

Summary Report

International Conference on Regulators' Views and Priorities on Nuclear Safety and Radiation Protection

TEPCO Fukushima Daiichi NPS Accident: 10-Year Reflection, Now and the Way Forward



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List of abbreviations and acronyms

ASN	Autorité de Sûreté Nucléaire (Nuclear Safety Authority, France)
BDBA	Beyond-design-basis accident
CLI	Commissions Locales d'Information (Local information commissions, France)
CSN	Consejo de Seguridad Nuclear (Nuclear Security Council, Spain)
CSNC	Canadian Nuclear Safety Commission
DBGM	Design-Basis-Ground-Motion
ENSI	Swiss Federal Nuclear Safety Inspectorate
EU	European Union
EXAR	Extreme flood events on the River Aare (Swiss Project)
EP	Emergency Preparedness
FACE	Fukushima Daiichi NPS Accident Information Collection and Evaluation
GDA	General Design Approval
GDA	Generic Design Assessment
GX	Green Transformation
IAEA	International Atomic Energy Agency
NEA	Nuclear Energy Agency
NPS	Nuclear power station
NRA	Nuclear Regulation Authority (Japan)
NRC	Nuclear Regulatory Commission (United States)
ONR	Office for Nuclear Regulation (United Kingdom)
POANHI	Process for Ongoing Assessment of Natural Hazards Information (NRC)
PRP	PEGASOS Refinement Project (Switzerland)
RP	Radiation Protection
SMR	Small Modular Reactor
STUK	Radiation and Nuclear Safety Authority (Finland)
SSM	Swedish Radiation Safety Authority
TEPCO	Tokyo Electric Power Company Holdings
WENRA	Western European Nuclear Regulators Association
WiN	Women in Nuclear

1. Introduction

The Nuclear Energy Agency (NEA), in co-ordination with the Nuclear Regulation Authority (NRA) of Japan, hosted the “International Conference on Regulators’ Views and Priorities on Nuclear Safety and Radiation Protection 10 Years After TEPCO Fukushima Daiichi Nuclear Power Station Accident – 10-Year Reflection, Now and the Way Forward”, on 28 and 29 November 2022. This conference provided an opportunity to bring together high-level regulatory officials from around the world to discuss and reflect on the past, present and future challenges and successes in the field of nuclear safety.

The main objective of the conference was to discuss: the developments in national regulatory frameworks after the Fukushima Daiichi Nuclear Power Station accident; the reassessment of safety requirements related to natural hazards; trust-building and transparency; and the involvement of women in the nuclear field.

Since the accident, the NEA has worked to identify lessons learnt and follow-up actions at the national and international levels to maintain and enhance safety in nuclear facilities. Implementation of these lessons and related research activities require long-term actions that will be continuously developed as regulators and the nuclear industry further examine regulations and practices in light of the accident.



2. Opening

This event gathered regulators from eight countries along with stakeholders from other sectors to examine the current situation, measure the progress made and anticipate the best path forward for all.



NRA Chairman Shinsuke Yamanaka.

Two hundred participants were welcomed with opening remarks by NRA Chairman Shinsuke Yamanaka, NEA Director-General William D. Magwood, IV, and International Atomic Energy Agency (IAEA) Deputy Director General Lydie Evrard.

NRA Chairman Shinsuke Yamanaka highlighted the policy frameworks that have been a priority for the organisation and have seen significant progress since his progression from Commissioner to Chairman in September 2022: communication and dialogue, nuclear safety, and human resources development. He added that since becoming a Commissioner at the NRA five years earlier, he has been involved in the inspection and supervision of nuclear facilities in view of restarts based on new regulations. Chairman Yamanaka furthermore expressed his expectations for the conference: to reflect on the NRA's work over the past decade and to draw important lessons from a rapidly evolving environment surrounding nuclear energy.

NEA Director-General William D. Magwood, IV thanked the NRA for the excellent co-operation that has characterised its relationship with the NEA, which has proven fundamental to launch the conference and create the conditions for an open conversation in which regulators' views, priorities and perspectives on nuclear safety are at the centre of the agenda.

