



# IFNEC FINANCE, REGULATORY, AND ENERGY PLANNING AUTHORITY WORKSHOP *FINAL SUMMARY REPORT*



**Final Report for the IFNEC Executive Committee  
December 2013**

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**On attached CD**

**Also available at [www.ifnec.org](http://www.ifnec.org)**

- D: Moderated Scenario Session Materials
- E: Breakout Session Materials
- F: Presentation to the IFNEC Executive Committee by Nadira Barkatullah
- G: Workshop Presentations
  - G1. Workshop Goals and Objectives by Nadira Barkatullah
  - G2. The Influence of Nuclear Safety and Electricity Market Regulation on the Financing of an NPP by Paul M. Murphy
  - G3. An Update and Overview of the Barakah Nuclear Power Project: ENEC Leadership in Shaping New Nuclear by Tom Samson
  - G4. Introduction to Moderation Scenario Session by Nadira Barkatullah
  - G5. Introduction to Breakout Sessions by Nadira Barkatullah

*Not Available*



***Location of Workshop: Etihad Towers, Abu Dhabi, UAE***

## 1. Executive Summary

The International Framework for Nuclear Energy Cooperation (IFNEC) held the Finance, Regulatory, and Energy Planning Authority Workshop on October 22, 2013, in Abu Dhabi, UAE. Abu Dhabi's Regulation and Supervision Bureau hosted the event at Etihad Towers in Abu Dhabi. The workshop was a follow-up to the 2012 IFNEC Finance Workshop in London, which identified and discussed the challenges countries face in financing nuclear power projects and resulted in three key findings: 1.) *an effective, independent regulatory body is of vital importance*, 2.) *government commitment and support plays an essential role*, and 3.) *there is a distinct need for a sound business/project plan*.

The Abu Dhabi Workshop built on the outcomes of the London Finance Workshop, in particular on the role of the regulatory body and additionally on the role of long-term electricity sale or purchase commitments in the financing of nuclear power projects. The format of the Workshop followed the interactive and experiential model used successfully in London, incorporating moderated expert role-play discussion and breakout group elements.

### 1.1 Objectives and Goals

The IFNEC Finance, Regulatory, Energy Planning Authority Workshop brought together a broad spectrum of approximately 95 stakeholders from IFNEC member countries, including government representatives and members of the nuclear energy and the financial communities. See Appendix A, B, and C for the Workshop Agenda, Speaker Biographies, and Registration List, respectively.

The objective of the Workshop was to address the following two questions:

**Focus 1** How important is the independence of the regulator to attract financing and investment?

**Focus 2** How important are long-term electricity contractual agreements to the financing of a nuclear power project?

To achieve this objective, the Workshop included an interactive, Moderated Scenario Session with a panel of experts that discussed financing issues associated with the development of an embarking nuclear power program. The Moderated Scenario Session was followed by smaller Breakout Sessions involving all attendees that further explored the previously discussed issues in more detail. The following topics were addressed in the Breakout Sessions:

- Nuclear power in the context of a country's energy policy
- International conventions, agreements, etc., and the financing of a nuclear power project (NPP)
- The development of the nuclear power safety, security, and safeguards regulator function in an embarking country
- The role of the electricity market regulator in the financing of a NPP
- Evaluating the financial risk of a nuclear power project

All materials from the Moderated Scenario Session and Breakout Sessions can be found in Appendix D and E, respectively. Both Sessions addressed the two specific focuses of the Workshop. As a result, the Workshop's key findings reflect a deeper understanding of how the nuclear safety regulator and long-term electricity contracts affect nuclear energy financing, and also detail some of the specific challenges and opportunities facing stakeholders interested in nuclear power finance.

The Workshop concluded with a plenary during which breakout session leaders presented synthesized key findings. The Key Findings of the IFNEC Finance, Regulatory, and Energy Planning Authority Workshop were presented to the IFNEC Executive Committee by Dr. Nadira Barkatullah in Abu Dhabi, UAE on October 24, 2013. Dr. Barkatullah's presentation can be found in Appendix F.

## 1.2 Key Findings

The **Moderated Scenario Session** resulted in the following key findings for each of the two Workshop focuses:

- Focus 1** How important is the independence of the regulator to attract financing and investment?
- Competence, independence, and the overall capability of the safety regulator is an important source of risk that financial institutions and rating agencies evaluate
  - Possible means for lenders to evaluate the capability of a newly formed nuclear safety regulator:
    - The IAEA Integrated Nuclear Infrastructure Review can provide insights
    - Interactions with other established safety regulators and peer groups can also provide important information
- Focus 2** How important are long-term electricity contractual agreements to the financing of a nuclear power project?
- Revenue stability is important and long-term commitments can provide such stability in liberalized electricity markets
  - Due to the nature of long-term commitments, lenders can be expected to require some form of sovereign guarantee
  - Phased financing (refinancing) can further assist; the need for a sovereign guarantee of some form is more pertinent to the construction phase

The **Breakout Sessions** resulted in the following key findings:

- Each country should have an energy policy and energy portfolio that makes best use of national resources and diversification is important
- Participation in international conventions is the preferred approach to support financing
- Regulated/guaranteed price for electricity alone is essential but not sufficient to finance an NPP
- An informed approach to risk allocation and a recognition of the policy choice inherent in new nuclear enables the long-term financing of nuclear power projects
- The tangible long-term commitment of the host (and vendor) government is critical
- Policy change risk (in all its forms) should be assumed by the host government
- Government to Government agreements are also essential

## 1.3 Recommendations for Executive Committee Consideration

The following topics were identified that would benefit from further discussion.

### 1. Ownership and Contractual Arrangements

Newcomer countries have a number of project ownership and contractual arrangements to consider, and each alternative has its own unique characteristics that pertain to risk allocation and financing

### 2. Phased Financing

A creative but practical approach to financing of a nuclear power project was suggested that involves refinancing at the end of certain phases of a project at a time when risk factors change significantly. This idea needs to be further explored.

It is suggested that IFNEC consider seeking opportunities to develop a better understanding of these two topics.

## 2. Introduction

### 2.1 Background of Workshop

The International Framework for Nuclear Energy Cooperation (IFNEC) held a Finance, Regulatory, and Energy Planning Authority Workshop on October 22, 2013, in Abu Dhabi, UAE. This Workshop was a follow-up to the IFNEC Finance Workshop held in London in 2012, which identified and discussed the challenges countries face in financing nuclear power projects. The IFNEC Finance Workshop in London resulted in three key findings:

1. **Importance of an effective, independent regulatory body,**
2. **Essential role of government commitment and support, and**
3. **Need for a sound business/project plan.**

The IFNEC Finance, Regulatory, and Energy Planning Authority Workshop built upon the findings of the IFNEC Finance Workshop, in particular on the role of the regulatory body. The Workshop focused on the critical relationship between the competence, effectiveness, transparency, and independence of the nuclear safety regulatory authority in an embarking country, and the country's ability to finance a nuclear power project.



*Workshop participants in discussion*

A second focus was on the role of long-term electricity sale or purchase commitments in the financing of nuclear power projects. Currently, such commitments are an important financing consideration and present challenges for energy planning authorities. The Workshop identified and discussed issues and options associated with pursuing this approach to financing.

The format of the Workshop followed the interactive and experiential model used successfully in London. Experts “role played” during open discussions about financing a hypothetical nuclear project, and all attendees participated in focused breakout sessions following the role-play to explore the key issues in greater detail.

### 3. Workshop Presentations

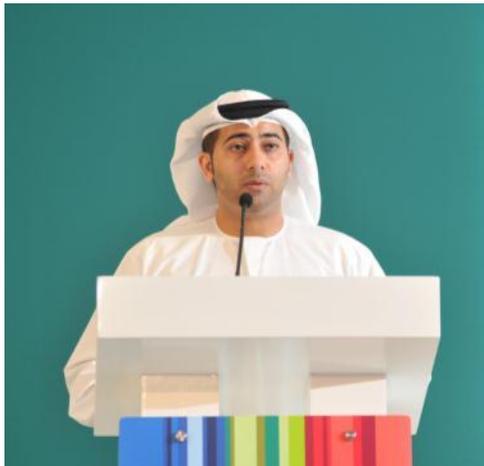
The IFNEC Finance, Regulatory, and Energy Planning Authority Workshop began with a series of welcome and introductory remarks, provided by the following:



***IFNEC Steering Group Chair Welcome  
Edward McGinnis  
IFNEC Steering Group Chair***



***Host Welcome  
Nick Carter  
Director General, Regulation &  
Supervision Bureau of Abu Dhabi***



***Keynote Address  
Ambassador Hamad Al Kaabi  
The UAE Permanent Representative  
to the International Atomic Energy  
Agency (IAEA)***



***Keynote Address  
Alexander Bychkov  
Deputy Director General and Head,  
Department of Nuclear Energy  
International Atomic Energy Agency  
(IAEA)***

Following these remarks, Dr. Nadira Barkatullah, the Workshop moderator, presented the Workshop Goals and Objectives. Next, Paul Murphy of Milbank, Tweed, Hadley & McCloy LLP gave a talk titled “The Influence of Nuclear Safety and Electricity Market Regulation on the Financing of an NPP.” Followed by Mr. Murphy, Tom Samson, Chief Operating Officer of Emirates Nuclear Energy Corporation (ENEC), presented on ENEC’s experience with the Barakah project. His talk was titled, “An Update and Overview of the Barakah Nuclear Power Project: ENEC Leadership in Shaping New Nuclear.” All available Workshop presentations are found in Appendix G.

## 4. Moderated Scenario Session

Dr. Nadira Barkatullah introduced the Moderated Scenario Session with an introductory and informative presentation (Appendix G).

### 4.1 Session Overview and Format

The Moderated Scenario Session comprised of an expert panel of key stakeholders who role played through a hypothetical scenario that involved an embarking nuclear power program. Each key stakeholder was represented by an expert in his or her respective discipline but none of the stakeholders' views offered during the role playing are attributed to them or to their employer. Consistent with this format, stakeholders were referred to by function: vendor, banker, legal consultant, etc. throughout the scenario exercise discussions.

