



**Convention on  
Nuclear Safety**

**Extraordinary Meeting 2012**

**National Report of ITALY**

**May 2012**

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***This National Report was drafted on behalf of the Ministry of  
Foreign Affairs by the Institute for Environmental Protection and  
Research (ISPRA).***

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## INTRODUCTION

This National Report is submitted to the Second Extraordinary Meeting of Contracting Parties to the Convention on Nuclear Safety to be held in Vienna from 27<sup>th</sup> to 31<sup>st</sup> August 2012, as agreed at the 5<sup>th</sup> Review Meeting of the Convention.

It has been prepared in accordance with the guidance provided by the General Committee of the Convention for providing information to Contracting Parties on actions and developments implemented or planned in the aftermath of the accident at the Japanese Fukushima Daiichi NPP.

This Extraordinary Meeting has been in fact conceived as a topic-oriented meeting with the focus on predefined six topic areas (external events, design issues, severe accident management and recovery - on site, national organizations, emergency preparedness and response and post-accident management - off site, international cooperation), as representative areas for Contracting Parties to inform on the measures taken or planned to respond to the Fukushima Daiichi NPP accident.

Not having NNPs either in operation or under construction, Italy's Report deals primarily with the last three topics addressed respectively to National Organizations, Emergency Preparedness and International Cooperation, as more applicable topics to inform on the current national nuclear activities primarily addressed to the decommissioning of the four Italian NPPs definitely shut down about 20 years ago and to the relevant spent fuel and radioactive waste management.

Some considerations are anyhow expressed in terms of lessons learned on the other topics as based upon national experience as well as on exchanges taking place in various regional and international contexts. It is also reported about the immediate mobilization ensured by the national competent Authorities at the occurrence of Fukushima Daiichi NPP accident and the coordinated actions implemented to follow the accident evolution and to provide the public with accurate and timely information on reactor status, spread of radioactive substances, radiological consequences on workers, and the environment in Japan and relevant protective measures. Adequate information have been also provided on environmental radiation monitoring results in Italy.

This National Report has been prepared on behalf of the Italian Government by the Department for Nuclear, Technological and Industrial Risk of the Italian Institute for the Environmental Protection and Research, ISPRA, that is the Italian National Regulatory Authority.

## DRAWING LESSONS FROM FUKUSHIMA

### *Fields of Activities*

In the immediate aftermath of Fukushima Daiichi Nuclear Power Station accident in March 2011, Italy's nuclear Regulatory Authority, ISPRA, immediately mobilised its resources to provide the Italian Government with accurate and timely advice on reactor status, spread of radioactive substances, radiological impact on workers, public and environment as well as implemented protective measures in Japan. ISPRA's actions were coordinated primarily with the Department of Civil Protection and Ministry of Health, in particular in relation to the support provided to Italian citizen in Japan. The ISPRA's advice was based on its assessment of information provided by the International Atomic Energy Agency (IAEA) and other sources. These information were also used as an official base to inform the general public through press releases, issued daily during the onset of the accident, also posted in the web site.

After the accident in the Fukushima Dai-ichi Italy has immediately provided its contribution to regional and international efforts aimed at drawing lessons from the accident and, in particular, to review the safety of EU nuclear power plants by participating to the stress tests' exercise in the context of the peer review phase. Italy also participated both at the Conference organised by the French Republic at the OECD premises and at the Ministerial Conference on Nuclear Safety held at IAEA headquarters. In this latter occasion, Italy contributed in particular to the preparation of the IAEA Action Plan on Nuclear Safety.

## **Topic 1 - External Events**

In comparison with other countries in Europe, Italy is characterized by a significant seismicity. In fact, also in the past, when nuclear power plants were operated in the 70's, growing attention was given to seismic issues. A constant effort is performed by the Italian Geological Service in order to update continuously the knowledge of the Italian territory from the point of view of the seismic risk.

Among the lesson learned from Fukushima it can be highlighted that also very rare natural events have to be taken into consideration when the nuclear risk is involved taking into account, that an earthquake originated at a great distance from the nuclear site can produce indirectly devastating consequences by producing secondary phenomena or effects.

In the case of Fukushima the secondary phenomenon was the Tsunami but in other case could be for example the damage of dams creating sudden flooding.