He noted that nuclear power is safer, more resilient and better prepared for extreme events than ever before. In Japan, perhaps more than in any other country, significant investments have been made to ensure that nuclear power plants can operate safely in a range of conditions, including unexpected events such as the one related to the 2011 Fukushima Daiichi Nuclear Power Station accident.

Regulators have a key role in implementing safety improvements, in particular the lessons learnt from the Fukushima Daiichi Nuclear Power Station accident. By effectively overseeing safety rules, they can create greater trust in the technology and facilitate the transfer of knowledge to future generations, Director-General Magwood said. This will be fundamental if nuclear energy is to grow and contribute more to the global clean energy transition.



NEA Director-General William D. Magwood, IV.

In conclusion, Mr Magwood said, the NEA and its member countries are working to support a global system of stakeholders who co-operate closely to enhance safety and improve efficiency, which has proved to be a successful response to the Fukushima Daiichi accident.

The participants of the conference were also greeted by IAEA Deputy Director General Lydie Evrard, who reminded the audience of the broad scope of IAEA activities undertaken in response to the Fukushima Daiichi Nuclear Power Station accident, many of which are still ongoing. She emphasised the importance of incorporating lessons learnt for the progressive advancement of nuclear technologies and safety research. Ms Evrard highlighted that nuclear safety regulators and the nuclear community in general are currently confronted with several new challenges. Primarily, these challenges concern the safety of innovative reactors, including small modular reactors (SMRs), for which safety requirements formulated after the Fukushima Daiichi Nuclear Power Station accident remain applicable. Another significant challenge regarding safety and security has appeared with the military conflict in Ukraine. The IAEA is investing considerable effort and resources to assist its member states in overcoming these multifaceted challenges.



IAEA Deputy Director General Lydie Evrard.

3. Main sessions

The conference consisted of panel discussions between high-level representatives of national regulatory authorities for nuclear safety dedicated to: the evolution of regulatory frameworks since the Fukushima Daiichi Nuclear Power Station accident; the reassessment of natural hazards and radiological protection in emergencies; the establishment of trust and transparency with the public and stakeholders through effective communication; and gender balance in the nuclear sector.

3.1 Session A. Evolution in regulatory frameworks after the Fukushima Daiichi Nuclear Power Station Accident: New challenges, successes and goals

The objectives of this session were to discuss the current goals and expectations from a regulatory standpoint, considering the measures taken since 2011 and the improvements and safety management measures put in place in each country.

The Session Chair, Commissioner Tomoyuki Sugiyama from the NRA (Japan), introduced the panellists:

- Marc Kenzelmann, ENSI Director General (Switzerland)
- Nina Cromnier, SSM Director General (Sweden)
- Francisco Miguel Castejón Magaña, CSN Commissioner (Spain)
- Laure Tourjansky, ASN Commissioner (France)
- Christopher T. Hanson, US NRC Chair (United States)

The Session Chair briefed the audience on the lessons learnt from the Fukushima Daiichi Nuclear Power Station accident (1F accident):

- The need to evaluate any anticipated initiators, including earthquakes, tsunamis, volcano eruptions, fires, aircraft crashes and terrorist attacks;
- The need for design provisions for beyond-design-basis-accident (BDBA) conditions;
- The importance of a defence-in-depth approach in designing measures comprised of hardware and procedures.

The chair then explained how Japanese regulation of nuclear safety had been enhanced. He provided further details on the NRA's investigation of the 1F accident and described the NEA FACE (Fukushima Daiichi Nuclear Power Station Accident Information Collection and Evaluation) Project (2022-2026), noting that the countries represented by the session panellists are all members of the project. Speaking about the current and future development of nuclear energy in Japan, Commissioner Sugiyama mentioned the GX (Green Transformation) Implementation Council. The GX Implementation Council established by the Japanese government held its first meeting in July 2022 and presented the following nuclear policies:

- Promoting the restart of nuclear power plants;
- Maximising the use of existing plants with an extension of the operation period (beyond 60 years);
- Introducing next-generation innovative reactors;
- Accelerating reprocessing, decommissioning and final disposal processes.