#### Key Stakeholders Represented

- Utility
- Technology Vendor K
- Technology Vendor H
- Technical Consultant
- Legal Consultant
- Export Credit Agency
- Banker
- Electricity Market Consultant
- Rating Agency
- Nuclear Safety Regulator
- Electricity Market Regulator

The Moderated Scenario Session focused on two objectives, each with sub-objectives to lead the discussion and address specific issues related to the financing of a nuclear power project.

The scenario exercise framework provided a platform for multiple topics on the challenges and opportunities of nuclear financing to be addressed and provided all of the key stakeholders an opportunity to share their thoughts, perspectives, and opinions.

The objectives of discussion were as follows:

**Objective 1: The importance of the nuclear safety regulator in ensuring that the country's first nuclear power project is designed, constructed, and operated safely and securely**

- 1a: Develop an understanding of the importance that the competence, effectiveness, transparency, and independence of the safety and security regulator plays in the financing of a nuclear power project
- 1b: Identify how the financial community determines whether the regulatory function is sufficiently developed to secure the confidence needed to underpin financing

**Objective 2: The importance of long-term electricity contractual agreements in financing a nuclear power project**

- 2a: Identify the potential contribution that long-term power purchase agreements make to its overall financing plan
- 2b: Clarify the role of the government in such long-term commitments
- 2c: Identify the important considerations that will need to be a part of any decision to pursue long-term power purchase agreements

The interactive and unscripted scenario exercises each featured discussion on the hypothetical case. Interaction was encouraged among the experts on the panels as well as from the moderator. Each interaction featured detailed insights from the role-playing expert stakeholders, who all drew upon their experience in their respective fields. Prior to the Workshop, a detailed scenario description was provided to the experts so that each had the opportunity to review the hypothetical situation and prepare for the interactive discussions.

## 4.2 Objective 1 Key Findings

One of the key findings of the 2012 IFNEC Finance Workshop in London was the importance of an effective, independent regulatory body. The Workshop in Abu Dhabi expanded upon this finding, by designating the focus of Objective 1 of the Moderated Scenario Session:

### ***The relationship between the nuclear safety regulator and the financing of a nuclear power project***

#### 4.2.1 Objective 1a

Objective 1a focused on developing an understanding of the importance that the competence, effectiveness, transparency and independence of the safety and security regulator play in the financing of a nuclear power project. This discussion resulted in the following key finding:

- **The competence, independence, and overall capability of the safety regulator is evaluated as a source of risk by financial institutions and rating agencies when reviewing nuclear power projects.**

The ultimate responsibility for ensuring the safety of a nuclear power plant lies with the operator. However, operators depend on the existence of a strong, independent safety regulator to secure confidence and financing for nuclear projects.

The status of the safety regulator plays a role in financing. Specifically, the independence of the regulator is important and evaluated as a source of risk to financial institutions and rating agencies. Banks have sector policies that, in some cases, include a policy for nuclear projects. They conduct a thorough analysis of the overall context of a project before investment decisions are made. One of the important elements of this analysis is reviewing the readiness of the regulatory authority. Financial institutions need to be convinced safety regulators are effectively independent and strong.

An independent regulator was defined as a regulator that maintains functional separation from other entities involved in the promotion of the nuclear project, while also possessing the authority to act when needed to promote safety, regardless of the consequences to the project.

#### 4.2.2 Objective 1b

Objective 1b focused on identifying how the financial community determines whether the regulatory function is sufficiently developed to secure the confidence needed to underpin financing. This discussion resulted in the following key finding:

- **Readiness of the regulatory authority can be evaluated based on many factors.**

There are various ways to evaluate the competence, effectiveness, transparency and independence of the safety and security regulator. Several points were discussed in detail and are listed below.

##### 1. Strength of the regulatory framework

To mitigate risk, vendors want an established regulatory process and framework that provide clear and unambiguous requirements. Since not all regulatory processes can be tested in newcomer countries, vendors might factor the associated risk into their price as a premium. However, despite the inherent risk associated with unproven regulatory frameworks, regulators can take steps to develop strong frameworks and minimize such risks.

It is expected that outside regulators will provide assistance to new regulatory bodies in the development of regulatory capability. These interactions will strengthen the new framework by building upon best practices of experienced regulators.

Strong regulatory frameworks can help newcomer countries and/or new nuclear programs obtain high credit-worthiness ratings. A rating is an internationally accepted indicator that has the same meaning for all investors in all countries. High ratings can be underpinned when regulatory frameworks are well established and based on best practices. They are indicators that can secure investor confidence and financing.

## 2. Interactions between the regulatory authority and other established safety regulators and peer groups

The development of the regulator is a dynamic process that can involve input from the vendor country regulatory authority and interactions with other regulatory entities in the government structure. The relationship and coordination between the new regulator and these other entities must be clearly established in various regulations.

It is also critical that there is institutional buy-in by the entire suite of governmental regulatory authorities. Vision, leadership, and cooperation of all key stakeholders should be clearly established to help give assurance to investors and financiers.

## 3. Results of the IAEA Integrated Nuclear Infrastructure Review

Governments request Integrated Nuclear Infrastructure Review (INIR) and Integrated Regulatory Review Services (IRRS) available from the IAEA. They provide a comprehensive review of the authority, function, and capability of the regulator and are available as reports that can be made public by the government being reviewed. These reports can provide financing institutions with key indicator information about the structure and functionality of the nuclear safety regulator. Governments receiving IRRS or INIR reviews are strongly encouraged to make the findings public.

### 4.3 Objective 2 Key Findings

Another key finding of the IFNEC Finance, Workshop in London was the need for a sound business/project plan. The Workshop in Abu Dhabi expanded upon this finding, by designating Objective 2 of the Moderated Scenario Session on finding ways to explore alternative financing options. Specifically, Objective 2 focused on:

#### ***The importance of long-term electricity contractual agreements to financing nuclear power projects***

Over the life of a nuclear project, revenue is required to cover the costs of construction, operation, debt service, etc. Because of the large investment required and extended tenor of nuclear projects, the financial security of such projects comes from two sources: the need for customers to buy electricity and the willingness of the government to provide support if necessary.

Due to the nature of an electricity market, revenues from the sale of electricity change over time with changes in demand and technology. Spot prices cannot be relied upon to provide the revenue required. A financing arrangement that does not rely solely on spot prices is needed to provide certainty of revenue.

Export credit agencies and banks provide essential sources of financing for nuclear power projects. To qualify for financing from either of these institutions, projects must address the critical requirement of revenue stability, which may be achieved through long-term financing arrangements.



*Nadira Barkatullah moderating the expert panel scenario discussion*

#### 4.3.1 Objective 2a

Objective 2a focused on identifying the potential contribution that long-term power purchase agreements make to its overall financing plan. This discussion resulted in the following key findings:

- **Long-term commitments can provide a basis for revenue stability**

Nuclear projects have not historically been able to rely only on revenues from the sale of electricity into an electricity market, and supplementary guarantees are needed because of the large costs involved. Up-front project financing has proven to be difficult, if not impossible. Price and volume risk associated with nuclear power projects can be mitigated through the use of long-term commitments that provide assurances of cash flow.

Investors have expressed that they prefer rating stability. Risk associated with these instabilities can be addressed by engaging in long-term commitments that stabilize key inputs. Export Credit Agencies require revenues to be stable, with stability provided by such mechanisms as Contracts for Difference (CFDs). The credit worthiness of the off-taker (i.e. consumer of the electric or heat by-product) is important and can be a paramount concern.

- **Long-term commitments are not necessarily stable in all circumstances, especially when political risk is involved**

Oftentimes such long-term commitments involve guarantees by the government and therefore may have elements of political risk. Establishing price structures can be politically vulnerable if they become too expensive over time. This gives rise to concerns about the future stability of long-term commitments.

From the perspective of the electricity market regulator, the creation of long-term commitments can require changes to market design and rules.

### 4.3.2 Objective 2b

Objective 2b focused on clarifying the role of the government in such long-term commitments. This discussion resulted in the following key findings:

- **Governments have a broad range of options for assuring stability of revenues, including financial guarantees and legal frameworks**

The sale of electricity into an electricity market is often not enough to support long-term investment. The government guarantee should be considered a last resort, but without other adequate support mechanisms, it is typically required for the long-term investments needed for a nuclear project.

Nuclear projects require sources of credit, and sovereign guarantees are likely to be needed if the project cannot be supported by the utility itself. However, sovereign guarantees are expensive.

Governments that decide to support long-term commitments must realize that they will need to be respected in the future, even if the situation changes. Therefore, supporting long-term commitments can be a difficult decision and will be more sustainable if there is a demonstrated benefit. It should be recognized that political support can wane. If explicit guarantees are irrevocable by the government, projects bonds can be aligned with sovereign guarantees. However, this approach may result in a changed rating of the sovereign.

Governments have a broad range of options in promoting stability of revenues that go beyond financial guarantees. For example, they can adopt legal frameworks that provide stability through approaches such as creating special legal statuses as another form of credit enhancement.

- **Long-term commitments to support the financing of a project can be used by the government to reflect the benefits of nuclear power**

The sovereign receives clear benefits from a nuclear project that can provide the rationale for the decision to provide guarantees. These benefits include jobs, supply diversification, reliability of electric power, industrial expansion, etc. It is important to estimate the magnitude of these benefits to support the decision making process.

Government support of long-term commitments also can reflect other benefits associated with nuclear power, such as the reliability of nuclear base-load electricity supply and the associated reduction of greenhouse gas emissions. It is important that governments confirm a positive cost-benefit tradeoff when providing support to nuclear projects to ensure political stability.

### 4.3.3 Objective 2c

Objective 2c focused on identifying the important considerations that need to be a part of any decision to pursue long-term power purchase agreements. This discussion resulted in the following key findings:

- **Third party nuclear liabilities have moved financing structures away from project financing and towards guarantees**

Lender liability has become the driving factor in how financing arrangements are done. Because of the large potential liabilities associated with nuclear projects, lending institutions are wary of being exposed to third party nuclear liabilities. This moves the financing away from project financing toward other structures such as sovereign guarantees, corporate guarantees, or bank guarantees.

The cost of financing from Export Credit Agencies is relatively low with government guarantees. To secure that financing alternative, state owned bank guarantees can be considered in addition to sovereign guarantees.



*Audience interaction during the Moderated Scenario Session*

- **Refinancing can improve prospects**

To enhance the prospects of financing, a project can be split into an engineering and procurement phase, supported by the supplier country and a construction phase, supported by government guarantees, with the guarantees falling away during operation.