Although in Italy no nuclear power station is in operation, these lessons have been learned and are considered in the design of installations like interim radioactive waste storage facilities and will be considered for the national repository to be localized and constructed in the future. Moreover, these lessons are taken into account in the current participation of the Italian regulator in the international initiatives for safety reassessment of operating NPPs

## **Topic 2 - Design Issues**

Nuclear power stations in operation are not present in Italy, however an inventory of radioactive materials, coming from the decommissioning of definitely shut down plants as well as from the current industrial, medical and research activities is located at different sites on the country. Potential risks have to be maintained under control and the lessons coming from the Fukushima accident as far as it concerns the topic 2 are going to be reflected in the future risk prevention actions.

As far as the spent fuel is concerned, it is to be taken into account that the few ThM still present in Italy located at Trino NPP and Avogadro facility - whose residual heat can be safely manageable in dry storage facilities - are in the process of being transferred to France for reprocessing.

In relation to radioactive waste it is mentioned that for the new facilities under construction on the nuclear installations sites for interim storage verification of existing margins against seismic events and an increased protection of wastes against flooding are requested in the licensing process.

### **Topic 3 - Severe Accident Management and Recovery**

Lessons learned are taken into account in the current participation of the Italian regulator in the international initiatives for safety reassessment of operating NPPs.

### **Topic 4 - National Organisations, Regulator, Operator, Government**

Main consequences in Italy of the Fukushima Daiichi NPP accident concerned the legislative level. It is worthwhile to mention the Law n° 75/2011 which modified all the provisions given in the Law n°99/2009 and in the Legislative Decree n° 31/2010, as amended by the Legislative Decree n°41/2011, relevant to the development of new NPP in Italy, so relinquishing the nuclear development in Italy. The provisions for the development of the national site for LLW disposal and ILW-HLW interim storage were confirmed.

Subsequently in June 2011, a referendum called in 2010 on the new national nuclear power programme established by the Government was held. The result of the consultation definitely sanctioned the abandon of the development of this nuclear programme in Italy started in 2009.

On December 2011, the Law n° 214/2011 abolished the new Nuclear Safety Agency (created with the Law 99/2009, but not applied) maintaining the related functions to ISPRA that in fact is continuing its work as Nuclear Regulatory Authority, waiting for a definitive reorganization.

#### ***Regulator***

No specific actions and changes on the organizational side have been undertaken for the Regulator as result of the Fukushima event.

The confirmation that the event provided on the essential importance of adequate staffing and competences for the Regulatory Authority represented an additional reason for accelerating in the development of a knowledge management programme addressed to cope with the process of retirement which in the last years led to the loss of a significant number of senior experts. Development and maintaining competences is essential not only for technical competences but primarily for regulatory competences which require a specific approach and cultural background on nuclear safety regulation and control.

The need of integrating the training of new young personnel recruited in the last years in advance to a further retirement of senior experts led the Nuclear Department of ISPRA to expedite the establishing of a knowledge management programme (strategy's document elaborated in 2010) tailored to an in progress generational change.

In this case, taking into account the peculiarity of the Italian nuclear installations as well as of the regulatory activities required by the current national nuclear activities and by a new regional and international context as due to the Fukushima accident, the development of such an ad-hoc knowledge management programme is going to largely found on a continuous comparison with Regulatory Authorities of foreign countries and appropriate mechanisms of peer reviews.

It is expected that in the upcoming reorganization of the regulatory function this process will be also underpinned by the recruitment of new personnel.

On the side of tasks and activities to be performed, the Fukushima event determined the launching of important international peer review activities which have requested the active participation of Regulators' experts. It is for example the case of the stress test programme undertaken at EU level. There is the need for the future that these initiative to be well coordinated, prioritized and focused on important objectives in order to be undertaken in a manner compatible with domestic regulatory activities taking into account the existing limited resources.

A small Regulatory Authority, such as currently the ISPRA, experienced a long lasting activation of its Nuclear Emergency Centre as referred under the Topic 5. Such conditions proved difficult to be managed. It is therefore envisaged the need to develop a more coordinated approach not only among neighboring Countries but primarily through the involvement of regional and international Organisations.