Finally, Commissioner Sugiyama asked the panellists to share their experience regarding the accident's repercussions, the changes made in their regulations, and their expectations from ongoing Fukushima-related activities.

The participants emphasised the importance of regulations addressing severe accidents in terms of prevention and mitigation. They highlighted the value of topical peer reviews on selected safety issues, conducted every six years in line with EU guidance after the Fukushima Nuclear Power Station accident. The WENRA document (WENRA – RHWG, 2020) summarises the important lessons learnt from this process. Stress tests in different countries led to improved nuclear safety, to the identification of key areas of investigation resulting in new regulations, design modifications, and a focus on fires, internal floods and extreme weather hazards. A deeply ingrained safety culture contributes to a stronger regulatory framework while improved public communication and independence were recognised as essential, along with specialised and effective approaches to forward-looking regulation and the safety of existing fleets. The significance of a holistic approach to emergency preparedness (EP) and public understanding of radiological protection (RP) science was also emphasised. Lastly, the importance of flexibility in new rules to accommodate evolving knowledge and practices was highlighted.

The session closed with a summary provided by the Session Chair. In addition to thanking the panellists for their thoughts and the audience members for their questions, he provided a summary of post-Fukushima Daiichi actions and the current status of the nuclear sector in Japan.

He noted the following key points in his discussion:

- Strong leadership and safety culture have many similar traits (e.g. accountability, openness to different views). Therefore, one way to improve safety culture is to improve leadership.
- “Conservative” decision-making (i.e. decision-making that focuses only on the effects of radiation exposure) can have negative consequences, as experienced in the Fukushima Daiichi accident. It is important to take a holistic approach to EP that considers not just dose but other factors as well.

Among the key challenges for regulators, he noted the potential impact of climate change, which has the potential to increase the severity and frequency of external hazards. Furthermore, the addition of advanced reactors to the nuclear fleet poses new technical challenges that must be addressed throughout the fuel cycle. One of these challenges is the development of new storage requirements for novel fuel types. These issues need to be thoroughly discussed and addressed before the deployment of advanced reactors to ensure the safety and effectiveness of the regulatory framework.

Commissioner Sugiyama then highlighted the recommendations provided by the panellists for future regulatory activities:

- Regulators should continue to enhance their knowledge base so that they can create regulations using the best available scientific information.
- Provided it is consistent with their regulatory frameworks, regulators should consider requiring licensees to address beyond-design-basis-accidents (BDBA), rather than leaving this up to voluntary licensee actions.
- In addition to mechanisms that are already in place, countries should consider applying the international frameworks used for sharing information about reactors to other areas (e.g. fuel cycle facilities, medical applications).

Looking to the future, a number of points can be highlighted. Firstly, as interest and excitement around advanced reactors continue to grow, it is crucial to maintain a focus on operating reactor safety. Secondly, nuclear safety regulators must adapt their mindsets and regulatory philosophies to effectively navigate the evolving landscape of new technologies and a changing sector, making sure they remain flexible and agile. Moreover, regulators, and perhaps society itself, bear the responsibility of leaving

behind a body of knowledge that is sufficient for future generations to address the liabilities left by the current generation. This can apply to spent fuel and many other areas. Lastly, the Fukushima Daiichi Nuclear Power Station accident showed that a shift in thinking is required, moving away from the boundaries of the current knowledge base and implementing an adaptable framework.

3.2 Session B. A long experience in reassessing natural hazards safety requirements

Session B addressed the question: to what extent should natural hazards be incorporated into regulation? Discussions focused on the experience in reassessing natural hazards or combinations of hazards as design basis events in order to meet safety requirements.