One approach to refinancing involves having different lenders allocating financing costs according to risk. For example, the host country might finance the early engineering and procurement costs, the vendor or export credit agency might finance the high risk construction costs, and conventional lenders might finance the costs once the project begins operation when the risks are more clearly understood. This approach would not take the place of the need for some form of sovereign guarantee, but it could make such guarantees easier to provide.

## 5. Breakout Sessions

Dr. Nadira Barkatullah introduced the Breakout Session with an introductory and informative presentation (Appendix G).

### 5.1 Session Overview

The objective of the Breakout Sessions was to increase understanding and insights into specific topics explored in the Moderated Scenario Session. In addition, the Sessions aimed to provide participants with the opportunity to get involved in the outcomes of the Workshop. Breakout Session leaders ultimately were to present their key findings in a concluding plenary.

### 5.2 Session Format

Workshop participants were divided into five groups that met concurrently for 75 minutes in facilitated discussions.



*Breakout Session set-up, designed to encourage open dialogue  
Two co-leads and a rapporteur sit in front of a U-shaped forum of participants*

### 5.3 Key Findings

The Rapporteur of each Breakout Session was responsible for recording the findings of the Session and compiling a list of key findings. After the conclusion of the Breakout Sessions, all participants gathered and heard the three findings of each Session. These findings were reviewed and refined by the Session participants.

### 5.3.1 Breakout Session 1

The first Breakout Session was co-led by Kamal Araj and Zbigniew Kubacki. The Rapporteur was Daniel Grosvenor. This Session addressed nuclear power in the context of a country's energy policy, specifically focusing on the question:

***Will nuclear power lead to an increased level of energy security and energy independence?***

There are various issues associated with this topic that guided the discussion. The summary of issues was included in the Breakout Session 1 Description, found in Appendix E. Breakout Session 1 resulted in the following key findings:

- **Nuclear can play a role in any energy strategy or portfolio**

Different countries have different challenges to address, in terms of energy security and energy independence. Although there may be different challenges, nuclear can be part of any energy strategy or portfolio.

- **Energy policy of 3<sup>rd</sup> party countries is important**

For countries considering incorporating nuclear into their energy portfolio, the energy policy of 3<sup>rd</sup> party countries should be considered, especially if these countries are interconnected. However, regional co-operation cannot be guaranteed, and international relations should be taken into account. Energy policy cannot ignore wider policy implications such as international trade.

- **A country's energy policy and portfolio should be sustainable**



***Breakout Session 1 Co-Leads and Rapporteur  
From left: Kamal Araj, Zbigniew Kubacki, Daniel Grosvenor***

Each country should have an energy policy and energy portfolio that makes best use of national resources and considers the sustainability of its energy sector and broader economy. To achieve energy independence, a country cannot be dependent on any individual country, resource, or energy type.

Diversification is important and needs to be considered carefully. Issues that should be considered before embarking on an energy project include the socio-economic impact, time horizon, and speed of implementation. None of the external and societal benefits of nuclear power are properly priced within energy markets, making it almost impossible for market mechanisms to deliver nuclear power.

Nuclear energy is a long-term solution and the impact needs to be considered carefully. Private sector organizations might struggle to address this

appropriately. However, all energy forms have their own issues that need to be addressed and international obligations are important in addressing these challenges.

### 5.3.2 Breakout Session 2

The second Breakout Session was co-led by Yury Sokolov and Al Burkart. The Rapporteur was John Mathieson. This Session addressed international nuclear and related conventions, agreements, etc., and their relationship to the financing of a nuclear power project. It specifically focused on the questions:

***What is the link between the presence or absence of treaties, conventions, and international agreements concluded by a newcomer, and the prospects for financing the NPP? In particular, how does demonstrating the ability of an independent regulator to implement/enforce the requirements of these conventions and agreements play into the financial risk assessment?***

There are various issues associated with this topic that guided the discussion. The summary of issues was included in the Breakout Session 2 Description, found in Appendix E. Breakout Session 2 resulted in the following key findings:

- **Nuclear conventions and treaties all represent important principles**

At their core, nuclear treaties, conventions, and international agreements represent important principles to support the peaceful uses of nuclear energy, covering Nuclear Liability, Nuclear Safety, Security, Safeguards, Radioactive Waste and Spent Fuel Management Safety, and Emergency Preparedness. Whilst being a signatory to these is an asset in itself, and would represent a preferred approach to support financing of nuclear projects, maintaining the spirit of the principles should also be taken into consideration in the financing decision if a country has not yet signed up to an agreement.

- **Participation in international conventions is the preferred approach to support financing**

Potential lenders might have a checklist of conventions to which countries must be signatories before receiving financing for nuclear power projects. However, if countries are not signatories to all conventions, lenders should inquire about actions being taken by these countries to implement the principles associated with these conventions rather than summarily dismissing them. Nonetheless, participation in international conventions is the preferred approach to support financing.

- **A multi-layer approach to financing might result in a better deal**

A nuclear power project may be implemented through treaties, primary legislation, regulation, or contract clauses. Countries can consider more than one for a more holistic approach. The degree to which a multi-layered approach is taken may be beneficial to such countries and give rise to a better finance deal.

### 5.3.3 Breakout Session 3

The third Breakout Session was co-led by Ian Grant and John Kalish. The Rapporteur was Claire Harvey. This Session addressed the development of the nuclear power safety, security, and safeguards regulator function in an embarking country. It specifically focused on the question:

***How can stakeholders obtain the needed confidence that the new regulatory body is sufficiently developed and possesses the requisite competence, effectiveness, and independence?***

There are various issues associated with this topic that guided the discussion. The summary of issues was included in the Breakout Session 3 Description, found in Appendix E. Breakout Session 3 resulted in the following key findings:

- **Compliance of the regulatory body can be ensured by both domestic and international means**

There are several ways, both domestic and international, to ensure a new regulatory body's compliance with international legal obligations and guidelines. Compliance can be established through ratification,

accession to the relevant international agreements, and establishment of domestic legislation. Independent reviews by international (IAEA/INIR, IRRS and IPPAS) and domestic auditors and publication of outcomes are important to ensure transparency while recognizing that trust needs to be maintained in the review process.

- **Annual reports can indicate the status of the regulatory body**

For a country embarking on a nuclear program, it is important to demonstrate that the regulator is independent, technically competent, has access to appropriate scientific infrastructure and resources, and can continue to maintain and develop expertise. These characteristics are critical to ensure long-term regulatory effectiveness and efficiency, including through mechanisms such as succession planning. The regulator's status in terms of demonstrating these characteristics can be achieved through publication of annual reports by the regulator. These publications can report against key performance indicators, including regulatory obligations and the status of the regulatory body and its management.

- **Interaction between experienced and new regulators can indicate development of regulatory body**

Interactions between the regulatory body in the vendor country of origin and the new regulator allow the new regulator to assume ownership of the existing nuclear technology and benefit from previous know-how in licensing. The conduct of these interactions can reveal the degree of development of the new regulator in terms of its competence, effectiveness, and independence.

#### 5.3.4 Breakout Session 4

The fourth Breakout Session was co-led by Dominic Holt and Paul Murphy. The Rapporteur was Mark Muldowney. This Session addressed the role of the electricity market regulator in the financing of a nuclear power project. It specifically focused on the question:

***Is a regulated/guaranteed price for electricity alone sufficient to finance an NPP?***

There are various issues associated with this topic that guided the discussion. The summary of issues was included in the Breakout Session 4 Description, found in Appendix E. Breakout Session 4 resulted in the following key findings:

- **Guaranteed price structures are essential but not sufficient**

To finance a nuclear project, guaranteed price structures are essential but not by themselves sufficient. The must-run nature of a nuclear plant is a fundamental basis for this regulatory structure (e.g., dispatch priority). However, in addition there needs to be an alignment of incentives to encourage efficiency, while also taking into account the importance of safety. It is important to avoid a transfer of risk that could undermine the economics of the project.

- **The longevity of assets needs to be considered**

The regulator and the host government (e.g., the NEPIO) must take full account of implications of the longevity of the asset. Specifically, the term of support must be at least as long as the debt term and potentially as long as the asset life. Host governments need to be prepared to use legal and policy commitments to protect investors and lenders against future developments, including their own policies, which could undermine the original investment case.

- **Refinancing should be an important part of regulatory and legislative policy**

Opportunities for the future involvement of additional sources of debt and equity that may not be available during construction should be considered an important part of regulatory and legislative policy, particularly

where several nuclear plants are planned. There should be an equitable sharing of the benefits of refinancing between investors and consumers.

### 5.3.5 Breakout Session 5

The fifth Breakout Session was co-led by Maelia Dufour and Charlotte Bruyer. The Rapporteur was Gareth Price. This Session evaluated the financial risk of a nuclear power plant. It specifically focused on the question:

***For export credit agencies and banks, what are the issues associated with the long-term financing required for nuclear power projects?***

There are various issues associated with this topic that guided the discussion. The summary of issues was included in the Breakout Session 5 Description, found in Appendix E. Breakout Session 5 resulted in the following key findings:

- **Affordability is key**

Debt and third party financial equity can assist a host government in financing nuclear projects, but its participation must be enabled by recognizing that a “lender’s only upside is to be repaid.” In other words, ultimately affordability is a significant factor governments must consider before successfully embarking on a nuclear program.

- **There is no “right way” to finance a nuclear project**

There are various financing options available, and no one approach is recognized as the best option. In all cases, an informed approach to risk allocation is important. Ultimately, the policy choice associated with embarking on a new nuclear program is what enables the long-term financing of nuclear power projects.

- **The commitment of the host government is critical**

When embarking on a new nuclear program, the tangible long-term commitment of the host government and vendor is critical. Government-to-government agreements are also essential. Policy change risk in all its forms should be assumed by the host government.



***Concluding Plenary to finalize key results of the Breakout Sessions  
From left: John Mathieson, Ian Grant, Mark Muldowney, Gareth Price, Maelia Dufour, Charlotte Bruyer***

## 6. Acknowledgments

The IFNEC Finance, Regulatory, and Energy Planning Authority Workshop was the result of significant creativity and contributions from many individuals and organizations. A broad spectrum of stakeholders were brought together from the IFNEC countries as well as the nuclear energy and financial communities to gain a better understanding of each other's roles and approaches to nuclear financing. Every Workshop participant contributed his/her expertise, professional insights, and recommendations to the discussion.

