STRENGTHENING NUCLEAR SAFETY WORLDWIDE

the IAEA Nuclear Safety Action Plan

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Introduction

After 25 years without serious nuclear accident, following a natural disaster of extraordinary magnitude that struck the East coast of Japan March 11, 2011, the Fukushima Daiichi Nuclear Power Plant was severely damaged. Today, the Japanese authorities, TEPCO employees and the nuclear industry are working together to gradually bring the damaged reactors into a stable and safe state.

Nuclear energy actors are going through a major test of their ability to assess their weaknesses, to draw and implement lessons from the accident, to advance nuclear safety, and to rebuild public and governments' confidence in the possibility to manage and develop the peaceful uses of nuclear energy in a responsible, sustainable and safe manner.

Responsibility for ensuring the application of the highest standards of safety and to respond in an appropriate and transparent manner to emergencies relies primarily on nuclear operators and States. This is part of the fundamental safety principles adopted by the IAEA.

But Fukushima confirmed that nuclear accidents do not respect borders. The atmospheric releases were detected in both hemispheres, though without radiological safety significance for other States. However, a real effect has crossed borders: the deterioration of public confidence in the ability of operators and states to control nuclear risks.

Therefore the primary responsibility of operators, supplemented by States, must be backed by an international approach to safety. The International Atomic Energy Agency is the privileged place where this approach is implemented.

The accident in Fukushima

I do not intend to describe in detail here the accident in Fukushima. Although many lessons are still to be learned on the course and causes of the accident, three substantial reports are currently available:

• a 160-page report prepared by the IAEA International Fact Finding Mission despatched to Japan from May 24 to June 2, 2011.

• a 400-page report prepared by the Government of Japan in June, and

• a supplementary report of 700 pages prepared by the Government of Japan in September.

At the request of the Director General of the IAEA, the International Nuclear Safety Group (INSAG) has established a series of recommendations to guide future actions related to the accident in Fukushima. These recommendations were made on the basis of the report of the IAEA International Fact Finding Mission, of the Ministerial Declaration adopted 20 June 2011 during the Vienna Ministerial Conference on Nuclear Safety, and of the content of the three working sessions of the Conference.

In addition to these reports, an independent investigation commission was set up by the Japanese Government; it should release its findings later next year.

IAEA's role: before the accident

In accordance with its Statute, the IAEA has developed safety standards for the protection of health and minimization of danger to the public and the environment resulting from the use of ionizing radiation. Today it is a consistent set of more than 100 standards, established and adopted in close cooperation with the Member States of the Agency. These standards form the recognised basis for achieving a high level of safety.

They are established through a rigorous process, based on four specialized committees and on the Commission on Safety Standards (CSS), which ensures consistency and coherence.

But whatever the quality of international standards, the key to achieving a high level of safety is their implementation.

To achieve this goal, we provide assistance to Member States to develop in a sustainable and effective manner their national infrastructure and human resources necessary to assume their responsibility. The benchmark to provide this assistance is the collection of our Safety Standards.

In addition, we provide regulators and operators with an external view, in an incentive approach to continuous improvement, through peer review missions. Again, the reference used, is our standards. These peer review services are subject to increasing demand. The three best-known are:

- IRRS (Integrated Regulatory Review Service) to assess regulatory practices;
- OSART (Operational Safety Review Team) to assess the operational safety of nuclear power plants;
- EPREV (Emergency Preparedness Review) to assess level and measures for emergency preparedness.
- and in addition, we also perform various missions on site safety assessment or reactor design safety.

They are at the heart of the proposed Action Plan on Nuclear Safety which was endorsed by the IAEA General Conference September 22, 2011. Their clear foundation on IAEA Safety Standards strengthens de facto, if not de jure, the status of these standards as **the** international reference.

Emergency preparedness and response: the Fukushima case

In the area of emergency preparedness and response, the IAEA works primarily within the two conventions adopted in the aftermath of the Chernobyl accident: the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

To ensure its responsibilities under these Conventions, the IAEA relies on the "Incident and Emergency Centre - IEC" in the Department of Nuclear Safety and Security. The IEC serves as a focal point for receiving and sharing information from the State where an emergency occurred, offers the Agency's good offices, and transmits the assistance proposals received from Member States.

Alerted within one hour after the earthquake by on-call IAEA experts-seismologists, and forewarned of the risk of damage to four nuclear power plants in the north-east coast of Japan, the IEC established a first communication with the contact point designated by Japan for emergencies (the Agency for Nuclear and Industrial Safety - NISA) one hour and a half after the earthquake, and called the staff on duty to staff the IEC. It then remained in "full response mode" around the clock until May 3, 2011. Such an operation-record for the IEC has been made possible thanks to the efforts of all staff trained in crisis management. Over 200 Agency staff brought their competencies to the IEC.