The Session Chair, Commissioner Akira Ishiwatari (NRA, Japan), introduced the panellists:

- Dr Nils Sandberg, SSM International Adviser (Sweden)
- Marc Kenzelmann, ENSI Director General (Switzerland)
- Michael Finnerty, ONR Director of Regulation for Operating Facilities (United Kingdom)
- David Skeen, US NRC Acting Director Office of International Programs (United States)

Commissioner Ishiwatari provided a short presentation on Japanese regulations and the 10-year progress made in the field of natural hazards regulations after the Fukushima Daiichi Nuclear Power Station accident. He mentioned that the NRA had developed more stringent standards regarding tsunami protection, tighter requirements for fault movement identification and evaluation, more precise methods to identify design-basis-ground-motion (DBGM) that may lead to earthquakes, and introduced an assessment and monitoring of volcanic activity as well as backfitting regulations for operating plants. He also provided information on the 2016 volcanic eruption in Kyushu and its effects on the Ikata Nuclear Power Station.

The participants further discussed specific natural hazards such as earthquakes, earth slides, hurricanes, tsunamis, floods, tornadoes, seiches, surface ruptures, storm surges, organic-matter-induced-hazards such as blockage of cooling intakes by seaweed or jellyfish, coastal effects such as extreme tides or coastal erosion high winds, high/low temperatures, flooding, precipitation (including heavy snowfall), ice storms, induced fire and burning, volcanic ash density, volcanic ash fall, pandemics, tsunamis occurring without warning signs, undefined seismic sources and climate change.

Panellists presented recent and ongoing activities such as stress tests and knowledge management documents from Fukushima; mechanisms such as the NRC's Process for Ongoing Assessment of Natural Hazards Information (POANH), the Swiss PEGASOS Refinement Project (PRP), and the EXAR Project; the creation of Task Forces for evaluation and assessment; graded analysis of natural hazards, 1 to 10 000-year design-basis events and methods of identifying capable faults (on which plants are not allowed to be built).

In addition, panellists also discussed among themselves and with the audience the question of combinations of hazards such as earthquakes and earth slides, high wind/hurricanes with debris production, and pandemic scenarios with energy shortages. Panellists agreed that it is crucial to introduce flexibility in the design because combinations of hazards may vary in the future in unexpected ways. On the other hand, countries that have low natural hazard risks such as Sweden may have a lot to offer since they are able to think about unexpected external event scenarios.

Climate change was also thoroughly discussed and panellists agreed on the need to enhance international relations to share practices and exchange data in light of the difficulty of making predictions

regarding climate change. Collaboration between the IAEA and the NEA regarding natural hazard issues within working groups was cited as a good example of these much-needed mechanisms. Participants also suggested it was good to collaborate on extreme space events, which may have an impact on various electronic components, a recently discovered issue that needs more research and collaboration.

The session closed with a summary provided by the Session Chair. In addition to expressing gratitude to the panellists for their valuable insights and acknowledging the audience for their thought-provoking questions, in his summary of the discussion on natural hazard safety requirements, he noted that low-frequency external hazards vary from country to country in terms of their nature and treatment. Hazards of a mainly meteorological nature (e.g. floods, snow storms, intense precipitation, tornadoes and high winds) are common to every country. They are especially considered for the assessment of climate change and global warming intensified by natural hazards. The assessment of natural hazards involves different approaches that vary depending on the country, the specific hazard and the method (deterministic, probabilistic or a combination of both). It was emphasised that the combination of multiple natural hazards can lead to significant consequences. Additionally, it was noted that after the Fukushima Daiichi Nuclear Power Station accident, many countries conducted stress tests to evaluate their preparedness.

Commissioner Ishiwatari emphasised several challenges and recommendations related to natural hazards. Firstly, he highlighted the challenge of dealing with uncertainties in hazard estimations and the lack of data, which can make it difficult to accurately assess risks. Additionally, he stressed the importance of studying different data sources, such as statistical, meteorological, geological, and prehistorical data, and determining how to address them. Furthermore, he underscored the need to consider the combination of hazards and the potential consequences of interdependent events, as these factors can have significant impacts on safety.

