



Australian Government



Nuclear-based science benefiting all Australians

Committee Secretary
Joint Standing Committee on Treaties
PO Box 6021
Parliament House
CANBERRA ACT 2600
AUSTRALIA

By email: jsct@aph.gov.au

Dear Secretary,

Re: Fifth Agreement to Extend the 1987 Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology

Please find enclosed ANSTO's responses to the three questions taken on notice at the Committee hearing on 18 June.

I also enclose an information paper addressing the Committee's interest in the steps that are being taken by the international nuclear community in the aftermath of the accident in March 2011 at the Fukushima Daiichi Nuclear Power Plant in Japan. I would be grateful if this could be distributed to Committee members for their reference.

If you or any members of the Committee would like any further information regarding the attached or the Agreement generally, please do not hesitate to contact me.

Yours sincerely,

Steven McIntosh
Manager, International Relations, Government Affairs and Policy



The International Atomic Energy Agency's Response to Fukushima Daiichi Nuclear Power Plant Accident, March 2011

Given the Committee's interest in the steps that are being taken by the international community – particularly the International Atomic Energy Agency (IAEA) - regarding nuclear safety in the aftermath of the accident in March 2011 at the Fukushima Daiichi Nuclear Power Plant in Japan, I thought I may assist the Committee by providing an outline of the work that is being undertaken in this regard.

In June 2011 and in direct response to the Fukushima accident, the Director General of the IAEA convened the inaugural Ministerial Conference on Nuclear Safety. At that meeting, the Director General was charged with the responsibility to develop a comprehensive action plan to coordinate international action responding to lessons learnt from the accident. The *IAEA Action Plan on Nuclear Safety* was unanimously approved and adopted by IAEA Member States, including Australia, at the September 2011 IAEA Board of Governors and General Conference. In addition, also in September 2011, the Secretary-General of the United Nations convened a High Level Meeting on Nuclear Safety and Security and issued a report on the *United Nations system-wide study on the implications of the accident at the Fukushima Daiichi nuclear power plant*.

The IAEA *Action Plan* consists of 12 main actions:

1. Assess the safety vulnerabilities of nuclear power plants in the light of lessons learned from the Fukushima accident;
2. Strengthen IAEA peer reviews in order to maximize the benefits to Member States;
3. Strengthen emergency preparedness and response;
4. Strengthen the effectiveness of national regulatory bodies;
5. Strengthen the effectiveness of operating organizations with respect to nuclear safety;
6. Review and strengthen IAEA Safety Standards and improve their implementation;
7. Improve the effectiveness of the international legal framework;
8. Facilitate the development of the infrastructure necessary for Member States embarking on a nuclear power programme;
9. Strengthen and maintain capacity building - including education, training and exercises at the national, regional and international levels;
10. Ensure the on-going protection of people and the environment from ionizing radiation following a nuclear emergency;
11. Enhance transparency and effectiveness of communication and improve dissemination of information; and
12. Effectively utilize research and development.

A copy of the Action Plan is attached for your reference (**Attachment 1**).

Implementation of the *Action Plan* is well underway, and the IAEA Director-General has provided quarterly reports on its implementation to the Board of Governors, with the most recent update given in June. The *Action Plan* has prompted a vast amount of activity aimed at strengthening nuclear safety. The IAEA Secretariat has developed around 170 specific activities to respond to the 39 sub-actions contained in the *Action Plan*. Furthermore, around 650 detailed tasks have been established to implement the Secretariat's activities. For example, the IAEA's Safety Standards, focusing on the regulatory framework governing the site evaluation, design, commissioning and operation of nuclear installations, have already been updated following the accident. These Safety Standards are based on best international practices and shared experience, and are used as benchmarks to determine compliance performance. The IAEA has identified further areas for strengthening of the Safety Standards and is undertaking on-going revision of certain Safety Standards, including *Preparedness and Response for a Nuclear or Radiological Emergency* and of *The Management System for Facilities and Activities*. The Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency, Dr Carl-Magnus Larsson, is a member of the Commission on Safety Standards, which has an overview role with regard to the Agency's Safety Standards.

As discussed by Dr Floyd during the hearing, Article IX of the 1987 Regional Cooperative Agreement requires that any project under the Agreement must implement the IAEA's current safety standards. Thereby, the Regional Cooperative Agreement has effectively incorporated all changes made to the safety standards since the Fukushima accident and will do likewise with respect to future changes.