The IFNEC Steering Group formed a **Workshop Planning Committee**, whose members supported all stages of Workshop development from developing the agenda to contributing to the scenario details and breakout topic identification. The Planning Committee was also key to ensuring that diverse experts were represented at the Workshop.

Members of the Workshop Planning Committee, listed alphabetically, included:

- Nouf Al Boushelaibi, UAE, Regulation and Supervision Bureau
- Nadira Barkatullah, UAE, Abu Dhabi's Regulation and Supervision Bureau, and Moderator of the Workshop
- Alex Burkart, USA, IFNEC Infrastructure Development Working Group Co-Chair
- Jeff Dehn, USA, IFNEC Secretariat
- Rob Floyd, Australia, Australian Safeguards and Non-Proliferation Office
- Janet Gorn, USA, Department of State
- John Gross, USA, Department of Energy
- Jo Guthrie, UK, Department of Energy and Climate Change
- Cheryl Moss Herman, USA, Department of Energy
- Yves Kaluzny, France, IFNEC Reliable Nuclear Fuel Services Working Group Co-Chair
- John Mathieson, UK, IFNEC Infrastructure Development Working Group Co-Chair
- Steven Mayo, USA, Export-Import Bank
- Ed McGinnis, USA, IFNEC Steering Group Chair
- Robert Mussler, USA, Booz Allen Hamilton
- April Pope, USA, Department of Energy
- Jack Ramsey, USA, Nuclear Regulatory Commission
- Michelle Scott, USA, Department of Commerce

This Workshop would not have been successful without the diverse array of presenters, panelists, and breakout leaders lending us their expertise and enthusiasm during the Workshop. A special acknowledgement is due to the Workshop moderator, Nadira Barkatullah, for encouraging and enabling the captivating scenario discussions.

Additionally, IFNEC offers its sincerest gratitude to the Government of the United Arab Emirates, and Government of Abu Dhabi, and in particular Abu Dhabi's Regulation and Supervision Bureau and the Director General, Mr. Nick Carter, for hosting the Workshop.

## Appendix A: Workshop Agenda



مكتب التنظيم و الرقابة  
Regulation & Supervision Bureau

The International Framework  
for Nuclear Energy Cooperation



### IFNEC Finance, Regulatory, Energy Planning Authority Workshop October 22, 2013 **AGENDA**

8:00-8:45      **Registration and Coffee**

#### **Workshop Welcome and Introduction**

*Etihad Towers Ballroom*

9:00-10:00      **IFNEC Steering Group Chair Welcome**

*Edward McGinnis*

*IFNEC Steering Group Chair*

#### **Host Welcome**

*Nick Carter*

*Director General, Regulation & Supervision Bureau of Abu Dhabi*

#### **Keynote Address**

*Ambassador Hamad Al Kaabi*

*The UAE Permanent Representative to the International Atomic Energy Agency (IAEA)*

#### **Keynote Address**

*Alexander Bychkov*

*Deputy Director General and Head, Department of Nuclear Energy*

*International Atomic Energy Agency (IAEA)*

10:00-10:30      **Workshop Goals and Objectives**

*Dr. Nadira Barkatullah*

*Director of Economic Regulation, Regulation & Supervision Bureau, Abu Dhabi and Workshop Moderator*

#### **“The Influence of Nuclear Safety and Electricity Market Regulation on the Financing of an NPP”**

*Paul Murphy*

*Milbank, Tweed, Hadley & McCloy LLP*

10:30-10:45      **ENEC Experience with the Barakah Project- “An Update and Overview of the Barakah Nuclear Power Project - ENEC Leadership in Shaping New Nuclear”**

*Tom Samson*

*Chief Operating Officer, Emirates Nuclear Energy Corporation (ENEC)*

**10:45-11:00 Break**

**11:00-11:15 Scenario Introduction: Utility Advocate Presentation**

A utility “expert role-player” proponent will provide a brief overview and answer any questions regarding the private utility’s nuclear power project advocacy as presented in the hypothetical scenario that will be discussed in the following session.

*Axel Bernadac*

*Electricite de France (EDF)*

**Expert Panel Discussion**

**11:15-12:45 Interactive Scenario Discussion: “Financing Issues Associated with the Development of an Embarking Nuclear Power Program”**

*Dr. Nadira Barkatullah, Moderator*

Expert panelists representing key stakeholders will “role play” and discuss a hypothetical scenario to address key financing issues associated with the development of a civil nuclear power program in an embarking country. The discussion will focus on two issues: (1) the critical relationships between the competence, effectiveness, transparency, and independence of the nuclear safety regulatory and the country’s ability to finance a nuclear power project; and (2) the role of long-term electricity purchase agreements in the financing of a nuclear power project. The moderator will facilitate an interactive discussion where stakeholders will provide and explain their perspectives on navigating the financing challenges presented by these two issues.

*Panelists include experts representing key stakeholder categories; the views expressed will be those of the stakeholder category but not attributed to the individual or his/her organization.*

Utility  
Axel Bernadac  
EDF

Energy Planning Authority  
The Honorable Hanna Trojanowska  
Ministry of Economy, Poland

Regulator  
Ian Grant  
Federal Authority for Nuclear Regulation

Electric Market Regulator  
Aftab Raza  
Abu Dhabi Regulation & Supervision Bureau

Technology Vendor Candidate  
Michael Kirst  
Westinghouse Electric Company

Technology Vendor Candidate  
Shinichi Hayafune  
Toshiba

Export Credit Agency  
John Schuster  
U.S. Export-Import Bank

Rating Agency  
Martin Kohlhase  
Moody’s Middle East Ltd.

Bank  
Xavier Rollat  
Consultant

Legal Consultant  
George Borovas  
Pillsbury Winthrop Shaw Pittman LLP

Market Consultant  
Edward Kee  
NERA Economic Consulting

Technical Consultant  
David Haboubi  
Atkins Global

12:45 – 1:45 **Luncheon, hosted by:**  
*Etihad Towers Ballroom*

### **Break-Out Discussion Groups**

1:45-1:55 **Introduction to Breakout Discussion – Format and Objectives**  
*Dr. Nadira Barkatullah, Moderator*

1:55-2:00 **Proceed to Breakout Rooms**  
*Group and room assignments can be found on participant badges*

2:00 – 3:15 **Break-Out Discussion Sessions**  
Breakout Leaders will facilitate small group discussions to review lessons learned from the scenario exercise and further develop one specific topic of interest (topics listed below). Groups will identify three top findings or conclusions that will be presented to the Expert Panel and Workshop Attendees in the Concluding Plenary that follows.

#### ***Topics:***

- **Nuclear power in the context of a country’s energy policy – *Sowwah Room***  
*Breakout Leaders: Kamal Aradj, Jordan Atomic Energy Commission  
Zbigniew Kubacki, Polish Ministry of Economy*  
*Rapporteur:: Daniel Grosvenor, Deloitte*
- **International conventions and agreements and nuclear power financing – *Yas Room***  
*Breakout Leaders: Al Burkart, U.S. Department of State  
Yury Sokolov, JSC “Rosatom Overseas”*  
*Rapporteur:: John Mathieson, Nuclear Decommissioning Authority, UK*
- **Development of the nuclear power safety, security, and safeguards regulator function in an embarking country – *Nurai Room***  
*Breakout Leaders: Ian Grant, Federal Authority for Nuclear Regulation, UAE  
John Kalish, Australian Safeguards and Non-proliferation Office*  
*Rapporteur:: Claire Harvey, Prospect Law*
- **Role of the electricity market regulator in the financing of a nuclear power project – *Al Reem Room***  
*Breakout Leaders: Dominic Holt, KPMG  
Paul Murphy, Milbank, Tweed, Hadley & McCloy LLP*  
*Rapporteur:: Mark Muldowney, BNP Paribas*

- **Evaluating the financial risk of a nuclear power project – *Mariah Room***

*Breakout Leaders:* Charlotte Bruyer, HSBC Bank Middle East

Maëlia Dufour, Coface

*Rapporteur::* Gareth Price, Allen & Overy

**3:15 – 3:35 Break/Return to Plenary**

**CONCLUDING PLENARY: Breakout Discussion Conclusions and Workshop Findings**

**3:35 – 4:35 Breakout Session Reports and Expert Panel Discussion**

Breakout Session Rapporteurs, accompanied by Breakout Session Leaders, will summarize the observations and comments from their discussion topics and present the most important conclusions to the Expert Panel for discussion.

**4:35 – 5:30 Workshop Findings**

The Moderator will lead discussions that combine Workshop findings for presentation to the IFNEC Executive Committee. The findings will build upon scenario discussions, breakout session reports, and real-time input from the Expert Panel and Workshop attendees.

**5:30 Concluding Remarks and Closing of Workshop**

*Edward McGinnis*

*IFNEC Steering Group Chair*

**7:30 Reception and Dinner**

*Etihad Towers Reception Area*

*Please return to the Etihad Towers reception area for a reception to begin at 7:30pm. The dinner, to be held in the same location will begin around 8pm. Suggested dress is Business Attire.*

*Please return to the Etihad Towers reception area for a reception to begin at 7:30pm. The dinner, to be held in the same location will begin around 8pm. Suggested dress is Business Attire.*

## Appendix B: Speaker Biographies



### **Ambassador Hamad AL KAABI**

*Permanent Representative of the UAE to the International Atomic Energy Agency, Special Representative for International Nuclear Cooperation*

H.E. Al Kaabi has helped lead the UAE assessment for developing a peaceful nuclear energy program since 2006, and has served as a primary interlocutor on matters relating to nuclear energy and nonproliferation between the UAE Government and international organizations and governments, including the International Atomic Energy Agency (IAEA).

Ambassador Al Kaabi is currently the UAE's permanent representative to the IAEA and was named Special Representative for International Nuclear Cooperation in 2008.

The Ambassador is personally involved in all key milestones of the nuclear energy assessment, drafting and release of the Policy of the United Arab Emirates on the Evaluation and Potential Development of Peaceful Nuclear Energy, and Bilateral Agreements related to cooperation in the peaceful uses of nuclear energy between the UAE and various nuclear supplier nations.

