation (or technology selection in a sole source scenario) – to ensure that the NPP is being developed in accordance with such requirements (if international financing is desired), with special consideration being given to where such standards exceed local law requirements.

As an additional matter, for projects being developed in Europe, host governments must also comply with the Espoo and Aarhus Conventions, to the extent they are member states thereto. The Espoo Convention (the Convention on

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Environmental Impact Assessment in a Transboundary Context) and the Aarhus Convention (the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters) are implicated whenever an infrastructure project is being developed in Europe. The Espoo Convention focuses on cross-border environmental impact assessments, while the Aarhus Convention focuses on public participation and access to information, with an emphasis on government accountability, transparency and responsiveness, all within the environmental framework. For example, current NPPs in development in Belarus and Kaliningrad have been challenged by Lithuania as failing to comply with the requirements of the Espoo Convention.

#### NUCLEAR LIABILITY AND INSURANCE

In the event of a nuclear incident at an NPP, where a radiological release occurs from containment, such release has the potential

to cause physical injury or property damage to third parties (in the case of a release on the scale of Chernobyl or Fukushima). As a precursor to this discussion, it is important to understand that an examination of nuclear liability does not involve damage to the asset itself. Such damage to the asset is covered within the contract for construction of the NPP. However, damage to third parties is outside the bounds of the contract and, due to a unique set of conditions, requires special treatment.

Under the nuclear liability conventions listed above, there are several key principles which govern such conventions. For the purpose of reputational risk analysis, three are noteworthy:

- Strict and channelled liability to the licensed nuclear operator (known as “legal channelling” and distinguishable from the US Price-Anderson system of “economic channelling”);
- Equal standing of claims, regardless of nationality, domicile or residence; and
- Mandatory financial coverage of the operator’s liability.

Despite the breadth of such principles, two key concerns remain. First, no international nuclear liability convention has ever been tested in a court of law. Second, such conventions are only

as effective as the membership covered thereunder (in other words, if cross-border damage is suffered in a neighbouring state that is not a fellow treaty member, then legal channelling does not occur and the project participants are exposed to claims in such neighbouring jurisdictions and without the benefit of the limits of liability specified under the applicable treaty; we refer to this risk as “gap risk”).

For lenders, the analysis on nuclear liability is twofold. First, lenders will want to be sure that a means of protection exists for third parties, whereby a path to an assured (and insured) source of recovery are available. Second, from an economic/risk perspective, lenders will want to be sure that the financing is structured so as to address gap risks for the lenders as project participants.

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For the successful financing of an NPP, technological, political (both domestic and international), reputational and economic issues must be dealt with in a holistic manner, whereby the financing entities must be able to answer the question “Is this a good project?” This is a highly subjective question that must incorporate very specific nuclear considerations and risk assessments that go beyond the more basic question of how debt payments will be serviced. Ultimately, the rigour of project finance due diligence is a useful tool in making such determination, even though we have yet to see a project financed NPP.