In addition, the following list provides a snapshot of some of the international conferences, workshops and meetings that have taken or will take place, which are aimed, inter alia, at addressing the lessons learned from the accident. I note that this list does not include meetings held under the aegis of the OECD Nuclear Energy Agency, the Asian Nuclear Safety Network, the West European Nuclear Regulators Association, or many other international bodies. Nor does it cover the countless efforts that are being taken by the IAEA and the international community to directly assist Japan with remediation following the accident.

1. In April 2011, the *Fifth Review meeting on the Convention on Nuclear Safety* was held in Vienna, which discussed the preliminary responses to the accident;
2. As noted above, in June 2011 a Ministerial Conference on Nuclear Safety was called by the Director General of the IAEA to respond to the Fukushima nuclear accident;
3. In September 2011, the *Regulatory Cooperation Forum* (which meets annually, and brings together nuclear regulators from around the world) discussed the issue. We anticipate that the Forum will return to the issue at this year's meeting.
4. In March 2012, an *International Experts' Meeting on Reactor and Spent Fuel Safety in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant* was held in Vienna. Over 230 experts from 44 IAEA Member States and four international organisations sought to identify the root causes of the accident. Discussions were had to review all the relevant technical aspects of reactor and spent fuel safety in light of the accident.

5. In December 2011 and again in May 2012, the International Expert Group on Nuclear Liability (INLEX) met in Vienna to develop recommendations to strengthen the international nuclear liability regime. Those recommendations will be considered by the Agency's Board of Governors and General Conference in September this year. Mr McIntosh, who appeared for ANSTO at the JSCOT hearing, is the Chair of INLEX.
6. In April 2012, the sixth meeting of representatives of competent authorities identified under the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency* was held in Vienna. The 150 participants from 71 countries discussed the response to the accident at the Fukushima Daiichi nuclear power plants at national and international levels and reviewed the progress in the implementation of the *Action Plan*.
7. In April 2012, the first Steering Committee meeting of the Global Nuclear Safety and Security Network was convened by the IAEA secretariat in response to the *Action Plan*.
8. In May 2012 the Contracting Parties to the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* convened for the Convention's fourth review. At the meeting the President of the Review Meeting specifically requested that contracting parties address in their country reports and presentations how they have assessed their own national strategies and safety concerns in relation to spent fuel management in light of the Fukushima accident. Japan provided extensive presentations on the safety of the spent fuel management facilities at Fukushima Daiichi and on their long-term plans for decommissioning of the site.
9. In May 2012, the United States hosted the 3rd *International Conference on Nuclear Power Plant Life Management for Long Term Operations*. The impacts of the Fukushima accident were discussed in relation to Power Plant Life Management.
10. Also in May 2012, a *Technical Meeting on Knowledge Management and Safety Culture in Nuclear Organisations* was held in Vienna. The meeting was created largely in response to issues raised by the Fukushima accident and highlighted the role of knowledge and knowledge management, and its role in maintaining a strong safety culture. The technical meeting followed a consultancy meeting held on the same subject in February 2012.
11. In June 2012, over 160 communication experts and government officials from 54 Member States considered best practices in enhancing transparency and communication effectiveness in the event of a nuclear or radiological emergency in a meeting held in Vienna titled: *Communicating Transparently in Nuclear emergencies*.
12. In August 2012, an Extraordinary Meeting of the Contracting Parties to the *Convention on Nuclear Safety* will meet in Vienna in response to the Fukushima accident.
13. Also in August 2012, the *Regional Cooperative Agreement* project – 'Marine benchmark study on the possible impact of the Fukushima radioactive releases in the Asia-Pacific Region' - to which Mr McIntosh referred in his introductory remarks to the

Committee - will hold its Annual Project Review meeting in Vietnam. Australia is the lead country on this project.

14. In September 2012, Seismologists and nuclear safety experts will meet in Vienna to consider protection against extreme earthquakes and tsunamis at the *International Experts Meeting on Protection Against Extreme Earthquakes and Tsunamis in the light of the Accident at the Fukushima Daiichi Nuclear Power Plant*.
15. In December 2012, in Fukushima Prefecture, Japan, a *Ministerial Conference on Nuclear Safety* will be held to discuss the progress of international efforts in strengthening nuclear safety, particularly in relation to the *Action Plan*.
16. In January 2013, an *International Experts Meeting on Decommissioning and Remediation after a Nuclear Accident* will be held in Vienna.
17. In April 2013, an *International Conference on Effective Nuclear Regulatory Systems* will be held in Canada.