In conclusion, he shared the future expectations of regulators in the field of natural hazard regulation. Firstly, he emphasised how climate change is considered by most regulators as one of the key topics of the next decade. Secondly, he pointed out that combinations of hazards may vary in the future, which is why regulations should be flexible enough to allow for these variations to be incorporated into the design. Lastly, he noted an increase in interest by regulators in the hazards associated with space weather.

3.3 Session C. Avenues for trust building and transparency

Session C looked at the experience gained following the accident at the Fukushima Daiichi Nuclear Power Station and sought to build upon ongoing efforts regarding the promotion of open dialogue and engagement with civil society, as well as trust-building and transparency to promote confidence between the nuclear institutions and the public. Furthermore, the session aimed to specifically highlight, promote and discuss national practices and approaches in these areas.

The Session Chair, Professor Tadahiro Katsuta (MEIJI University, Japan), introduced the panellists:

- Rumina Velshi, CSNC President (Canada)
- Laure Tourjansky, ASN Commissioner (France)
- Petteri Tiippana, STUK Director General (Finland)
- María del Pilar Lucio Carrasco, CSN Commissioner (Spain)
- Michael Finnerty, ONR Director of Regulation for Operating Facilities (United Kingdom)

The Session Chair noted that certain measures to strengthen trust and engagement between the nuclear operators, the nuclear regulator and the public were taken in Japan after the Fukushima Daiichi Nuclear Power Station accident and they continue to this day. One of the examples is the no-return rule. The rule prevents the staff members of the Secretariat of the NRA to be redeployed to administrative bodies with jurisdiction over matters relating to the use of nuclear energy in order to prevent a real or perceived conflict of interest. The NRA also maintains active communication with the senior leadership of the nuclear operators and with the public. However, public distrust of nuclear energy is still widespread in Japan. Despite efforts to date, a large part of the public continues to not differentiate between organisations charged with operating and/or promoting the nuclear industry and organisations charged with regulating it. In addition, historically in Japan the nuclear regulator has not played a major role when it comes to communicating and engaging in trust building activities with the public. New laws have been recently added aiming at safeguarding the lives of the people, such as the Atomic Energy Basic Law. The opportunity therefore exists for increased, more effective engagement and trust building with the public going forward and for the NRA to play a larger role in this area. Issues around competency and capacity building for the NRA in this area may still exist, requiring improved efforts to address public trust and transparency. However, it should not be just the NRA seeking enhanced, more transparent communication with the public. The nuclear utility companies such as TEPCO can also play an important role and, for example, efforts are already under way in this regard involving TEPCO and the local community in the Niigata prefecture. However, unlike some other countries, such as France with the Commissions Locales d'Information (CLI), there is no legal requirement for public engagement and consultation for major nuclear projects to proceed. Japanese institutions including the NRA would like to learn more about other regulatory agencies' programmes and specific initiatives for improved public engagement and trust building.

Panellists provided tangible examples of ongoing efforts within their countries to build and sustain engagement with the public. A number of ongoing projects were mentioned in which public stakeholder engagement and consultation was at the forefront of the initiative. It was nevertheless agreed that more can and should be done and that international collaboration and the sharing of lessons learnt are key to move forward in this area. Some of the participants highlighted the work of the NEA on, for example, the analysis and drafting of the then soon-to-be-released green booklet on *Characteristics of a Trusted Nuclear Regulator* (NEA, 2024), the type of publication from which regulators (and other nuclear sector institutions) can gain valuable insights to build and maintain trust.

The session closed with a summary provided by the Session Chair. In addition to thanking the panellists for their thoughts and the audience for their questions, he provided a summary of the discussion on trust building and transparency.

First, he listed the key points of discussion:

- Openness, honesty, transparency, ongoing engagement, competency and expertise are all critical elements of trust building.
- Building trust is like building up credit: it needs to be ongoing and continual, yet it can evaporate very quickly.
- All regulatory bodies around the world have gone through their own trust building journeys and have experiences where trust was lost or depleted and had to be restored.
- Surveys and other means of data collection are key to assessing public trust.
- A healthy safety culture within the regulatory body can uphold public trust.

