



Economic Research Institute
for ASEAN and East Asia



Report on International Nuclear Energy Symposium

“Discussions on Nuclear Energy from the Female Point of View”
-- Why is it necessary? Why is it safe enough? Why is it irreplaceable? --

Date: 9:00-17:30, May 19, 2015 (Tuesday)

Venue: The National Graduate Institute for Policy Studies (GRIPS) (Sokairo Hall)

Cosponsors: The Breakthrough Institute

The Economic Research Institute for ASEAN and East Asia (ERIA)

The National Graduate Institute for Policy Studies (GRIPS)

The Institute of Energy Economics, Japan (IEEJ)

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Panelists



Ms. Agneta Rising



Director General of World Nuclear Association, Co-founder and Former President Women in Nuclear



Ms. Anne-Marie Choho



AREVA Executive Committee Member, France



Ms. Ana Claudia Raffo-Caiado



Director, Division of Programme Support and Coordination, International Atomic Energy Agency(IAEA)



Ms. Xudan Song



CEO of China Division, EDF, China



Dr. Reiko Fujita



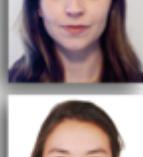
President, Atomic Energy Society of Japan



Ms. Jessica R. Lovering



Senior Energy Analyst focusing on developing policy for nuclear power, The Breakthrough Institute



Ms. Ximena Vásquez-Maignan



Senior Legal Adviser, OECD/Nuclear Energy Agency



Ms. Cecilia Tam



Deputy Vice President, APERC, Former Head of the Energy Demand Technology Unit, IEA



Ms. Siriratana Biramontri



Former Deputy Secretary General of Office of Atoms for Peace, Thailand



Ms. Kaija Kainurinne



Former Head of TVO Brussels Office, Finland



Prof. Gerry Thomas



Professor of Molecular Pathology at Imperial College London, UK



Ms. Monamie Bhadra



Arizona State University, US



Ms. Kazuko Uno



Department Head, Interferon & Host Defense Laboratory, Luis Pasteur Center for Medical Research, Japan



Ms. Rachel Pritzker



Chair of Advisory Board, The Breakthrough Institute

Moderators



Ms. Ann MacLachlan



Journalist



Ms. Sumiko Takeuchi



Senior Fellow, International Environment Economic Institute, Japan



Ms. Yukari Yamashita



Board Member, Director, Charge of Energy Data and Modeling Center, The Institute of Energy Economics, Japan

※ All titles are as of May 19, 2015

Time table

8:30	Doors open & Registration
9:00- 9:10	Opening Address : Masakazu Toyoda, President & CEO, IEEJ
9:10- 9:25	Special Lectures : Yosuke Takagi, State Minister of Economy, Trade and Industry, Japan
9:25- 9:40	Keynote Speech : Hidetoshi Nishimura, Executive Director, ERIA
9:40- 9:55	Keynote Speech : Agneta Rising, WNA, Former President of WIN
<i>Session 1 :</i>	<i>"Why nuclear is necessary?"</i> (Moderator: Ann MacLachlan, journalist)
9:55-10:25	1) Anne-Marie Choho, Senior Executive Vice President of Areva, France 2) Ana Claudia Raffo Caiado, Director of the Division for Technical Cooperation Programme Support and Coordination, IAEA 3) Xudan Song, CEO of China Division, EDF, China 4) Reiko Fujita, President of AESJ, Japan
10:25-11:10	Panel Discussion
11:10-11:25	Coffee Break
<i>Session 2 :</i>	<i>"Can we cope with the climate change without nuclear? "</i> (Moderator: Sumiko Takeuchi, Senior Fellow, IEEI)
11:25-11:55	1) Jessica Lovering, Senior Analyst, The Breakthrough Institute, USA 2) Ximena Vásquez-Maignan, Senior Legal Adviser, OECD/NEA 3) Cecilia Tam, Deputy Vice President, APERC, Former Head of the Energy Demand Technology Unit, International Energy Agency 4) Siriratana Biramonti, Former Deputy Secretary General of OAP, Thailand
11:55-12:40	Panel Discussion
12:40-14:00	Lunch Break
14:00-14:10	Keynote Speech : Takashi Shiraishi, President, GRIPS
<i>Session 3 :</i>	<i>"How safe is safe enough when there is nothing absolutely safe?"</i> (Moderator: Ann MacLachlan, journalist)
14:10-14:40	1) Kaija Kainurinne, Former Head of TVO Brussels Office , Finland 2) Gerry Thomas, Professor of Molecular Pathology at Imperial College London, UK 3) Monamie Bhadra, Arizona State University 4) Kazuko Uno, Department Head, Interferon & Host Defense Laboratory, Louis Pasteur Center for Medical Research, Japan
14:40-15:25	Panel Discussion
15:25-15:40	Coffee Break
<i>Session 4 :</i>	<i>"What is necessary to gain support for nuclear energy from the public, especially from women?"</i> (Moderator: Yukari Yamashita, Director, IEEJ)
15:40-17:10	1) Anne-Marie Choho, Senior Executive Vice President of Areva, France 2) Ana Raffo-Caiado, Director, Division of Programme Support and Coordination, 3) Xudan Song, CEO of China Division, EDF, China 4) Reiko Fujita, President of AESJ, Japan