The combined efforts of the *Action Plan*, and the discussions and actions that derive from the analysis, peer review, critique and application undertaken at the above meetings, is providing an essential and thorough review and scrutiny of the nuclear industry post-Fukushima. Domestically, Japan has recently reformed its regulatory framework to take account of the criticisms of lack of regulatory independence levied after the accident.

Globally, 'stress tests' are being carried out widely at nuclear plants around the world in response to the lessons learnt from the accident. The IAEA is also expanding and strengthening its peer review programme. In the 12 months following the accident, the IAEA undertook 30 missions, comprised of international experts, to assess the effectiveness of a Member State's nuclear regulatory systems and safety arrangements, with a particular focus on the IAEA Safety Standards.

References: International Atomic Energy Agency www.iaea.org and <http://www-ns.iaea.org/actionplan/default.asp>

Joint Standing Committee on Treaties
Treaties tabled on 20 March and 8 May 2012
 ANSWERS TO QUESTIONS ON NOTICE
 Australian Nuclear Science and Technology Organisation
 Hearing – 18 June 2012

AGENCY/DEPARTMENT: AUSTRALIAN NUCLEAR SCIENCE AND TECHNOLOGY ORGANISATION

REFERENCE: Question on Notice (Hansard, 18 June 2012, Page 3)

QUESTION No.: 1

Senator LUDLAM: Can you tell us how many projects there are actually afoot under the RCA that Australia is engaged in at the moment? If it is complex maybe just table us a list, but roughly how many are underway?

Mr McIntosh: There are 18 projects on foot at the moment, of which Australia is participating in 13.

Senator LUDLAM: Is it easy for you to provide for us a breakdown of where those are and what the nature of them is?

Mr McIntosh: I will do that on notice.

ANSWER

There are currently a total of 20 RCA projects (not 18 as stated at the hearing). Australia participates in 15 of these projects, which are outlined below:

Project Title:	Lead Country:	National Project Coordinator for Australia:
Health Sector		
Reducing the Shortage of Oncology Professionals through an Applied Sciences of Oncology Course (ASOC)	Australia	Liverpool Hospital, NSW
Strengthening Medical Physics Through Education and Training	Australia	Canberra Hospital, ACT
Building Capacity with Distance Assisted Training for Nuclear Medicine Professionals	Australia	National Imaging Facility ANSTO and the Brain and Mind Research Institute, NSW
Improving Cancer Management with Hybrid Nuclear Medicine Imaging	India	Austin Hospital, VIC
Supporting 3D Image-Guided Brachytherapy Services	Japan	Peter MacCallum Cancer Centre, VIC

Strengthening the Application of Nuclear Medicine in the Management of Cardiovascular Diseases	Philippines	Royal Melbourne Hospital, VIC
Strengthening the Application of Stereotactic Body Radiation Therapy to Improve Cancer Treatment	Republic of Korea	Royal North Shore Hospital, NSW
Environment Sector		
Marine Benchmark Study on the Possible Impact of the Fukushima Radioactive Releases in the Asia-Pacific Region	Australia	TRADEWINDS (Australia), NSW
Applying Isotope Techniques to Investigate Groundwater Dynamics and Recharge Rate for Sustainable Groundwater Resource Management	Pakistan	ANSTO Institute for Environmental Research
Supporting Nuclear and Isotopic Techniques to Assess Climate Change for Sustainable Marine Ecosystem Management	Philippines	TRADEWINDS (Australia), NSW
Supporting Sustainable Air Pollution Monitoring Using Nuclear Analytical Technology	New Zealand	ANSTO Institute for Environmental Research
Agriculture Sector		
Supporting Mutation Breeding Approaches to Develop New Crop Varieties Adaptable to Climate Change	China	Department of Agriculture and Food, WA
Implementing Best Practices of Food Irradiation for Sanitary and Phytosanitary Purposes	China	Department of Employment, Economic Development and Innovation, QLD

Improving Soil Fertility, Land Productivity and Land Degradation Mitigation	New Zealand	The University of Newcastle, NSW
Industry Sector		
Supporting Advanced Non-Destructive Examination for Enhanced Industrial Safety, Product Quality and Productivity	India	Advanced Technology Testing and Research, VIC

Joint Standing Committee on Treaties
Treaties tabled on 20 March and 8 May 2012
ANSWERS TO QUESTIONS ON NOTICE
Australian Nuclear Science and Technology Organisation
Hearing – 18 June 2012

AGENCY/DEPARTMENT: AUSTRALIAN NUCLEAR SCIENCE AND TECHNOLOGY ORGANISATION

REFERENCE: Question on Notice (Hansard, 18 June 2012, Page 3)

QUESTION No.: 2

Senator LUDLAM: Has the agreement been modified at all in its history?