Ambassador Al Kaabi was trained as a nuclear engineer, earning his bachelor's and master's degrees from Purdue University in Indiana (USA). His graduate work focused on nuclear safety.



### **Prof. Kamal J. ARAJ**

*Vice Chairman & Commissioner for Nuclear Power Reactors, Jordan Atomic Energy Commission*

Dr. Kamal Araj is responsible for all international cooperation agreements and activities and serves as a liaison to the IAEA and other international organizations. He is also the project manager for the Jordan Nuclear Power Plant.

Prior to his current role, Dr Araj served as the Government Advisor for Nuclear Energy and as the scientific advisor for King Abdullah Development Bureau (KADDB).

Prior to 2006, Dr. Araj worked as a senior policy and planning advisor at the IAEA in Vienna for five years. Prior to that, Dr. Araj was an international consultant in energy and advanced technology in Washington, DC. His clients included: RCG/Hagler, Bailly, Inc.; XERAD, Inc.; the BDM Corporation; Argonne National Laboratory; and the U.S. ACDA.

Dr. Araj held academic and research appointments at the Massachusetts Institute of Technology (MIT), Harvard University, Brookhaven National Laboratory and the U.S. National Academy of Sciences.

Dr. Araj received both his B.S. in physics and B.S.E. in nuclear engineering from the University of Michigan, Ann Arbor. He obtained his Ph.D. at MIT in nuclear engineering with a minor in energy technology and policy.



**Dr. Nadira BARKATULLAH**

*Director of Economic Regulation, Regulation & Supervision Bureau, Abu Dhabi*

Dr. Nadira Barkatullah is a specialist economist in infrastructure financing and regulated utility industries. Dr. Barkatullah has more than fifteen years of experience in applying economic concept and conducting quantitative analysis while working on projects around the globe. The experience includes advising both governments and major organizations. While at the IAEA, she worked on financing and investment analysis of capital intensive infrastructure projects as well as energy and sustainable development issues. Dr. Barkatullah also represented the IAEA at various expert advisory committees, like the OECD Working Party on Nuclear Energy Economics.

Prior to joining the IAEA, Dr. Barkatullah was the Divisional Director of London Economics London-based international utilities practice and London Economics' associate practice for the Asia Pacific region. In this capacity she led local and international projects in the infrastructure industries in relation to various issues including cost of capital analysis, evaluations of various funding options, tariff design, market reform, efficiency analysis, market performance, third party access, competition, and liberalization.

Dr. Barkatullah has several years of experience as an economist working as Senior Manager for KPMG Australia and ACIL Consulting, as well as for Sydney Water and Energy Australia.

Dr. Nadira Barkatullah has a Masters in Economics from Carnegie Mellon University, USA and a PhD in Economics from the University of Sydney, Australia.



**Mr. George BOROVAS**

*Partner, Head of International Nuclear, Pillsbury Winthrop Shaw Pittman LLP*

Mr. George Borovas concentrates his practice on the development and financing of new nuclear power plants. He has recent experience advising governments on the development of civilian nuclear power programs and the construction of new nuclear power plants. He regularly negotiates contracts and advises clients on the establishment of global joint ventures relating to the nuclear industry as well as on transactions for the trading of fuel, equipment, and services for nuclear power plants. Mr. Borovas advises companies on international nuclear liability and export compliance issues and has represented buyers in transactions involving the acquisition of nuclear power plants.

Mr. Borovas has worked on nuclear projects and transactions in the U.K., the U.S., Europe, the Middle East, Japan, South Korea, Southeast Asia, China, Russia, and South Africa.

Before becoming a nuclear energy lawyer, Mr. Borovas worked as an engineer for a nuclear power plant engineering firm.



**Ms. Charlotte Bruyer**

*Director, Head of Infrastructure and PPPs MENA at HSBC Bank Middle East*

Ms. Charlotte Bruyer joined HSBC's Project & Export Finance team in Dubai in 2005. She has 13 years of experience. Previously working in the Structured Finance Energy division, based in Paris, she was co-leading the worldwide relationships with the Oil Majors. She was involved in all the structured finance transactions related to any subsidiary in any region including Trade Finance and Project and Export Finance, as well as syndication and capital markets.

Charlotte has since been actively engaged in numerous advisory and lead arranging assignments in the Middle East, in various sectors such as petrochemicals or infrastructure and utilities, including the first nuclear project in the Middle East.

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**Dr. Alex BURKART**

*Deputy Director, Office of Nuclear Energy, Safety and Security, Bureau of International Security and Nonproliferation, U.S. Department of State*

Dr. Alex Burkart has been with the U.S. Government for over 35 years in a variety of positions related to nuclear weapons, nuclear energy, and nuclear nonproliferation. His particular current areas of focus are international nuclear cooperation, proliferation resistance and advanced nuclear technologies.

Dr. Burkart currently serves as Co-Chairman of the Infrastructure Development Working Group of the International Framework on Nuclear Energy Cooperation (IFNEC) and is a member of the IAEA's Technical Working Group on Nuclear Power Infrastructure. He is a member of the American Nuclear Society and has served on the Special Committee on Nuclear Nonproliferation and the International Committee.

Dr. Burkart has a B.S. and a Ph.D. in Nuclear Engineering from North Carolina State University. He is also a Distinguished Graduate of the Industrial College of the Armed Forces. He is a licensed Professional Engineer in the State of Virginia.

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**Dr. Alexander BYCHKOV**

*Deputy Director General, Head, Department of Nuclear Energy, International Atomic Energy Agency*

Before his appointment, Dr. Alexander Bychkov was Director General of the Research Institute of Atomic Reactors in Dimitrovgrad, Russian Federation. His main areas of activity cover the nuclear fuel cycle subjects including nuclear fuel, fast reactors and high level waste, radionuclide technologies and research reactors applications.

Dr Bychkov is a co-author of more than 150 scientific works. He worked on projects related to the Russian-USA Global Partnership on the disposition of excessive military plutonium and the return and treatment of highly enriched uranium from other countries.

Dr. Bychkov graduated with a degree in chemistry from Moscow State University in 1982 and went on to earn a PhD in 1998.

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**Mr. Nick CARTER**

*Director General, Regulation & Supervision Bureau, Abu Dhabi*

Mr. Nick Carter is a Fellow of the Institution of Engineering and Technology (previously the IEE) and a member of the UK Engineering Council. Educated at University College London, INSEAD and London Business School, he has spent most of his working life in utility management, having held a number of executive level positions in London Electricity and Southern Electricity of the United Kingdom.

He joined the water and electricity unbundling team for Abu Dhabi in 1998 and in 1999 was appointed Deputy Chairman and Managing Director of Abu Dhabi Distribution Company and Board Member of the local transmission company (TRANSCO).

He joined the Regulation and Supervision Bureau in 2001.



**Ms. Maëlia DUFOUR**

*Head of Department International-Organisation-Expertise Coface State Guarantees Directorate*

Ms. Maëlia Dufour has worked in the Coface State Guarantees Department since 1984. She has significant international experience regarding export credit guarantees, interfacing with exporters, banks, and foreign buyers on commercial and financial projects. Ms. Dufour has worked in all the geographic departments of Coface as well as in the Military Affairs Department.

Ms. Dufour was Head of Certification ISO 9001 project for Coface State Guarantees Department and then became Head of Clients requests, Quality and Statistics Department.

In 2006, Ms. Dufour rose to the position of Head of Division of Paris Club Rescheduling Agreements. In 2007, she became Head of Division of Geographic Desks (Africa, Americas, Asia, Europe and Oceania). In 2008, she became Head of Division of Key Accounts (Energy and nuclear power, Telecom, Space, Project Finance, Engineering, Buildings, Public works and Capital goods).

Since 2012, Ms. Dufour serves as Head of the International-Organisation-Expertise Department of the State Guarantees Directorate of Coface handles international matters that includes interfacing with Bern Union, ECAs, bilateral meetings, and the OECD. Ms. Dufour has expertise on new products for banks and exporters and reports on dominant State Guarantees Directorate trends.

Ms. Dufour has represented Coface in several missions in China, Russia, Brazil, and Iran. She participated in several international conferences such as Trade and Project Finance in Moscow, Middle East Project Finance in Manama and Dubai; Export Conference in Cape Town; and Global Annual Export Finance Conference in Berlin. She has participated in the following: a Bern Union workshop on project finance in Amsterdam; the Bern Union General Assembly in Stockholm; the IFNEC Finance, Regulatory, and Energy Planning Authority Workshop in London; and the Saudi Nuclear Symposium in Riyadh.

Ms. Dufour holds a Master Degree in Economics and International Business from Paris-Sorbonne University, France.



**Mr. Ian GRANT**

*Director, Nuclear Safety Department, UAE Federal Authority for Nuclear Regulation*

Mr. Ian Grant has over 38 years of nuclear experience. Previously he worked with the Canadian Nuclear Safety Commission from 1989 to 2009, where he held several senior management positions with responsibility for licensing and safety assessment of the Canadian nuclear power fleet. Earlier in his career he worked with Atomic Energy of Canada Limited, and with Babcock and Wilcox in the UK.

Ian is currently the UAE delegate on the IAEA Nuclear Safety Standards Committee. He has participated on two national delegations to review meetings on the Convention on Nuclear Safety, was a member of peer review missions to the national nuclear regulatory bodies of Japan and Korea, and has helped to conduct self-assessments of regulatory effectiveness in Canada and the UAE.

Ian holds a Bachelor of Science in mechanical engineering from the University of Glasgow, and a Masters degree from Cranfield University in the UK. He is a licensed professional engineer in Ontario and a Fellow of the UK Institution of Mechanical Engineers.



**Mr. Daniel GROSVENOR**

*Partner, Head of Nuclear, Deloitte UK*

Mr. Daniel Grosvenor leads the UK firm's work in the nuclear sector and is a partner in Deloitte's Corporate Finance Energy and Resources team. During his career, Mr. Grosvenor has advised Governments, utilities, and the supply chain in the international nuclear industry throughout the nuclear life cycle from nuclear new build to decommissioning and waste management. His work has included feasibility studies, funded decommissioning programs, financing plans, M&A transactions as well as advising the UK Government on the restructuring of the civil nuclear industry.

Mr. Grosvenor's work has involved advising clients in the UK, Middle East, Japan, Poland, Slovakia, China and USA.