	5) Jessica Lovering, Senior Analyst, The Breakthrough Institute, USA 6) Ximena Vásquez-Maignan, Senior Legal Adviser, OECD/NEA 7) Cecilia Tam, Deputy Vice President, APERC, Former Head of the Energy Demand Technology Unit, International Energy Agency 8) Siriratana Biramontri, Former Deputy Secretary General of OAP, Thailand 9) Kaija Kainurinne, Former Head of TVO Brussels Office , Finland 10) Gerry Thomas, Professor of Molecular Pathology at Imperial College London, UK 11) Monamie Bhadra, Arizona State University 12) Kazuko Uno, Department Head, Interferon & Host Defense Laboratory, Louis Pasteur Center for Medical Research, Japan
17:10-17:25	Closing Address : Rachel Pritzker, Chair of Advisory Board, Breakthrough Institute, USA
17:25-17:30	Closing Address : Masakazu Toyoda, President & CEO, the Institute of Energy Economics, Japan



Summary Minutes

On May 19, the Institute of Energy Economics, Japan (IEEJ), the U.S. environment think tank the Breakthrough Institute, the Economic Research Institute for ASEAN and East Asia (ERIA) and the National Graduate Institute for Policy Studies (GRIPS) cosponsored the International Nuclear Energy Symposium at GRIPS.

Seventeen female experts in nuclear, energy and environment issues from Japan and other countries met at the symposium to discuss how best to secure nuclear safety, the necessity and roles of nuclear energy, measures against climate change, how to communicate with the public on nuclear energy and other matters from a wide range of female viewpoints under the theme “Discussions on Nuclear Energy from the Female Point of View -- Why is it necessary? Why is it safe enough? Why is it irreplaceable?” This is a tough theme over which Japanese people are divided.

Ms. Agneta Rising, director general of the World Nuclear Association, delivered a keynote speech introducing the present situation where “nuclear energy serves as a base load power source in most countries that have achieved a low-carbon power generation sector.” Quoting a report by the International Energy Agency (IEA), she said, “Nuclear power generation will make the greatest contribution to solving global warming in the future.” Reviewing the past process in which public confidence in nuclear energy was restored gradually after the Three Mile Island and Chernobyl nuclear power plant accidents, she assured Japan that nuclear energy promoters “will be able to restore public support” for nuclear energy through their tenacious dialogue with all layers of citizens.

1st Session: “Why is nuclear energy necessary?”

Four panelists from France, the International Atomic Energy Agency (IAEA), China and Japan took the rostrum to give presentations.

First, Ms. Anne-Marie Choho, a member of the AREVA Executive Committee, France, explained the process in which the oil crises in the 1970s led France to choose nuclear energy for improving its energy self-sufficiency rate. She pointed out that public understanding about nuclear energy would be required first for its promotion and that transparency of nuclear energy must be enhanced to secure such understanding. Ms. Choho noted that the present French administration’s policy of reducing nuclear energy’s share of power generation reflects its coalition with Europe Ecology, or the Greens. The administration, though planning to promote renewable energy development,

would have to maintain a certain level of nuclear power generation from the viewpoint of competitiveness, she said.