Mr McIntosh: It was modified in 1987. There was an original agreement in 1972, which was rolled over unchanged three times. Then, in 1987, there was a significant rewrite, which has just been rolled over since.

Senator LUDLAM: Was that rewrite subject or conditioned at all to the disaster that had just occurred in the Ukraine at Chernobyl?

Mr McIntosh: Not that I understand.

Senator LUDLAM: Can you check back for us as to whether that was a factor?

Mr McIntosh: I will check that too.

ANSWER

As noted in paragraph six of the National Interest Analysis [2012] ATNIA 9, the ‘purpose of the 1987 update was to enhance overall coordination and supervision of cooperative projects carried out under RCA arrangements.’ From ANSTO’s recollection, the rewriting of the agreement in 1987 was prompted by an internal Agency reorganisation in 1986/87, which moved the RCA program from the Agency’s Department of Radioisotopes and Applications to the Department of Technical Cooperation. The Department of Technical Cooperation requested the inclusion in the Agreement of more detail about the RCA processes and procedures than were covered in the 1972 Agreement.

Joint Standing Committee on Treaties
Treaties tabled on 20 March and 8 May 2012
ANSWERS TO QUESTIONS ON NOTICE
Australian Nuclear Science and Technology Organisation
Hearing – 18 June 2012

AGENCY/DEPARTMENT: AUSTRALIAN NUCLEAR SCIENCE AND TECHNOLOGY ORGANISATION

REFERENCE: Question on Notice (Hansard, 18 June 2012, Page 5)

QUESTION No.: 3

Senator THISTLETHWAITE: And you said earlier that Australia is involved in 13 of the 18 projects that are currently being undertaken. Can you give us a flavour of some of the projects that we are not involved in?

Mr McIntosh: I will take that on notice.

ANSWER

Australia does not participate in five of the 20 RCA projects (not 18 as stated at the hearing). The five projects that Australia does not participate in are outlined below.

Australia is not participating in the four projects in the Industry and Agriculture Sectors because Australian activities in the specific project areas are currently not significant, therefore, there is little opportunity for Australia to provide technical input or add further value to the project. With regards to the project in the Health Sector, this project was initiated by Japan and most of the resource inputs were framed around those available in Japan. While Australia is not a designated participant country in this project, several nuclear medicine experts from Australia were engaged to assist on one of the regional training courses.

Project Title	Lead Country
Industry Sector	
Characterising and Optimising Process Dynamics in Complex Industrial Systems Using Radiotracer and Sealed Source Techniques	Pakistan
Supporting Radiation Processing for the Development of Advanced Grafted Materials for Industrial Applications and Environmental Preservation	Malaysia
Enhancing Capacity for Effective Use and Maintenance of Nuclear Instrumentation	Sri Lanka
Health Sector	
Improving Image Based Radiation Therapy for Common Cancers in the RCA Region	Japan
Agriculture Sector	

Supporting Radiation Processing of Polymeric Materials for Agricultural Applications and Environmental Remediation	Malaysia
--	----------

IAEA Action Plan on Nuclear Safety¹

In June 2011 a Ministerial Conference on Nuclear Safety was convened to direct, under the leading role of the IAEA, the process of learning and acting upon lessons following the accident at TEPCO's Fukushima Daiichi Nuclear Power Station in order to strengthen nuclear safety, emergency preparedness and radiation protection of people and the environment worldwide. At the conference a Ministerial Declaration was adopted which inter alia:

- “Requested the IAEA Director General to prepare a Report on the June 2011 IAEA Ministerial Conference on Nuclear Safety and a draft Action Plan, building on the Declaration of the Ministerial Conference and the conclusions and recommendations of the three Working Sessions, and the expertise and knowledge available therein, and to promote coordination and cooperation, as appropriate, with other relevant international organizations to follow up on the outcomes of the Conference, as well as facilitate consultations among Member States on the draft Action Plan”;
- “Requested the IAEA Director General to present the Report and the draft Action Plan covering all the relevant aspects relating to nuclear safety, emergency preparedness and response, and radiation protection of people and the environment, as well as the relevant international legal framework, to the IAEA Board of Governors and the General Conference at their forthcoming meetings in 2011”;
- “Called upon the IAEA Board of Governors and the General Conference to reflect the outcome of the Ministerial Conference in their decisions and to support the effective, prompt and adequately resourced implementation of the Action Plan”.