**Mr. David HABOUBI**

*Head of Nuclear Business, UAE at Atkins*

Mr. David Haboubi is the Head of Nuclear for Atkins in the United Arab Emirates. He has been working in the nuclear industry with Atkins since he graduated as a mechanical engineer in 2000, and has been involved with nuclear decommissioning as well as new build and life extension programmes.

Mr. Haboubi oversees Atkins role as the lenders technical advisor to the UAE nuclear new build programme.



**Ms. Claire HARVEY**

*Senior Solicitor, Prospect Law Ltd*

Ms. Claire Harvey joined Prospect Law from the US firm Squire Sanders Hammond. She was formerly head of legal at United Kingdom NIREX Limited (formerly the Nuclear Industry Radioactive Waste Executive).

Ms. Harvey has specialist expertise in domestic and international Nuclear Regulatory Law including the transport and storage of radioactive substances. She has vast experience advising on the regulatory aspects of Nuclear New Build (including the NPS) and nuclear supply contracts, and of advising Tier 1 contractors in Nuclear Decommissioning.

Ms. Harvey also advises on International Law and the application of International Treaties including Nuclear Liability Conventions. She has presented at International Nuclear Lawyers (INLA) Congress, industry and intergovernmental meetings, and is a Member of the International Nuclear Law Association and the Nuclear Institute (Management Committees). Ms. Harvey works with INLA, the Nuclear Industry Association, the World Nuclear Association, Ciria and UKELA.



**Mr. Shinichi HAYAFUNE**

*Senior Manager, Business Strategy and Planning Division, Toshiba*

Mr. Shinichi Hayafune is the Senior Manager of Toshiba Corporation's Power Business Development & Promotion Department. He has held this position since July 2012.

Prior to that position, Mr. Shinichi Hayafune was a Group Manager in Toshiba Corporation's Uranium Business Development and Marketing Department. Before joining Toshiba, he was the Vice President and Coordinating Officer for Westinghouse Electric's Nuclear Fuel Cycle & Strategy Division from June 2007- July 2009. He has an additional 20 years of experience in the nuclear power business.

Mr. Hayafune earned a degree in Chemical Engineering from the University of Tokyo.



**Mr. Dominic HOLT**

*Associate Director, Global Infrastructure & Projects Group, KPMG Corporate Finance*

Mr. Dominic Holt is a Director in KPMG’s Corporate Finance Power and Utilities team and is responsible for leading nuclear power projects.

As a Chartered Civil Engineer (UK), with a complimentary finance qualification from the ACCA, he has over 20 years of experience working on various aspects of major infrastructure projects across a number of sectors in the UK, Asia, and the Middle East.

Since joining KPMG in 2007 Mr. Holt has focused on Power and Utilities projects. He has a global range of public and private sector clients and is involved in a majority of the high profile nuclear projects currently being planned or progressed including those in the UK, Middle East, Africa, and Europe. In particular, he has had significant involvement in the areas of procurement as well as financing and market entry studies. He worked on the Baraka (UAE) project through the procurement phase and has been advising the UK Government extensively over the past two years on various aspects of the proposed Electricity Market Reforms (EMR) as well as assisting on the agreement of a Funded Decommissioning Plan for new build.

Dominic has authored a number of thoughtful leadership publications on constructing and financing nuclear power and is a regular speaker at conferences and seminars both in the UK and abroad.



**Dr. John KALISH**

*Assistant Secretary, Australian Safeguards and Non-Proliferation Office, Department of Foreign Affairs and Trade*

Dr. John Kalish has been an academic at The Australian National University, a Senior Principal Research Scientist in the Department of Agriculture, Fisheries and Forestry (DAFF) and Assistant Secretary of the Fisheries and Aquaculture Branch and later International Fisheries Branch in DAFF.

Dr Kalish joined the Department of Foreign Affairs and Trade in 2010 as Assistant Secretary in the Australian Safeguards and Non-Proliferation Office.



**Mr. Edward KEE**

*Vice President, NERA Economic Consulting*

Mr. Edward Kee is an expert on nuclear power economics. He provides strategic advice to companies and governments on issues related to nuclear power and electricity. He has testified as an expert witness in US and international disputes.

Prior to joining NERA, Mr. Kee held consulting positions at CRA International, PA Consulting Group, and McKinsey & Company. He was a merchant power plant developer before becoming a consultant.

Mr. Kee started his career as a Naval Officer working on construction and commissioning of the USS Carl Vinson (CVN-70), during this time he earned qualification as chief engineering officer on Nimitz-class nuclear aircraft carriers.

Mr. Kee has published articles on nuclear power and the electricity industry and speaks at industry conferences.



**Mr. Michael E. KIRST**

*Vice President, Strategy and External Relations, Europe, Middle East and Africa, Westinghouse Electric Company*

Mr. Michael E. Kirst's prior roles in Westinghouse include Vice President for Central and Eastern Europe; Director, Central and Eastern European Fuel for Westinghouse's European Fuel Business and Director, Government and International Affairs in Washington D.C.

Before to joining Westinghouse in 1996, Mr. Kirst was Director of the Economic Committee of the NATO Parliamentary Assembly in Brussels, Belgium. There, he was responsible for advising members of parliament from the NATO member nations and representing the Atlantic Alliance.

Mr. Kirst began his career as a Legislative Aide to Congressman Leon E. Panetta where he was responsible for issues within the jurisdictions of the House Budget, Banking and Energy and Commerce Committees.

He is a member of the Executive Committee and Board of Directors of the US-Ukraine Business Council and a member of the Nuclear New Build Working Group of FORATOM in Brussels.



**Mr. Martin KOHLHASE**

*Vice President – Senior Analyst, Moody's Corporate Finance Group*

Mr. Martin Kohlhase relocated to Moody's Dubai office in February 2008, where he covers a wide range of credits including the investment holding, telecom, real estate and utility sectors for the Middle East and Turkey.

Prior to joining Moody's in Frankfurt in 2004, where he was lead analyst for a portfolio of European packaging and paper & forest products companies, Mr. Kohlhase worked inter alia for Commerzbank in London and Frankfurt as an equity analyst for companies of the IT services and software sectors.

Mr. Kohlhase has a Masters degree in Economics from the University of Constance in Germany.



**Mr. Zbigniew KUBACKI**

*Director, Nuclear Energy Department, Ministry of Economy of Poland*

In 1979, Mr. Zbigniew Kubacki completed university education at the Warsaw School of Economics. In 1984 to 1985, he finished post-graduate management studies at the a/m University.

He actively participated in various specialized courses and professional programs devoted to the problems of energy and international economic relations. The programs were organized by the International Atomic Energy Agency (IAEA), Nuclear Energy Agency (OECD) the World Trade Organization (WTO), German Institute of World Economy (IPO), and the Loyola University.

From 1980 to 1986, Mr. Kubacki worked at the Ministry of Foreign Trade. In 1987 through 1991, he served as a Economic Attaché of the Polish Embassy in

Athens, Greece and between 1995 and 2001 he worked as the Head of the Economic and Commercial Division of the Polish Consulate in Chicago (USA), where he was responsible for the development of Polish economic relations with the midwest of the US.

In January 2002 he was promoted to the position of the Director of the Department of International Cooperation at the Ministry of Economy. From 2005 to 2011, Mr. Kubacki served as a Minister Counselor/Head of the Economic and Commercial Section of the Embassy of the Republic of Poland in Washington, supervising inter alia US – Polish cooperation in energy sector.

In July 2011 he was promoted to the position of the Director of the Nuclear Energy Department at the Ministry of Economy. His main responsibility is the development of the Polish Nuclear Power Program.

Mr. Kubacki is an author of several articles and publications on energy and international economic relations. He speaks English fluently. He also knows French and Russian.



**Mr. John MATHIESON**

*Head of International Relations, UK Nuclear Decommissioning Authority (NDA)*

Mr. John Mathieson is the Head of International Relations with the UK's Nuclear Decommissioning Authority (NDA) accountable for developing and implementing its international relations strategy. He is responsible for understanding the nuclear power and radioactive waste management policies and programmes in other countries and identifying opportunities for technical co-operation. He is also responsible for managing the relationships with counterpart organizations such as the US-DOE.

Mr. Mathieson is co-chair of the Infrastructure Development Working Group of the International Framework for Nuclear Energy Cooperation (IFNEC). He also works closely with the IAEA and OECD / NEA, participating in a number of expert missions, technical meetings and working groups. Mr. Mathieson is the UK representative on the European Union's Club of Waste Management Agencies.

Mr. Mathieson has also worked with other EU nuclear and radioactive waste management organizations in assisting the governments of many Central and Eastern European countries, as well as Russia and Ukraine. Mr. Mathieson also helped to further develop their financing, decommissioning, and radioactive waste management strategies.

He is a Board Director and Secretary of Waste Management Symposia Inc. which runs the annual Waste Management conference in Phoenix. Before joining the NDA in 2007, Mr. Mathieson worked with Nirex for 17 years in several roles, including business development and international relations. Prior to that he was with CEGB / Nuclear Electric (now EDF Energy) for 14 years as a health physicist, working initially at Dungeness B nuclear power station and then the Health and Safety Department.



**Mr. Edward MCGINNIS**

*Deputy Assistant Secretary, International Nuclear Energy Policy And Cooperation, Office of Nuclear Energy, US Department of Energy*

Mr. Edward McGinnis is responsible for the Department of Energy's international civilian nuclear energy activities, including international nuclear energy research, development and demonstration cooperation, international framework and partnership development, international nuclear energy policy, and other international civilian nuclear energy-related activities carried out by the Department of Energy's Office of Nuclear Energy. As part of these responsibilities, Mr. McGinnis serves as Steering Group Chairman of the International Framework for Nuclear Energy Cooperation that consists of more than 60 countries and serves as the Departmental Representative to the US Trade and Promotion Coordination Committee on civil nuclear energy matters. Within the Office of Nuclear Energy, Mr. McGinnis has also served as a Vice Chairman and Principal U.S. Representative to the Generation IV International Forum and was responsible for US domestic nuclear fuel assurance matters, including technical oversight activities regarding the United States Enrichment Corporation, uranium inventory management matters, as well as US nuclear energy security matters.