From the viewpoint that a growing number of countries in Southeast Asia and Africa are considering introducing nuclear energy for the first time, Ms. Ana Raffo-Caiado, director of the IAEA Division of Program Support and Coordination, explained a framework for the IAEA's support for the countries planning to introduce nuclear energy for the first time. She said "If IAEA member countries request support from IAEA, IAEA has prepared resources (safety analysis systems and technical cooperation projects) to sufficiently meet their requests." "IAEA also hopes member countries to promote nuclear energy with safe ways, though refraining from forcing them to introduce it" she added.

Ms. Xudan Song, CEO of the China Division of French power utility EDF, said that this year was an important year for China to resume its nuclear power plant construction projects suspended since the Fukushima accident. For China that has already developed hydro resources as a low carbon power source almost to the maximum extent and depends heavily on coal power generation, nuclear energy "is an environment-friendly power source that can respond to fast-growing electricity demand," she said, emphasizing the necessity of nuclear energy. With China's plan to raise nuclear energy's share of power generation output to 3% by 2020 and to 6% by 2030, she explained that China was planning efforts to build nuclear reactors in inland zones as well as coastal zones while promoting public understanding about nuclear energy.

Ms. Reiko Fujita, president of the Atomic Energy Society of Japan, said nuclear energy was one of solutions to the global warming problems and a stable base load power source. She also said: "Irrespective of whether to support or oppose nuclear, no one can get around the challenge of high-level radioactive wastes. Wastes should be minimized and recycled as much as possible." As nuclear energy has an advantage of being conservable or usable over a long term, it is important to establish a fuel cycle including fast breeder reactors in the future, Ms. Fujita said, citing the present postponement of the nuclear fuel cycle project as a problem.

Panel discussions focused on whether female viewpoints are different from male viewpoints. Ms. Anne-Marie Choho said that while female and male viewpoints are not so different, women spend more time on childcare and contacts with neighbors than men so female viewpoints might reflect home life to a greater extent than male viewpoints. Ms. Ana Claudia Raffo-Caiado said women tended to take reasonable approaches and do business enthusiastically. Ms. Xudan Song explained that due to the

limited number of women majoring in nuclear reactor engineering, she could be viewed as representing female viewpoints and could attract more attention. She also said her opinions could gain more attention as female views when talking about new projects for nuclear power generation. Ms. Reiko Fujita said women, though becoming emotional sometimes in private situations, were as logical as men in public situations.

2nd Session: "Can we address climate change without nuclear energy?"

Four panelists from the United States, the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD/NEA), the Asia Pacific Energy Research Center (APERC) and Thailand took the rostrum to give presentations.

First, Ms. Jessica Lovering, senior analyst at the U.S. Breakthrough Institute, said, “Japan actually increased energy-sector CO₂ emissions despite its target of cutting such emissions by 6% by 2012 under the Kyoto Protocol.” “Low-carbon power sources' share of total power generation output has failed to increase since the late 1990s while the share has remained around 5% for hydro and rose rapidly for nuclear energy in the 1980s and for renewable energy recently.” She also said: “The risk of CO₂ emissions through oil, natural gas and coal combustion is greater than that of nuclear power generation from the viewpoint of the global environment. In Japan, the economic risk of the shutdown of all nuclear reactors is also great.”

OECD/NEA Senior Legal Adviser Ms. Ximena Vasquez-Maignan said: “The IEA's Technology Roadmap released in 2015 makes 10 proposals to overcome major obstacles to the introduction of nuclear energy. In the 2°C scenario, nuclear energy will play a key role in cutting emissions in the power generation sector. The roadmap predicts that the development of small modular nuclear reactors will expand the nuclear market and allow even isolated markets to get nuclear reactors.” She also said: “Key actions should be taken in the next decade to keep the nuclear option open. Not only governments but also all other stakeholders should take actions to allow nuclear generating and other countries to promote nuclear reactors that are safe, acceptable for the public and cheap.”