In line with the expected national follow up initiatives to the public Seminar held by ENSREG and the EC with European Stakeholders held in Brussels on last May at the conclusion of the Peer Review of EU Stress Tests, it is mentioned the national Seminar organized by ISPRA with national Stakeholders, to be held in Rome on July 12, to report and discuss on the experiences, outcomes and perspectives connected to such a process analysed in the context of national and regional interests. In addition to the experience made by Italian Authorities and Industry, the agenda of the Seminar includes presentations on the experiences respectively made by the EC, the ENSREG and the Board of the Peer Review as well as on experiences made by Regulators of neighboring Countries with NPPs, such as France, Slovenia, Switzerland, and by the Austrian Regulator as a non nuclear Country. Environmental Associations and Media have been also invited.

## **Topic 5 - Emergency Preparedness and Response, Post-accident management**

### ***On-site and off-site emergency plans***

Emergency planning at nuclear installations is regulated in Italy by the provisions reported in Articles 115 to 135 of the Legislative Decree n° 230/1995 and subsequent amendments. In addition, the general legislation governing emergency preparedness and response provisions in all cases of accidental events and disasters, as reported in the Act n° 225/1992, is applicable.

With regard to *on-site emergency planning* above provisions are complemented with those reported in Articles 47 and 49 of the Legislative Decree n° 230/1995 respectively related to the Manual for the Conduct of Plant Operation and to the role of the Plant safety Committee which include, among other duties, the preparation of the on-site emergency plan.

Technical Specifications attached to the license regulate the performance of periodic emergency drills. As a normal practice these drills are attended also by representatives of the regulatory authority.

As far as off-site emergency preparedness response concerns its organization differs depending on extension and type of the consequences of the postulated events (namely events which could affect a local area or a larger part of the national territory).

If the potential consequences of postulated reference events result to be manageable at local level, the *off-site emergency* plan is prepared under the authority of the Prefect of the province where the installation is located, as stated in Articles 118, 119 and 120 of the Legislative Decree n° 230/1995. According to article 117 of the same legislative decree, the technical basis for the plan are established by the Licensee and revised by the Regulatory Authority. The plan is prepared taking into account the indications reported in the Law n° 225/1992.

At present, NPPs which still have spent fuel storage on the site, have maintained the emergency plan in force during the operation phase. Emergency preparedness provisions are therefore sized to ensure a level of protection to the public and the environment beyond the current level of risk of the installation. In other cases, a re-evaluation of the technical bases has been performed and the plan consequently updated.

An updating of the emergency plan is performed following the authorization of the decommissioning plan, and in any case, following the removal of spent fuel from the site.

It is to be mentioned also that specific emergency plans are prepared for the transport abroad of spent fuel for reprocessing according to a specific Government regulation (art. 125 of Legislative Decree 230/1995).

Cases where postulated reference events could lead to radiological consequences investing larger parts of the national territory, are regulated by specific provisions of the Legislative Decree n° 230/1995 (article 121) related to the National Plan on Radiological Emergencies, as referred in the following point.

### ***National Plan against Radiological Emergency***

Provisions of Section 121 of the Legislative Decree n° 230/1995 require the preparation of a general National Plan of Protective Measures for Radiological Emergencies under the authority of the Department of Civil Protection. Such a plan is aimed at protecting general public and environment in case of accidents occurring at an Italian installation or at an installation located in a neighbouring country, as well as of emergency situations at undetermined location in the territory.

The current edition of the National Plan for nuclear emergency was approved in March 2010 by the Italian Government. The Plan was prepared by the Department of the Civil Protection of the Council of Ministers and represents a revision of the previous 1997 edition.

This revision of the National Plan results from the following technical and operational factors:

- the review of accident scenarios taken as reference for planning interventions in case of accidents at NPPs across the border, referring to situations more severe than those previously considered, in order to identify areas most at risk in case of trans-boundary releases;
- the updating of dose intervention levels as required by the current regulations;
- the taking into account the current legislation on the role of local authorities (Regional Administration and Prefectures) in emergency planning and some recent provisions on civil protection;
- the updating of the framework of the central technical facilities and the taking into account the establishment of the radiological alarm automatic networks and the reorganization of framework of the regional environmental laboratories that are part of the national surveillance network of the environmental radioactivity.

### ***Reference accident scenario and consequences assessment***

The national plan adopted in 1997 considered severe accidents, involving core meltdown, but assuming a capacity of the containment system to limit the release to the environment. For the updating of the Plan, the Department of Civil Protection asked the ISPRA (responsible of the preparation of the study) to assess the new technical basis extending the response capabilities envisaged by the Plan.