In considering this Action Plan, it is important to note that:

- The responsibility for ensuring the application of the highest standards of nuclear safety and for providing a timely, transparent and adequate response to nuclear emergencies, including addressing vulnerabilities revealed by accidents, lies with each Member State and operating organization.
- The IAEA Safety Standards provide the basis for what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation, and will continue to be objective, transparent and technologically neutral.
- Transparency in all aspects of nuclear safety through timely and continuous sharing and dissemination of objective information, including information on nuclear emergencies and their radiological consequences, is of particular importance to improve safety and to meet the high level of public expectation. Nuclear accidents may have transboundary effects; therefore it is important to provide adequate responses based on scientific knowledge and full transparency.

¹ The Action Plan was approved by the IAEA Board of Governors on 13 September 2011, as endorsed by the IAEA General Conference during its 55th regular session on 22 September 2011.

- As understanding of the accident develops, additional analysis of the root causes will be carried out. Further lessons may be learned and, as appropriate, be incorporated into the proposed actions by updating the Action Plan. The High Level Conference to be organized by Japan and the IAEA in 2012 will provide an opportunity for learning further lessons and for enhancing transparency.
- The Agency's prompt and effective implementation of activities under the Action Plan will be funded through prioritization and continuing efficient use of resources from the regular budget, and through voluntary contributions of extrabudgetary resources.

The purpose of the Action Plan is to define a programme of work to strengthen the global nuclear safety framework. The plan consists of actions building on the Ministerial Declaration, the conclusions and recommendations of the Working Sessions, and the experience and knowledge therein, including the INSAG letter report (GOVIN/2011/11), and the facilitation of consultations among Member States.

The success of this Action Plan in strengthening nuclear safety is dependent on its implementation through the full cooperation and participation of Member States and will require also the involvement of many other stakeholders². They are therefore encouraged to work cooperatively to implement the Action Plan to maximize the benefit of the lessons learned from the accident and to produce concrete results as soon as possible. Progress on the implementation of the Action Plan will be reported to the September 2012 meeting of the Board of Governors and the 2012 General Conference and subsequently on an annual basis as may be necessary. In addition, the extraordinary meeting of the Contracting Parties to the Convention on Nuclear Safety (CNS) in 2012 will provide an opportunity to consider further measures to strengthen nuclear safety.

Strengthening nuclear safety in light of the accident is addressed through a number of measures proposed in this Action Plan including 12 main actions, each with corresponding sub-actions, focusing on: safety assessments in the light of the accident at TEPCO's Fukushima Daiichi Nuclear Power Station; IAEA peer reviews; emergency preparedness and response; national regulatory bodies; operating organizations; IAEA Safety Standards; international legal framework; Member States planning to embark on a nuclear power programme; capacity building; protection of people and the environment from ionizing radiation; communication and information dissemination; and research and development.

Safety assessments in the light of the accident at TEPCO's Fukushima Daiichi Nuclear Power Station

Undertake assessment of the safety vulnerabilities of nuclear power plants in the light of lessons learned to date from the accident

- Member States to promptly undertake a national assessment of the design of nuclear power plants against site specific extreme natural hazards and to implement the necessary corrective actions in a timely manner.
- The IAEA Secretariat, taking into account existing experiences, to develop a methodology and make it available for Member States that may wish to use it in carrying out their national assessments.
- The IAEA Secretariat, upon request, to provide assistance and support to Member States in the implementation of a national assessment of the design of nuclear power plants against site specific extreme natural hazards.

² Stakeholders include, amongst others, governments, relevant international organizations and associations, regulatory bodies, operating organizations, nuclear industry, radioactive waste management organizations, technical support and safety organizations, research organizations, education and training institutions and other relevant bodies.

- The IAEA Secretariat, upon request, to undertake peer reviews of national assessments and to provide additional support to Member States.