APERC Deputy Vice President Ms. Cecilia Tam, as an author of the IEA Technology Roadmap 2010-2015, introduced a prediction that “OECD countries, which have diversified energy sources, will increase nuclear energy consumption while reducing coal and oil consumption, while non-OECD countries will expand consumption of all energy sources.” She also said: “Various areas should be decarbonized to limit the temperature rise to 2°C or less. Given that nuclear energy is

required to account for some 17% of power generation output in 2050, achieving the limitation without using nuclear energy would cost more.” “While there would be various challenges to be solved for Southeast Asian countries' introduction of nuclear energy, a globally united organization would be required to promote nuclear energy as a key option to develop countries. The next APEC (Asia-Pacific Economic Cooperation) meeting is planned to indicate that the stability as a feature of nuclear energy would become necessary.”

Ms. Siriratana Biramontri, a former deputy secretary general of the Thai Office of Atoms for Peace, said: “In Thailand as well, the energy sector emits massive CO₂. Thai power generation is mostly covered by natural gas, emitting massive CO₂. Furthermore, Thailand imports natural gas from neighboring countries.” “Thailand decided to construct a nuclear power plant more than 30 years ago. But the project was suspended as offshore natural gas resources were discovered. I hope that the government will make a decision to use nuclear from the viewpoint of energy security.”

In panel discussions, moderator Ms. Sumiko Takeuchi, a senior fellow at the International Environment and Economy Institute, first asked a question about the Obama administration's attitude on nuclear energy. In response, Ms. Jessica Lovering indicated her hopes on U.S. nuclear energy policy, saying: “President Obama has made no specific remarks on nuclear energy. In respect to Climate Action Plan being drafted by the Environmental Protection Agency, however, momentum for nuclear is growing in the political world.”

Next, asked “why nuclear failed to be recognized as a low-carbon technology under the Kyoto Mechanism and if the situation would change in the future,” Ms. Ximena Vasquez-Maignan said, “Nuclear failed to be put into the Clean Development Mechanism due to the radioactivity and other problems.” But she said: “Excluding nuclear means limiting options and is not positive. Discussions should be continued on nuclear energy's contribution, which is important from the viewpoint of climate change.”

Asked “if Japan, which spends funds on diffusing existing technologies, should invest more in development,” Ms. Cecilia Tam said: “Most emerging countries are considering the nuclear option. Various technologies must be considered for satisfying future energy demand.” She also said: “Japan, which has no international grid network linked to neighboring countries, must consider flexibility and energy storage. As energy storage technology may be developed over a long term, it is important to support the development.”

Asked “what contributions Japan’s nuclear technology would make,” Ms. Siriratana Biramontri said: “Japan has experienced various natural disasters and can become a model for the Thai people. Despite the Fukushima accident, most Thai people support Japan. Thailand, though having yet to introduce nuclear energy, is looking to Japan in preparation for the introduction.”

3rd Session: Why can nuclear be described as safe when there is nothing absolutely safe?

Four panelists from Finland, the United Kingdom, India and Japan took the rostrum to give presentations.

Ms. Kaija Kainurinne, a former head of Finnish power generator TVO’s Brussels Office, explained the process in which Finland reached the world’s first decision on a high-level radioactive waste disposal site while forming national consensus. “Although it was a difficult challenge, a decision-making process was clarified with many people participating.” She also pointed out that Finland implemented stress tests for all nuclear power plants, based on the Fukushima accident, with nuclear plant operators making ardent efforts to reduce risks. But she noted that it is difficult for the public to correctly understand numerical risk indicators. “What plant operators can do is to communicate with people.” She also said that “transparent decisions are the most important” for gaining public understanding and that a particular key point “is that law stipulates decision-making processes.”

Ms. Gerry Thomas, professor of molecular pathology at Imperial College London, announced an analytical finding that “the Fukushima accident’s impact on thyroid cancer was limited to one-hundredth of the Chernobyl accident’s impact.” On communications with the public, she said: “The problem is that there are too many technical terms regarding nuclear energy. We must take care to avoid special terms when talking with ordinary citizens.” It would be important to first understand science and enlighten ordinary citizens about science and priority should be given to “dialogue” if something is to be communicated to people, she said.