The technical bases of the Plan have been assessed taking into consideration an envelope of the accident scenarios used as reference for emergency planning in the countries with NPPs close to the Italian border. Particularly, scenarios characterized by core damage and loss of containment was considered. With regard to scenarios of this nature it is still considered reasonable to assume a partially effective capacity of mitigation actions existing on site. The scenarios identified are for NPPs up to 1500 MWe.

It is therefore believed that these provisions properly bound conditions potentially related to events occurring to radioactive waste and spent fuel installations in the vicinity of the national territory.

Scenarios include particularly severe accident events, with a very low probability, during which, despite several failures of the safety systems and core damage, it is still possible to assume that:

- for events that originate within the plant, abatement systems and containment, although partially degraded, can continue to provide a barrier which would limit the release to the environment;
- in the event of external origin producing the loss of primary containment system, recovery and mitigation actions could arrest the process of core melting or lead to a partial removal of the radioactive particulate;

The releases calculated in these conditions, are about 10% of the total inventory.

Assuming the above envelope source term, simulation of the atmospheric dispersion was carried out starting from the closest foreign NPP to the Italian border, selected also considering other relevant factors such as orographic configuration and prevailing winds.

The simulation was performed by using the long-range atmospheric dispersion model running into the ARIES System (Accidental Release Impact Evaluation System) which is operative at the Nuclear Emergency Centre of ISPRA. ARIES was run assuming particularly unfavorable atmospheric conditions occurred over several years.

Dose assessment suggests the sheltering and stable iodine administration as possible protective measures to be considered by the Plan. Moreover, the expected ground contamination requires the implementation of a radiological monitoring programme to be extended on large areas of the country, aimed at controlling environmental and food matrices for providing the necessary technical basis for any decisions about food production and consumption restrictive measures.

### ***Operational level of the emergency response***

After the receiving of the notification of a nuclear accident, two operational level are defined by the Plan:

- a Warning Level in case of an accident at a nuclear plant within 200 km from the Italian border, which entails the following main activities:
  - the acquisition of further information about the event and its evolution;
  - activation of the radiological monitoring capabilities at national and local level;

- public information, and
- an Alert Level, as the evolution of the previous scenario with involvement of the national territory and possible activation of the protective measures. After the declaration of the Alert (by the National Department of the Civil Protection) the activities under the Plan are aimed at the following objectives:
  - event monitoring, evaluation of the radiological consequences and full activation of the national and regional radiological monitoring network;
  - activation of the structures of the national service of the Civil Protection;
  - definition and implementation of the protective measures (sheltering, iodine prophylaxis);
  - public information.

### ***Emergency organization***

On the basis of the identified accidental scenarios and the technical competence, the national Plan establishes the ruling structures (competent Authorities) as well as the technical and the operative bodies, both at national and at local levels.

The ruling structure is the Prime Minister (or a delegate) with the support of the Operative Committee of Civil Protection, consisting of representatives from all related national administrative bodies (Department of Civil Protection, Ministry of Interior, Ministry of Health, Ministry of Defence and others).

In case of a national emergency the technical body is the Centre for Data Elaboration and Evaluation (CEVaD), as stated at art. 123 of Legislative Decree n° 230/1995, which includes representatives of ISPRA (as coordinator), the National Institute of Health (ISS), the National Prevention and Workers safety Institute (ISPESL), the National Fire Brigades Department (V.V.F), the National meteorological service of the Air Force and representatives of regional laboratories for the environmental radioactivity surveillance. ISPRA provides also technical and logistic support for CEVaD.

The Centre is entitled to follow the evolution of the radiological consequences of the event in order to provide the Operative Committee of the Civil Protection with the proper recommendations in relation to the protective actions to be undertaken where required.

The Centre is operating according to established procedures contained in an operational manual which have been recently updated and issued as “Operational manual for the dose evaluation and the environmental monitoring in case of a nuclear and radiological emergencies”.

The manual describes the tasks of the committee and the procedures used for dose assessments from different exposure pathways during a nuclear and radiological emergency. Reference levels for protective measures implementation are reported. The most significant radiometric data in the management of an emergency are indicated providing the operational guides for the sampling and measurement activities of environmental and food matrices.