IAEA peer reviews

Strengthen IAEA peer reviews in order to maximize the benefits to Member States

- The IAEA Secretariat to strengthen existing IAEA peer reviews by incorporating lessons learned and by ensuring that these reviews appropriately address regulatory effectiveness, operational safety, design safety, and emergency preparedness and response; Member States to provide experts for peer review missions.
- The IAEA Secretariat, in order to enhance transparency, to provide summary information on where and when IAEA peer reviews have taken place, and to make publicly available in a timely manner the results of such reviews with the consent of the State concerned.
- Member States to be strongly encouraged to voluntarily host IAEA peer reviews, including follow-up reviews, on a regular basis; the IAEA Secretariat to respond in a timely manner to requests for such reviews.
- The IAEA Secretariat to assess, and enhance as necessary, the effectiveness of the IAEA peer reviews.

Emergency preparedness and response

Strengthen emergency preparedness and response

- Member States to conduct a prompt national review and thereafter regular reviews of their emergency preparedness and response arrangements and capabilities, with the IAEA Secretariat providing support and assistance through Emergency Preparedness Review (EPREV) missions, as requested.
- The IAEA Secretariat, Member States and relevant international organizations to review and strengthen the international emergency preparedness and response framework, taking into account recommendations given in the final report of the International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies, and encouraging greater involvement of the relevant international organizations in the Joint Radiation Emergency Management Plan of the International Organizations.
- The IAEA Secretariat, Member States and relevant international organizations to strengthen the assistance mechanisms to ensure that necessary assistance is made available promptly. Consideration to be given to enhancing and fully utilizing the IAEA Response and Assistance Network (RANET), including expanding its rapid response capabilities.
- Member States to consider, on a voluntary basis, establishing national rapid response teams that could also be made available internationally through RANET.
- The IAEA Secretariat, in case of a nuclear emergency and with the consent of the State concerned, to conduct timely fact-finding missions and to make the results publicly available.

National regulatory bodies

Strengthen the effectiveness of national regulatory bodies

- Member States to conduct a prompt national review and thereafter regular reviews of their regulatory bodies, including an assessment of their effective independence, adequacy of human and financial resources and the need for appropriate technical and scientific support, to fulfil their responsibilities.

- The IAEA Secretariat to enhance the Integrated Regulatory Review Service (IRRS) for peer review of regulatory effectiveness through a more comprehensive assessment of national regulations against IAEA Safety Standards.
- Each Member State with nuclear power plants to voluntarily host, on a regular basis, an IAEA IRRS mission to assess its national regulatory framework. In addition, a follow-up mission to be conducted within three years of the main IRRS mission.

Operating organizations

Strengthen the effectiveness of operating organizations with respect to nuclear safety

- Member States to ensure improvement, as necessary, of management systems, safety culture, human resources management, and scientific and technical capacity in operating organizations; the IAEA Secretariat to provide assistance to Member States upon request.
- Each Member State with nuclear power plants to voluntarily host at least one IAEA Operational Safety Review Team (OSART) mission during the coming three years, with the initial focus on older nuclear power plants. Thereafter, OSART missions to be voluntarily hosted on a regular basis.
- The IAEA Secretariat to strengthen cooperation with WANO by amending their Memorandum of Understanding to enhance information exchange on operating experience and on other relevant safety and engineering areas and, in consultation with other relevant stakeholders, to explore mechanisms to enhance communication and interaction among operating organizations.

IAEA Safety Standards

Review and strengthen IAEA Safety Standards and improve their implementation

- The Commission on Safety Standards and the IAEA Secretariat to review, and revise as necessary using the existing process in a more efficient manner, the relevant IAEA Safety Standards³ in a prioritised sequence.
- Member States to utilize as broadly and effectively as possible the IAEA Safety Standards in an open, timely and transparent manner. The IAEA Secretariat to continue providing support and assistance in the implementation of IAEA Safety Standards.

International legal framework

Improve the effectiveness of the international legal framework

- States parties to explore mechanisms to enhance the effective implementation of the Convention on Nuclear Safety, the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management, the Convention on the Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, and to consider proposals made to amend the Convention on Nuclear Safety and the Convention on the Early Notification of a Nuclear Accident.
- Member States to be encouraged to join and effectively implement these Conventions.

³ This review could include, inter alia, regulatory structure, emergency preparedness and response, nuclear safety and engineering (site selection and evaluation, assessment of extreme natural hazards including their combined effects, management of severe accidents, station blackout, loss of heat sink, accumulation of explosive gases, nuclear fuel behaviour and ways to ensure the safety of spent fuel storage).