Prior to working in the Office of Nuclear Energy, Mr. McGinnis led a number of other high priority United States Government initiatives at the Department of Energy, including having served as the senior Director for the office of Global Radiological Threat Reduction. Prior to this, Mr. McGinnis served as senior advisor and special assistant to four Assistant Secretaries and Deputy Administrators for nonproliferation and national security.

Mr. McGinnis holds a master's degree from The American University's School of International Service in Washington, DC, and is a graduate of the Kennedy School's Senior Executive Fellows Program as well as the Program for Senior Executives in National and International Security at Harvard University.



**Mr. Mark MULDOWNEY**

*Head of Energy Advisory Project Finance, BNP Paribas, London*

Mr. Mark Muldowney is head of the energy advisory team for BNP Paribas in the UK and responsible for nuclear advisory in EMEA. Current nuclear experience includes advisory work on the strategic and financial aspects of new nuclear generation projects in the UK, Finland and the Czech Republic.

Mr. Muldowney has more than 20 years experience raising financing for large capital projects in the investment banking and energy industry in Europe and Asia. Prior to joining BNP Paribas he worked at Barclays Capital, Entergy and Fortis.

Mr. Muldowney has a degree in History from Magdalen College, Oxford.



**Mr. Paul MURPHY**

*Special Counsel, Milbank, Tweed, Hadley & McCloy LLP*

Mr. Paul Murphy's practice focuses on multiple aspects of the nuclear industry – from legal and policy matters, including international regulatory and treaty frameworks and issues regarding nuclear liability, to strategies for creating viable nuclear power programs and the identification and mitigation of associated risks – representing developers/owners, investors, and contractors on nuclear projects internationally.

Mr. Murphy is recognized as an expert in the development and financing of nuclear power programs by the International Atomic Energy Agency (IAEA), the OECD's Nuclear Energy Agency (NEA) and the US government. Mr. Murphy currently serves on the IAEA's Technical Cooperation Program team, which assists member states in developing civilian nuclear power programs. Mr. Murphy has served as a designated expert, chairman, and author at several special meetings and for multiple working groups of the IAEA, primarily involving the development, financing, and structuring of nuclear power projects. He continues to work with the IAEA in a number of key areas, including a current revision of the IAEA's *Handbook on Nuclear Law* and as lead author for a new report to be released in the next few months, entitled, *"Alternative Contracting and Ownership Practices for Nuclear Power Plants"*.

Mr. Murphy currently serves as a two-time appointee to the US Secretary of Commerce's Civilian Nuclear Trade Advisory Committee, and he chaired its Finance subcommittee for the last two years. In addition, Mr. Murphy recently served as the US Government's sole representative on an NEA working group on *"Financing of Nuclear Power Plants"*, acting as chairman for the working group. Mr. Murphy also chaired the IAEA working group that issued, *"Issues to Improve the Prospects of Financing Nuclear Power Projects."* Mr. Murphy has also worked with the Nuclear Energy Institute, the US State Department, the US Mission to the OECD, and the Export-Import Bank of the United States on revisions to the OECD's Guidelines for the financing of nuclear power projects by Export Credit Agencies.

For the last three years, Mr. Murphy served as a faculty member for the *"Training Course on Nuclear Power Infrastructure Programs and Related Projects in Emerging Nuclear States"*, held on behalf of the US State Department and the IAEA at the Argonne National Laboratory and attended by representatives of over 20 foreign governments.



**Mr. Gareth PRICE**

*Global Head of the Projects Group and Co-Head of Energy at Allen & Overy LLP*

Gareth heads the Allen & Overy international nuclear projects team and is based in London. Gareth is the firm's foremost expert on matters relating to the civil nuclear industry having advised government on the establishment of nuclear law, developers and funders on the development of new build plants and investors participating in nuclear projects.

Gareth, has over 15 years experience in the energy, nuclear and low carbon sector, is the firm's foremost expert on nuclear related matters. He has advised on numerous high profile and strategically important nuclear matters including advising governments on the establishment of nuclear law, governments and developers on the financing and new build of nuclear generation assets and equity investors into the civil nuclear industry.

Gareth's clients include governments, lenders, developers, utilities, contractors

and secondary market purchasers and other major companies involved in the nuclear industry globally including major projects in Lithuania, Finland, Bulgaria, Turkey, United Arab Emirates and United Kingdom.

Gareth has been described as “...*absolutely the most talented and knowledgeable legal adviser in nuclear energy*” (Legal 500 Power (including electricity, nuclear and renewables) 2013). He has also co-authored (with David Lee and Graham Vinter) the new edition of “*Project Finance*”, published in August 2013. This is a major update to the 2005 classic “*Vinter on Project Finance*”



**Mr. Aftab RAZA**

*Head of Network Price Controls, Regulation & Supervision Bureau, Abu Dhabi*

Mr. Aftab Raza has 20 years of experience in economic regulation, market design and reforms, project financing and management, economic and financial analysis, and contract negotiation and administration in power, water, wastewater and gas sectors,

Mr. Raza presently works as the head of network price controls for the Regulation & Supervision Bureau - the water, wastewater and electricity regulator for Abu Dhabi, UAE. Mr. Raza presently focuses on price controls, operating and capital efficiency, and performance/output incentives for natural monopolies and tariff, commercial and technical issues relating to IPPs and IWPPs including renewable and nuclear energy projects.

Previously, Mr. Raza worked as the project manager for the Private Power and Infrastructure Board, Government of Pakistan, where he specialized in the formulation and implementation of government power policies, tariff and business analysis, contract negotiation and administration, and project financing for IPPs.

Mr. Raza has also advised the governments, regulators and utilities in South Asia and Africa on regulatory and tariff regimes for private power and gas projects. He has presented and published numerous papers on infrastructure reforms and regulation, including contributions to books, international journals, and best practice manuals.

Mr. Raza has also been a visiting faculty member to two universities in Pakistan for their MBA programs and South Asian utility regulators forum for its annual training program. Mr. Raza holds an MBA (finance) and electrical engineering degrees.



**Mr. Xavier ROLLAT**

*Investment Banking Professional*

Mr. Xavier Rollat has been working on export, corporate, acquisition and project finance transactions in the power industry for the last 23 years, acting as lender and financial advisor. He has developed comprehensive experience in arranging and delivering structured debt-financed solutions for Greenfield and Brownfield electricity generation projects, using a myriad of energy sources as primary fuel. During that period, he also arranged long-term debt financing to fund new investments in electricity transmission. His most recent clients include: CGNPC (China), ESKOM (South Africa), EVN (Vietnam), HSE (Slovenia) or PGCIL (India). In the past ten years, Mr. Rollat has also been involved in, or has led, several large and complex advisory mandates for the development of nuclear new-build power generation projects. On the corporate and project sides, he acted, *inter alia*, for: EDF (France), ENEL (Italy), NEK (Bulgaria), SE (Slovakia) and SNN (Romania). On the public sector side, Mr. Rollat advised various governmental agencies, as well as the European Commission.

During his career, Mr. Rollat has worked for different employers in the banking and financial service industry in France, Switzerland and the UK, including various commercial and investment banks, a multilateral agency and a service firm. He also worked for two years for a nuclear engineering company (SGN, part of the AREVA Group). More recently, Mr. Rollat launched a financial advisory and management consulting business, providing independent corporate- and transaction-based senior level advisory services to a variety of clients in the power sector.

Mr. Rollat is recognized as a visiting expert in the development and financing of nuclear power programs by the International Atomic Energy Agency (IAEA) and has been serving for multiple working groups of the IAEA since 2008. Within the European Nuclear Energy Forum (ENEF), he is also a member of the Working Group “Opportunities” established by the European Commission to provide legal and financial guidelines on the financing of nuclear new-build power plants in the European Union.

A native French speaker, Mr. Rollat speaks fluent English, German and has basic command of Russian. He holds a Masters in Management from HEC, France’s long-standing leading business school.



**Mr. Tom SAMSON**

*Chief Operating Officer at Emirates Nuclear Energy Corporation (ENEC)*

As Chief Operating Officer at ENEC, Mr. Tom Samson is responsible for establishing the Operating Company which will become the Licensed Operator of the UAE's first civilian nuclear units at Barakah in Abu Dhabi. He has over 23 years of experience in a variety of leadership and development roles within the Energy industry. Mr. Samson spent the majority of his career at Marubeni Corporation in their Infrastructure division, including 5 years leading the acquisition, development and subsequent operation of Taweelah B the largest IWPP in Abu Dhabi at that time and 2 years as CEO of the Marubeni TAQA Caribbean Holdings joint venture based in the USA during which time he sat on the Board of 4 operating utility companies across the Caribbean.

Within ENEC, Mr. Samson is the Chairman of the Executive Risk Management Committee and he is leading the organization in their operational readiness activities, including development of the new Operating Model, recruitment of an experienced nuclear leadership team and development of UAE nationals in the Energy Pioneer program to prepare them for a range of Operational roles. Mr. Samson represents ENEC on the WANO Atlanta Governing Board.

Mr. Samson is a Chartered Engineer and a graduate of Napier University in Edinburgh.



**Mr. John SCHUSTER**

*Vice President, Project and Corporate Portfolio Management, United States Export - Import Bank*

Mr. John L. Schuster is responsible for the origination of all of Ex-Im Bank's limited recourse project finance business, which consists of a total portfolio of 67 projects with Ex-Im Bank authorizations of more than \$21 billion. In addition, the Structured Finance Division includes all long-term corporate and structured finance transactions – a total of 134 transactions and authorizations of another \$20 billion since 1997. This total loan portfolio of \$41 billion spans a full range of industry and infrastructure sectors: renewable energy, power, petrochemical, refining, LNG, oil/gas E&P, pipelines, mining, satellite, and other telecommunications.

Mr. Schuster has been with Ex-Im Bank's Structured Finance Division since 1998, holding the position of Director from 2001 to 2010, and has managed, directed, and supported 60 separate major transactions approved by Ex-Im Bank's Board of Directors for \$9 billion in export finance, including 13 Deals of the Year.



**Dr. Yury SOKOLOV**

*Vice President- Director of the Department, JSC Rusatom Overseas*

A graduate of Moscow University, Dr. Yury Sokolov began his scientific career in 1971 at the Kurchatov Institute in Moscow, where he became a Candidate of Science and Doctor of Science in 1980 and 1996, respectively.