Ms. Monamie Bhadra, an Indian student at Arizona State University in the United States, pointed to a decline in the social acceptance of nuclear energy due to the superficial independence of India’s Department of Atomic Energy (DAE) and Atomic Energy Regulatory Board (AERB). In order to increase the public acceptance, the government should meet citizens’ requests to join decision-making processes and citizens should have scientific knowledge, she said. On a report that citizen scientists

have won confidence among the public in India, she said the key point was public trust in such scientists, while some of such scientists could tell lies or have wrong beliefs.

Ms. Kazuko Uno, head of the Interferon & Host Defense Laboratory at the Louis Pasteur Center for Medical Research in Japan, indicated the view that “the ill fortune of the Fukushima accident was that physicists and biologists were divided over radiation.” “Problems have emerged from evacuation-related insufficient exercise and stress rather than low-dose radiation,” she said, introducing lifestyle improvement initiatives. Noting that many people likened the effects of the Fukushima accident to those of atomic bombing, Ms. Uno concluded that Japan’s education about radiation over the past decades had turned out to be insufficient. Noting that a major problem was that the Fukushima accident shook the confidence of scientists, she asserted that scientists should restore their confidence from the public.

Panel discussions covered such topics as different degrees of sensitivity to risks among people. Ms. Kazuko Uno said that people had thanked her for explaining that lifestyle improvements could mitigate the risk of cancer, when Fukushima residents had been concerned about the risk of radiation in the wake of the Fukushima accident. Ms. Kaija Kainurinne said that citizens had great confidence in scientists in Finland and that it would be difficult to export such culture to other countries. Noting that German citizens had not been concerned about air pollution while Germany’s nuclear phase-out policy had exposed people to risks involving coal-fired power generation, Ms. Gerry Thomas said the utilization of domestic resources (brown coal) might have been behind such public response. Ms. Monamie Bhadra said that since even scientists were divided over risks, it would be important to produce agreement through dialogue.

Panelists also discussed relations between nuclear energy and journalists. Moderator Ms. Ann MacLachlan, who is a journalist, said, “While some journalists have insufficient knowledge about nuclear energy and send wrong information under time pressure, scientists rather than journalists provide exaggerated information sometimes.” In response, Ms. Gerry Thomas introduced a British initiative triggered by the Fukushima accident. Noting that the problem was that there were no scientists available at any time for journalists, she explained that the Fukushima accident had prompted scientists to send their messages more voluntarily and positively. This was because scientists had feared those other than real experts would receive interviews in place of experts, she said. Ms. Thomas also said that as the independence of academic societies and universities had been protected in the United Kingdom, journalists had been trying to trust scientists.

4th Session: "What is necessary to gain support for nuclear energy from the public, especially from women?"

In the fourth and last session, a total of 12 panelists for the first to third sessions took the rostrum. All were asked what is necessary to gain support for nuclear energy from the public, especially from women, and made the following comments:

Ms. Monamie Bhadra: "Without having a preconception that ordinary people are irrational and full of fears, we should make discussions under the conception that they are intelligent."

Ms. Siriratana Biramontri: "Women may be in an advantageous position in talking with people. We should have dialogue with ordinary citizens to win their confidence in nuclear energy."

Ms. Ana Raffo-Caiado: "We should involve young generations who are free from any specific views. It is also important to use easy-to-understand words for explanations."

Ms. Reiko Fujita: "Atomic Energy Society of Japan members have been visiting Fukushima. Initially, Fukushima residents questioned why we were visiting Fukushima. As we have won their confidence through the continuation of such visits, experts should continue such activities to maintain connections with many people."

Ms. Kaija Kainurinne: "Patience is a key factor. While winning public confidence in nuclear energy is indispensable, citizens' participation only in one meeting would be insufficient. Women should take advantage of their patience for continuing the communication process."

Ms. Jessica Lovering: "Women are apt to have interests in solving actual problems rather than in science or engineering. Nuclear energy should be emphasized as 'a means to provide cheap, clean energy' rather than as 'one of the power generation means.'"