- Member States to work towards establishing a global nuclear liability regime that addresses the concerns of all States that might be affected by a nuclear accident with a view to providing appropriate compensation for nuclear damage. The IAEA International Expert Group on Nuclear Liability (INLEX) to recommend actions to facilitate achievement of such a global regime. Member States to give due consideration to the possibility of joining the international nuclear liability instruments as a step toward achieving such a global regime.

Member States planning to embark on a nuclear power programme

Facilitate the development of the infrastructure necessary for Member States embarking on a nuclear power programme

- Member States to create an appropriate nuclear infrastructure based on IAEA Safety Standards and other relevant guidance, and the IAEA Secretariat to provide assistance as may be requested.
- Member States to voluntarily host Integrated Nuclear Infrastructure Reviews (INIR) and relevant peer review missions, including site and design safety reviews, prior to commissioning the first nuclear power plant.

Capacity Building

Strengthen and maintain capacity building

- Member States with nuclear power programmes and those planning to embark on such a programme to strengthen, develop, maintain and implement their capacity building programs, including education, training and exercises at the national, regional and international levels; to continuously ensure sufficient and competent human resources necessary to assume their responsibility for safe, responsible and sustainable use of nuclear technologies; the IAEA Secretariat to assist as requested. Such programmes to cover all the nuclear safety related areas, including safe operation, emergency preparedness and response and regulatory effectiveness and to build upon existing capacity building infrastructures.
- Member States with nuclear power programmes and those planning to embark on such a programme, to incorporate lessons learned from the accident into their nuclear power programme infrastructure; the IAEA Secretariat to assist as requested.

Protection of people and the environment from ionizing radiation

Ensure the on-going protection of people and the environment from ionizing radiation following a nuclear emergency

- Member States, the IAEA Secretariat and other relevant stakeholders to facilitate the use of available information, expertise and techniques for monitoring, decontamination and remediation both on and off nuclear sites and the IAEA Secretariat to consider strategies and programmes to improve knowledge and strengthen capabilities in these areas.
- Member States, the IAEA Secretariat and other relevant stakeholders to facilitate the use of available information, expertise and techniques regarding the removal of damaged nuclear fuel and the management and disposal of radioactive waste resulting from a nuclear emergency.
- Member States, the IAEA Secretariat and other relevant stakeholders to share information regarding the assessment of radiation doses and any associated impacts on people and the environment.

Communication and information dissemination

Enhance transparency and effectiveness of communication and improve dissemination of information

- Member States, with the assistance of the IAEA Secretariat, to strengthen the emergency notification system, and reporting and information sharing arrangements and capabilities.
- Member States, with the assistance of the IAEA Secretariat, to enhance the transparency and effectiveness of communication among operators, regulators and various international organizations, and strengthen the IAEA's coordinating role in this regard, underlining that the freest possible flow and wide dissemination of safety related technical and technological information enhances nuclear safety.
- The IAEA Secretariat to provide Member States, international organizations and the general public with timely, clear, factually correct, objective and easily understandable information during a nuclear emergency on its potential consequences, including analysis of available information and prognosis of possible scenarios based on evidence, scientific knowledge and the capabilities of Member States.
- The IAEA Secretariat to organize international experts meetings to analyse all relevant technical aspects and learn the lessons from the Fukushima Daiichi nuclear power station accident.
- The IAEA Secretariat to facilitate and to continue sharing with Member States a fully transparent assessment of the accident at TEPCO's Fukushima Daiichi Nuclear Power Station, in cooperation with Japan.
- The IAEA Secretariat and Member States, in consultation with the OECD/NEA and the IAEA International Nuclear and Radiological Event Scale (INES) Advisory Committee to review the application of the INES scale as a communication tool.

Research and development

Effectively utilize research and development

- Relevant stakeholders, with assistance provided by the IAEA Secretariat as appropriate, to conduct necessary research and development in nuclear safety, technology and engineering⁴, including that related to existing and new design-specific aspects.
- Relevant stakeholders and the IAEA Secretariat to utilize the results of research and development and to share them, as appropriate, to the benefit of all Member States.

⁴ For example, extreme natural hazards, management of severe accidents, station blackout, loss of heat sink, feed and bleed system, containment venting system, structural integrity of containment building and spent fuel pool structure and behaviour of fuel assembly, and post-accident monitoring system under extreme harsh environment