He has worked in the fields of plasma physics and fusion, engineering design of fusion facilities and thermonuclear reactors. Since 1988 he has been active in the International Thermonuclear Experimental Reactor (ITER), firstly, as a member of the ITER Managing Committee, leading the Russian team of physicists and engineers, and, later, as the Russian representative on many ITER-related inter-governmental boards, which supervised and promoted the work of ITER.

In 1996, Dr. Sokolov was appointed Head of the Department of Science and Technology at the Ministry of the Russian Federation for Atomic Energy. In this post, as well as fundamental nuclear science, he was also responsible for nuclear power strategy development in the Russian Federation and for innovation across the full spectrum of fuel cycle and waste management technologies. He has initiated several nuclear knowledge preservation activities in the Russian Federation, some of which are linked to Agency activities in this area.

Dr. Sokolov has served as a member of the Scientific and Technical Council of Minatom in the Russian Federation and on various national and international committees for science and technology, on the editorial boards of scientific journals, on bilateral committees for scientific cooperation, etc.

In October 2003, Dr. Sokolov joined the International Atomic Energy Agency in Vienna as Deputy Director General, Head of the Department of Nuclear Energy. He is current the Vice President – Director of the Department of JSC Rusatom Overseas.

## Appendix C: Registration List



**The International Framework  
for Nuclear Energy Cooperation**



### IFNEC Finance, Regulatory, Energy Planning Authority Workshop Abu Dhabi, United Arab Emirates October 22, 2013

#### Participants List

Name	Title	Ministry / Organization
<b>Argentina</b>		
Dana BOROJOVICH	Diplomat	Ministry of Foreign Affairs
Facundo DELUCHI	Head of Institutional Relations	National Atomic Energy Commission
<b>Armenia</b>		
Aram GEVORGYN	Head of Atomic Energy Department	Ministry of Energy and Natural Resources
<b>Australia</b>		
John KALISH	Assistant Secretary	Australian Safeguards and Non-Proliferation Office (ASNO)
<b>Bulgaria</b>		
Katerina KOSTADINOVA	Head of Unit	Ministry of Economy and Energy
Dimitar KUYUMDJIEV	Director	Ministry of Economy and Energy
<b>Canada</b>		
Josée BERTHIAUME	Deputy Director General, Electricity Resources Branch	Natural Resources Canada
<b>China</b>		
Yongping WANG	Researcher	China Institute of Nuclear Information and Economics
Hongsheng YANG	Deputy Director	China Development Bank
Meng ZHANG	Assistant Researcher	China Institute of Nuclear Information and Economics
<b>Egypt</b>		
Amer AHMED	Fuel Plan Manager	Atomic Energy Authority
Ibrahim Ali EL SHEHAWY	Vice Chairman for Projects	Nuclear Power Plants Authority
<b>France</b>		
Marc-Gérard ALBERT	International Affairs Director	Institute for Radiological Protection and Nuclear Safety
Axel BERNADAC	Project Manager	Electricity of France
Anne CREPIN	Deputy VP Project & Export Finance Dept.	AREVA
Maëlia DUFOUR	Head of Department	Coface
Slimane NOCEIR	Project Manager	Electricity of France
<b>Ghana</b>		
Alfred AHENKORAH	Ghana Energy Commission	Executive Secretary
<b>IAEA</b>		
Alexander BYCHKOV	Deputy Director General,	International Atomic Energy Agency

Name	Title	Ministry / Organization
	Head of Nuclear Energy	
Paul WARREN	Energy Systems Analyst	International Atomic Energy Agency
<b>Japan</b>		
Shinichi HAYAFUNE	Senior Manager, Power Business Development and Promotion Department, Power System Company	Toshiba Corporation
Junichi IWAZAKI	Deputy Director	Ministry of Economy, Trade and Industry (METI)
Takashi NAKANO	Deputy Director General for Nuclear Energy Policy	Cabinet Office
Motomitsu (Mitch) SADAYASU	Senior Researcher	Office of Atomic Energy Commission, Cabinet Office
Shigeru WATANABE	General Manager, Global Business Operations Division	Hitachi-GE Nuclear Energy, Ltd.
<b>Jordan</b>		
Kamal ARAJ	Vice Chairman	Jordan Atomic Energy Commission
Majd HAWWARI	Director General	Jordan Nuclear Regulatory Commission
<b>Republic of Korea</b>		
Myungsook AN	Team Leader of Multilateral Cooperation Team	Korea Nuclear International Cooperation Foundation
Jae Eun CHOI	Deputy Manger	Korea Nuclear International Cooperation Foundation
Jae Soo RYU	Head, Nuclear Foreign Policy Research Team	Korea Atomic Energy Research Institute (KAERI)
<b>Oman</b>		
Abdel Jalil AL AJMI	First Secretary	Oman Foreign Affairs
Salim Hamood Salim AL HINAI	Deputy Head of Mission	Embassy of Oman-UAE
Mohammed AL ZARAFI	Under Secretary	Oman Foreign Affairs
Hadj Slimane CHERIF	Head, Peaceful Nuclear Technology Office	Ministry of Foreign Affairs
<b>Poland</b>		
Janusz Bylinski	Counsellor	Polish Embassy in Abu Dhabi
Adam KRZYMOWSKI	Polish Ambassador	Polish Embassy in Abu Dhabi
Zbigniew KUBACKI	Director, Nuclear Power Department	Ministry of Economy
Andrzej LYSIK	First Counsellor	Polish Embassy in Abu Dhabi
Hanna TROJANOWSKA	Government's Commissioner for Polish Nuclear Power, Undersecretary of State	Ministry of Economy
<b>Qatar</b>		
Koichi ENDO	Assistant Manager	SMBC Doha QFC Office
<b>Romania</b>		
Mircea METES	Head Power Transactions Department	Nuclearelectrica
Razvan MIRONESCU	Deputy	Parliament of Romania
<b>Russian Federation</b>		
Alena SCHERBINA	Analyst	State Atomic Energy Corporation

Name	Title	Ministry / Organization
		"ROSATOM"
Yury SOKOLOV	Vice President, Department Director	JSC Rusatom Overseas
<b>United Arab Emirates</b>		
Ahmed Bin Abbood AL ADAWI	Vice President, Water Development and Projects	Abu Dhabi National Energy Company
Sahar AL AMIN	RSB Staff	SG Secretariat Staff
Nouf AL BOUSHELAIBI	Team Lead	SG Secretariat Staff
Hamad AL KAABI	Permanent Representative to IAEA	Special Representative for International Nuclear Cooperation
Nasser AL NASSERI	Chief Financial Officer	Emirates Nuclear Energy Corporation
Rashed AL RASHDI	Deputy Director General	Regulation & Supervision Bureau
Fatima AL SHAMSI	Vice President -P&BD	Dubai Electricity and Water Authority
Nadira BARKATULLAH	Director of Economic Regulation	Regulation & Supervision Bureau
Karl BROWNSON	Director of Production & Contracts	Regulation & Supervision Bureau
Charlotte BRUYER	Director - Head of Infrastructure and PPPs MENA	HSBC Bank Middle East
Nick CARTER	Director General	Regulation & Supervision Bureau
Allison DUNCAN	Director - Head of Power and Renewables MENA	HSBC Bank Middle East
Farah EL ASHKAR	RSB Staff	SG Secretariat Staff
Ian GRANT	Director of Nuclear Safety	Federal Authority for Nuclear Regulation
David HABOUBI	Head of Nuclear, UAE	WS Atkins & Partners Overseas
Martin KOHLHASE	Vice President - Senior Analyst	Moody's
Neil LANGLEY-EVANS	Enterprise Risk Insurance Manager	Emirates Nuclear Energy Corporation
Dragana POPOVIC	Production Planning & Reliability Manager	Regulation & Supervision Bureau
Mark POPPLEWELL	Managing Director	Marsh, Inc.
Aftab RAZA	Head of Network Price Controls	Regulation & Supervision Bureau
Thomas SAMSON	Chief Operating Officer	Emirates Nuclear Energy Corporation
William TRAVERS	Director General	Federal Authority for Nuclear Regulation
<b>United Kingdom</b>		
Edward DE LA BILLIERE	Director	Prospect Law Ltd
George BOROVAS	Partner	Pillsbury Winthrop Shaw Pittman LLP
Richard DRUCE	Senior Consultant	NERA Economic Consulting
Phillip FLETCHER	Partner	Milbank, Tweed, Hadley & McCloy LLP
Daniel GROSVENOR	Partner, Head of Nuclear	Deloitte
Jo GUTHRIE	Technical Policy Advisor	Department of Energy & Climate Change
Claire HARVEY	Senior Solicitor	Prospect Law Ltd
Paul HOLLIDAY	Managing Director	Marsh Limited
Dominic HOLT	Director	KPMG
Barry KAUFER	Director CORDEL	World Nuclear Association
John MATHIESON	Head of International Relations	Nuclear Decommissioning Authority/ UK

<b>Name</b>	<b>Title</b>	<b>Ministry / Organization</b>
Mark MULDOWNNEY	Head of Energy Advisory, London	BNP Paribas
Gareth PRICE	Global Head of Projects & Global Co-Head of Energy	Allen & Overy LLP
Xavier ROLLAT	Senior Consultant	
<b>United States</b>		
Jay BRISTER	Vice President	C2HM Hill
Alex BURKART	Deputy Office Director	Department of State
Helen COOK	Senior Associate	Pillsbury Winthrop Shaw Pittman LLP
Jeffrey DEHN	Foreign Affairs Specialist	Department of Energy
John GROSS	Director, Office of Multilateral Cooperation	Department of Energy
Edward KEE	Vice President	NERA Economic Consulting
Michael KIRST	Vice President, Strategy and External Affairs	Westinghouse Electric Company
John LYMAN	Director, Energy & Environment Program	Atlantic Council
Edward MCGINNIS	Deputy Assistant Secretary, International Nuclear Energy Policy and Cooperation	Department of Energy
Paul MURPHY	Special Counsel	Milbank, Tweed, Hadley & McCloy LLP
Robert MUSSLER	Director	Booz Allen Hamilton
April POPE	Foreign Affairs Specialist	Department of Energy
Andrew RICHARDS	Analyst	Department of Energy
John Schuster	Vice President	Export-Import Bank
Vijay SAZAWAL	Director of Government Programs	United States Enrichment Corporation, Inc.