Among the challenges and recommendations, the Session Chair mentioned the need for an improvement in confidence in nuclear regulators and industry in many countries. It was also acknowledged that building transparency and trust takes time, resources and commitment on an ongoing basis.

Additionally, the implementation of external, third-party reviews and the involvement of stakeholders in regulatory processes can greatly improve trust in the regulatory body. The importance of data was emphasised, with surveys being crucial for assessing the level of confidence in regulatory bodies and directing improvement efforts. Lastly, the willingness to learn from failures, along with an open and honest approach to assessing and implementing improvement initiatives, was seen as essential for building trust.

In conclusion, the chair discussed the expectations of regulators in the field of trust building. He emphasised the importance of capacity building, including training, and the resources required to allow the nuclear regulator to effectively engage with the public, including the ability to communicate risk and safety in clear, plain language. It is important to be prepared for long-term and ongoing levels of engagement. He also highlighted the significance of support and engagement with the international community, including the NEA, the IAEA and other organisations, to foster trust and transparency initiatives. International guidance and best practices can be used to strengthen these efforts. In addition, the chair suggested exploring ways to develop communication and engagement tools (e.g. social media, focused groups, media outlets) and to connect with targeted stakeholders and communities.

3.4 Session D. Panel discussion on women's involvement in the nuclear sector

The objective of this session was to discuss the situation of women working in the nuclear sector in each country and the ways of improving women's representation in the nuclear field, especially in nuclear regulatory bodies.

The Session Chair, NRA former Commissioner Kayoko Nakamura (Japan), introduced the panellists:

- Rumina Velshi, CSNC President (Canada)
- Nina Cromnier, SSM Director General (Sweden)
- Andrea Veil, NRC Director of the Office of Nuclear Reactor Regulation (United States)
- Yuko Nakagiri, NRA Director of Public Information Office (Japan)
- Ayako Otsuji, NRA Deputy Director of Office for Accident Measures of Fukushima-Daiichi Nuclear Power Station (Japan)

Key points of discussion included: biases in job descriptions and recruitment processes that affect women negatively; comparisons of gender equality levels between countries such as Japan, Sweden and the United Arab Emirates; race and gender within the nuclear sector; organisations that promote gender equality such as Women in Nuclear (WiN); work/life balance; managing professional careers and family.

Some of the topics that were also discussed included age discrimination added to gender discrimination; pregnancy and career advancement; self-deprecation among women; fear of staying single; support from male colleagues; personal experiences around Fukushima; fast progress in the sector in recent years; notable changes in the United Arab Emirates; the importance of child care policies and remote work; parental leave; the example and inspiration provided by women who reach the highest levels in government and industry; the role strategic sectors can have for government-sponsored gender advancement.

Many of these challenges are commonly encountered by women in the nuclear field, potentially impacting their overall well-being and performance. The panellists shared their personal experiences in effectively managing these challenges with their colleagues' support.

In addition, panellists answered questions from the audience regarding: key general initiatives that are needed to support women in the nuclear field; individual initiatives carried out by women who occupy high-level positions; the work environment surrounding female staff in said organisations; work-related obstacles panellists faced and how they were overcome; international feedback that may be considered by the NRA to support gender balance.

The Session Chair summarised the key points of the discussion on women's involvement in the nuclear field as follows:

- Other international initiatives should be looked at to build international alliances.
- Recruiting processes need to be reviewed to eliminate gender bias practices in job postings and job interviews.
- Perseverance is important for women to grow and to move forward professionally, and should be supported.
- Work-life balance challenges exist. Geographically specific practices that improve the work-life balance for women should serve as an inspiration for countries who face challenges in this matter, such as Japan.
- Structural bias against women and resistance to change should be addressed in the nuclear sector.