The mobilization of the IAEA was total and immediate. It continued throughout the critical period, in close liaison with all intergovernmental organizations concerned with the crisis. Even the fact that the two post-Chernobyl Conventions were not activated by the Japanese authorities did not prevent the IAEA to fulfil all its obligations under these Conventions, including transmitting to the Japanese Government the offers of assistance from Member States.

INES

Communication issues in case of nuclear crisis have been highlighted on the occasion of the classification by Japan of the accident in the INES scale (International Nuclear Event Scale).

On April 13, presenting to Member States then to the press the principles used by the Japanese authorities to carry out the latest classification as level 7 (“major accident”), I discovered the profound misunderstanding between experts and the public. The impression that emerged from the increase at level 7 was that a serious event had just happened on April 12, while it was "only" the result of an assessment of the amount of radioactivity released into the atmosphere since the early days of the accident.

Obviously, the objective of providing the public with simple information, prompt and easy to understand, was widely missed.

How to strengthen the global nuclear safety framework: the IAEA Action Plan on nuclear safety

Responding to the Ministerial Declaration adopted by the Vienna Conference on Nuclear Safety in June, the IAEA prepared during the summer, in consultation with Member States, an action plan on nuclear safety which was approved by the Board of Governors and adopted by the General Conference on September 22. This plan consists of 12 key actions each with corresponding sub-actions, focusing on: safety assessments in the light of the accident; IAEA peer reviews; emergency preparedness and response; national regulatory bodies; operating organizations; IAEA Safety Standards; international legal framework; Newcomers; capacity building; protection of people and the environment; communication and information dissemination; and research and development.

The players in the Action Plan

This is not an Action Plan only for the 2000 or so employees of the IAEA. The expected actors are as well Member States, regulators, nuclear operators, international and intergovernmental organizations involved in nuclear safety and the emergency preparedness and response. Its successful implementation will necessitate their full cooperation and participation. In this spirit, each sub-action is explicitly addressed either to MS or to the Secretariat, or to other stakeholders, upon whose involvement will depend the success of the Action Plan.

Transparency and the Action Plan

Beyond the debates that led to the approval of the Action Plan, it is important not to dwell on words only, but to resolutely address its implementation. In proposing to make a more systematic use by Member States of peer review missions, providing the widest transparency to the results of these evaluations, the Action Plan will play a decisive role towards harmonization and strengthening of safety practices.

Transparency on the evaluation by peers is a key element of the Action Plan. It is a powerful tool, which will create an obvious incentive, and will meet expectations of the public in strengthening nuclear safety. This is the necessary first step to rebuild trust in nuclear energy.

The evaluation of the safety of nuclear power plants

The first of the 12 actions relates to the urgent national assessment of the safety vulnerabilities of nuclear power plants in the light of lessons learned to date from the accident (commonly but improperly called "stress tests"). This action alone addresses most of the issues encountered as a result of Fukushima: emergency, transparency, harmonization, independence and international oversight.

This is clearly an urgent action expected by the public and by governments in order to provide a realistic assessment of the safety of existing facilities, and a clear vision of improvements needed in the short term. At the same time, the question of harmonization of these reviews from one State to another is clearly needed, every Nation hoping that its neighbours will address these assessments with the same seriousness as its own, and expecting to be informed in a transparent way. To eliminate any risk of complacency, the independence of regulators in charge of the review is, as always, a strongly formulated requirement, and finally the guarantee of a final review by peers at international level is an added guarantee of impartiality of the process.

Within the Secretariat, in October we will have a reference methodology for the evaluation of safety margins of nuclear power plants, based on existing experience, including the definition of "stress tests" used by the European Nuclear Safety Regulators' Group ENSREG. This will allow us to answer existing requests for assistance from Member States

IAEA peer reviews… and more!

The second action establishes a general framework for IAEA peer review missions. The views of Member States on this framework were divided between the desires for some to make these missions compulsory, periodic and automatic, while others preferred to keep them on a voluntary basis. The formulation finally accepted by all is: *"Member States [are] strongly encouraged to voluntarily host IAEA peer reviews..."*

An in depth analysis of the peer review mechanisms shows indeed that without voluntary and strong involvement of Member States, these missions could not play their role in the objective assessment of the effectiveness of national regulatory systems.

For example, just consider that an IRRS mission is prepared some two years in advance. It begins with a self-assessment by the regulator. The result of this self-assessment is sent to the IAEA and to the international experts contacted for the mission, accompanied by detailed documentation. The climax of this peer review is the mission itself, lasting typically two weeks, during which some fifteen experts analyse in detail the various activity sectors of the regulator, relying on the established document base and on the self-assessment, complemented by interviews with employees of the authority together with multiple briefings. Organised visits to licensed facilities under the control of the regulatory body allow a hands-on understanding of relationship between the authority and the operator. A report is then prepared by the team of experts, and finally, in most cases, made public.

The real challenge in implementing the Action Plan is not to include peer reviews in a legally binding instrument, but to create a living process, through the incentives provided by transparency and the pressure it creates, but also through demonstration of the enhanced benefits for all of these peer reviews.