Ms. Ximena Vasquez-Maignan: "In order to gain confidence in nuclear energy from the public, a legal framework is required for operators' safe use of nuclear energy and regulator's oversight. Preparations for accidents are also necessary."

Ms. Xudan Song: "China has started initiatives to increase the public acceptance of nuclear energy. Since the Fukushima accident, citizens have become willing to get involved in decision-making processes for nuclear plant construction projects and locating such plants. It is important to provide information to the public in early stages."

Ms. Cecilia Tam: “We should identify matters of concern to our conversation partners before talking with them. It is important for us to explain and get conversation partners’ understanding about the advantages of nuclear energy.”

Ms. Gerry Thomas: “We must discuss various matters. Explaining only puts us at the starting point. As for differences between women and men, some may point out that women tend to refrain from making comments. But all people should be allowed to participate in discussions and make comments, irrespective of whether they are men or women.”

Panelists also introduced interesting episodes based on their actual experiences. Ms. Anne-Marie Choho quoted one of her neighbors as telling her: “I had been opposed to nuclear energy until several years ago. After seeing you (Ms. Choho) living as an ordinary citizen while working in the nuclear industry, however, I have begun to believe nuclear energy is reliable.” “People working in the nuclear industry should become reliable to win public confidence in nuclear energy,” Ms. Choho said.

Ms. Kazuko Uno introduced an episode where she gave a hand massage to a person wanting healing rather than a difficult lecture during her visit to Fukushima and found the massage very welcomed. Ms. Uno also said, “When I used a simple experiment to explain about food products that can reduce the risk of cancer, my audience understood my explanation well.” Then, she repeated a part of the experiments.

Following comments by panelists, the audience was invited to ask questions. A GRIPS student said: “There were comments emphasizing transparency as important. What does transparency mean? Does it mean an explanation about a process or a detailed scientific explanation to the public?” In response, Ms. Gerry Thomas said: “We must first find what kind of detailed explanations the public wants. It is not easy to explain about radiation or doses.” “It is not appropriate to provide only a mountain of facts,” she said. Ms. Ana Raffo-Caiado said, “IAEA staff members are ready to provide answers for various cases in preparation for being asked why nuclear energy can be used for peaceful purposes.” She also said: “We must consider who our conversation partners are, what we want to communicate to our conversation partners and what words we should use for such communication. Messages should be clear.” Finally, the session ended with a concluding remark by moderator Ms. Yukari Yamashita, IEEJ director in charge of the Energy Data and Modelling Center: “I thank you for your very significant

discussions. I would like you to refer to the discussions here after returning to your businesses.”

After all sessions ended, Ms. Rachel Pritzker, chair of the Advisory Board of the Breakthrough Institute, delivered a closing address. The Breakthrough Institute, which had doubted the safety or economic efficiency of nuclear energy five to six years ago, has recognized nuclear energy as indispensable for satisfying energy demand in the world through its past researches, according to Ms. Pritzker. In the research process, she said, she had paid attention to the fact that no one had died from radiation in the Fukushima accident while fossil fuel combustion for energy supply had led 30,000 people to die of respiratory diseases annually in the world. She then emphasized nuclear energy as one of the safest and cleanest energy sources. When asked if she would allow her daughter to live near a nuclear power plant, she would answer, “Yes,” she said powerfully.

As for challenges regarding nuclear energy, Ms. Pritzker said Japan had faced difficulties in gaining public understanding about nuclear energy after experiencing the Fukushima accident. While noting it would not be easy to overcome the difficulties, she expressed expectations that Japan, attracting global attention now, could develop a new model for dialogue with the public about nuclear energy.

The symposium brought about a common perception that (1) promoting understanding about the necessity of nuclear energy as an energy source that is effective for preventing climate change and economical, (2) continuing to provide correct information and communications on safety of nuclear power plants and radiation risks, and (3) patient dialogue with people taking advantage of female viewpoints, particularly “transparent” and “easy-to-understand” explanations, are required for gaining understanding from the public, particularly women, about nuclear energy.

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