The Session Chair highlighted several challenges and recommendations regarding women's involvement in the nuclear field. These included the pursuit of equal opportunities for both men and women, the importance of mentorship as a valuable resource for women, the ongoing challenge of balancing professional careers with family life, the still present need to overcome barriers holding women back in spite of competence and skills, and the significance of having allies regardless of gender while disregarding detractors.

Finally, the Session Chair presented some of the expectations of the nuclear sector regarding women's involvement. These include the need for organisations to set goals and actively work towards achieving gender balance, the exploration of new means of engaging and encouraging young women, and the importance of seeking support from international organisations like the NEA and IAEA to strengthen gender balance initiatives.

4. Conclusions

NEA Director-General William D. Magwood, IV invited the chairs of all four sessions to provide their conclusions on the perspectives for potential future international co-operation.

NRA Commissioner Tomoyuki Sugiyama started by listing the conclusions related to the evolution of the regulatory body:

- The post-Fukushima Daiichi stress tests led to a number of safety improvements, including design changes (e.g. the addition of both onsite and offsite portable equipment). They are a good example of how international approaches can enhance nuclear safety.
- Due to their flexibility, performance-based rules are more readily harmonised than prescriptive rules. This is important because a prescriptive approach that works in one country might not work in others due to differences in culture as well as in legal and regulatory frameworks.
- The deployment of advanced reactors will offer an excellent opportunity for international co-operation because many countries may lack familiarity with certain designs (e.g. lead-cooled, gas-cooled reactors). The first countries to adopt a particular design can provide a wealth of information to subsequent adopters of the technology.
- The existing frameworks for international co-operation (e.g. NEA, IAEA, WENRA) are effective but regulators should always be on the lookout for ways to enhance them.
- Some topics are better suited for multinational co-operation while others lend themselves better to bilateral agreements.

NRA Commissioner Akira Ishiwatari provided the perspectives for international co-operation related to the panel session dedicated to natural hazards:

- Examples of successful international co-operation were mentioned, both bilateral and multilateral, concerning the exchange of information, especially on low-frequency natural hazards and hazards on which there is not much information. For example, the ONR, STUK and NRC co-operated on seismic issues. Sweden collected the data on seismic hazards from other countries and, in turn, other countries learnt from Japan about how to deal with earthquakes.
- There is an opportunity for new co-operation initiatives among countries to share data and experience that will improve the understanding of safety margins and the means to reduce those margins, including uncertainty.
- For countries with only a few natural hazards, international co-operation helps to think outside of the box and to consider new potential challenges.
- A high level of uncertainty and the worldwide effects of climate change will require wider international co-operation to share data, further develop current methods of estimation and lower uncertainties.

Professor Tadahiro Katsuta provided the key points of the panel session dedicated to trust building and transparency:

- Building and maintaining public trust is seen as a key priority for regulatory bodies. Without that trust they do not have a social licence and are unable to discharge their responsibilities.
- To be trusted, an organisation must be known and recognised for what it does, for the values it upholds and for its commitment towards openness and transparency.

- Practical and adaptive engagement approaches are crucial – one size does not fit all for the public.
- International collaboration and information sharing can greatly assist in a nuclear regulator’s journey towards improving trust.
- It is important to use plain language and communicate clearly while engaging with the public.

Former NRA Commissioner Kayoko Nakamura provided the perspectives for international co-operation towards enhancing women’s involvement in the nuclear field:

- Post-COVID-19 remote work policies and information technologies should be used to the advantage of women.
- Examples of women in the workforce should be highlighted and education for young women encouraged.
- NEA mentoring workshops for young girls are a valuable tool: “If I can see it, I can be it!”. This workshop is a visible indicator that the issue is progressing in Japan. However, more work remains to be done in this direction.

Panellists in the concluding session gather on stage at the end of the conference.



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NEA publications and information

The full catalogue of publications is available online at www.oecd-neo.org/pub.

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Cover photos: Site visit to the Fukushima Nuclear Power Station, Japan.