This general framework for IAEA peer reviews is then applied into 3 subsequent main actions: concerning Emergency preparedness and response (EPR), National regulatory bodies, and Operating organizations.

They rely on the peer review missions identified earlier; they rely also significantly on strengthening the assistance and coordination mechanisms such as the Inter-Agency Committee on Radioactive and Nuclear Emergencies (IACRNE), or the Response and Assistance Network (RANET). Already, proposals to develop regional emergency training centres have been voiced during the General Conference, as well as strengthening RANET through developing rapid response capabilities.

One ever more significant focus is the independence of National regulatory bodies, and the strength of their scientific base. IRRS are of evidence one of the favoured tools identified in the Action Plan for assessing their effectiveness in this regard.

As concerns operating organisations, fields for a strengthened cooperation with WANO have already been identified in common on a preliminary basis, and will be addressed at a meeting next month.

IAEA Safety Standards

As concerns Safety Standards, we could not ignore the potential consequences of the accident in Fukushima on their content, regardless of our confidence in the quality of their preparation process. The Action Plan therefore includes a focused review of relevant safety standards, promptly launched on the basis of the process mentioned earlier.

The international legal framework

The question of strengthening the international legal framework was acutely raised by the Fukushima accident. Coincidentally, the 5th review meeting of States Parties to the Convention on Nuclear Safety (CNS) was held in Vienna from 4 to 14 April 2011. Confronted directly with the consequences of the accident, the Parties agreed to hold an extraordinary meeting in August 2012. Strengthening the provisions of the CNS was the focus of many discussions; many delegations considered that priority should be given to a strengthening of implementation mechanisms of the CNS, not requiring amending the Convention. However, under the leadership of its President, the Russian Federation later officially submitted a proposal for amendment to be considered by the Parties during the extraordinary meeting of the CNS in August 2012. Russia also filed a proposed amendment to the Convention on Early Notification of a Nuclear Accident.

Arguments were also heard, on the unpredictable length of the amendment process, or on a preferred and swifter way through improving the implementation mechanisms. My personal experience of active participation in the long process of amending the Convention on the Physical Protection of Nuclear Material (CPPNM), leads me to favour a parallel approach: launching a carefully planned amendment process, supplemented by a variety of mechanisms and non-legally binding tools available to the international community. Such an approach will respond to urgent needs to strengthen nuclear safety, without foregoing the longer term, more permanent tools of strengthened Conventions.

I would need a second conference to go through all the 12 Actions, which I do not intend to do now! I want just to mention two subjects.

Under the Action on ***protection of people and the environment from ionizing radiation***, an IAEA international expert mission requested by the Japanese Government is presently in Japan to help the country develop its remediation plans.

And, in the critical field of ***Communication and information dissemination*** only, 7 sub-actions have been identified, including increased capabilities during an emergency to analyse with, and communicate to MS possible accident scenarios and their potential consequences. The review of INES is one of these sub-actions that the Agency has already launched.

Where are we today?

On Monday 26th September, DG Amano announced the creation inside my Department of a Nuclear Safety Action Team tasked with overseeing the prompt implementation of the Action Plan and ensuring proper coordination among all stakeholders.

Friday last, I organised with the special coordinator for the implementation of the Action Plan (Gustavo Caruso) our second meeting of the cross-departmental group

- to report on the identification of a few hundred tasks (two to three hundred) identified under the 12 Actions,
- to develop an outreach strategy to MS and other International Organisations whose role is essential to the success of the AP, and
- to discuss our reporting plan to MS, starting from the November Board of Governors.

Just a remark on Safety and security

As current Head of a nuclear safety and security department, it would be inappropriate for me to avoid the issue of the relationship between safety and security in the light of the Fukushima accident. Yes, a nuclear accident could be the result of a malicious act. Yes, it is legitimate to consider the lessons of the Fukushima accident in terms of improvements that could be made to the protection of nuclear facilities against terrorism. But transparency tools which I praised a few lines above are not available in the field of nuclear security. Only general principles could be addressed, and the IAEA Action Plan implementation cannot be limited to generalities. Concrete, visible actions, are expected.

Nevertheless security has not been overlooked. It was addressed in the IAEA's contribution to the study launched by the UN Secretary General in preparation to the High Level Meeting organised in New York. Nuclear security in light of the Fukushima accident was also present in the Agenda of the Senior Regulators' Meeting during the IAEA General Conference.

Conclusion

By adopting the Action Plan on Nuclear Safety on 22 September, the IAEA General Conference took a historical step. This is the first time in the life of the Agency that 151 Member States gather in a comprehensive program all nuclear safety tools to strengthen the global nuclear safety framework at the national, regional and international levels. The implementation of all these tools opens a new period in the quest for a continuous, transparent, strengthening of nuclear safety worldwide. The IAEA, its 151 Member States, are at the heart of this work, you are at the heart of this work!

Thank you.