The Centre also makes use of important technical support features which are operative at the ISPRA Nuclear Emergency Centre, such as two automatic networks for the environmental radiological monitoring of the gamma dose rate and the airborne radioactive particulate at national level and the aforementioned ARIES computational system with validated models to estimate the medium and long range dispersion of radioactive contaminants released into the atmosphere in a specific installation located in Europe.

Italian organisations involved in the implementation of national plan, regularly participate in emergency exercises organized at international level by EU, IAEA and OECD/NEA. National exercises have been also undertaken in the past and on the occasion of the updating of the plan a new exercise series, aimed at testing the plan, has been organised under the coordination of the Department of Civil Protection.

It is finally to be mentioned that, at international level, Italy has ratified the Convention on Early Notification of a Nuclear Accident (1986) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1987). Italy also established proper provisions to fulfill the requirements of European Union Council Decision n° 87/600/Euratom regarding the urgent exchange of information in case of radiological emergency.

## **Topic 6 - International Cooperation**

In line with message conveyed by the IAEA Action Plan to the Member States, the international cooperation is recognized by Italy as an essential element to strengthen the international framework for nuclear safety that the Fukushima Daiichi NPP accident has highlighted as among priorities to be addressed.

As regularly referred in the National Reports for the CNS and the JC, Italy has traditionally been active in international nuclear cooperation within IAEA, OECD/NEA, EU and FORATOM as well as in bilateral contexts. An active participation in international activities is considered to be important to keep up-to-date the national competencies and capabilities in the safety and in the technology of nuclear installation as well as to promote the maintaining and the updating of the nuclear safety culture at national level.

### **Italy Obligations and International Policy in the Field of Nuclear Safety**

At the multilateral international level, many obligations to Italy derive from the Conventions subscribed with the IAEA and primarily from 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 Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

In the multilateral regional context, Italy has many obligations coming from its membership in the EU, as primarily associated to the binding legislative instruments adopted at EU level in the nuclear safety field.

ISPRA, as the national Nuclear Regulatory Authority, fully takes its responsibility in the fulfillment of such multilateral international and regional obligations.

## **Regulatory Authority**

In the framework of a regulatory system it is recognized that the international cooperation provides also a significant contribution to the quality of the national safety and radiation protection regulatory work. In such a context the experienced cooperation by ISPRA has primarily regarded regulatory issues dealt with in the International Organisations. In addition to the activities performed to fulfill the above obligations on the Conventions, it is mentioned the participation of ISPRA experts in the production and updating of IAEA safety standards as members of the safety standards Committee (NUSSC, WASSC, RASSC, TRANSSC).

As member of the EU Institutions committees facing the nuclear regulatory issues, ISPRA fully takes its responsibility in contributing to the enhancing of the nuclear safety as a main objective of the EU international policy, not only through an active participation at level of production of Commission binding instruments (i.e. WPAQ of the Council) but also through direct participations in all the fora where cooperation actions in the nuclear safety field are proposed and evaluated.

In its Regulatory Authority institutional role, ISPRA is member of ENSREG and actively participates in all the ENSREG activities. In this regard the active participation of ISPRA in the process of Peer Review on the Stress Tests is to be mentioned. Participation of ISPRA experts was ensured both on the horizontal activities (i.e. topical review meetings on each of the established three topics) and on vertical activities (i.e. country visits to Slovenia, Slovak Republic and Ukraine).

In addition, ISPRA is a member of the Western European Nuclear Regulators Association (WENRA) and has actively participated in the comparison of safety requirements of the different member countries, against agreed reference levels, as basis for harmonisation.

Together with all the other WENRA Members, ISPRA has used the outcomes from this project for establishing the national action plan to correspondingly update its basic safety regulations mainly addressing issues related to decommissioning and waste management.

ISPRA expects that on next years the production of national nuclear regulation, even remaining a national responsibility, will be largely driven by regional and international contexts. The need of ensuring international participation and the work on correspondingly reviewing the national



regulation will require an increase of national resources. Major international references for pursuing the establishing of common safety standards and regulatory practices (global nuclear safety regime) are represented by the IAEA through its policy and the recently established action plan and other international organisations such the OECD/NEA. At EU level, the reference is represented by the entry into force of the nuclear safety Directive and the next entry into force of the Directive on the management of spent fuel and of radioactive waste. A revision of the Safety Directive has been also already planned by the Commission in the light of the Fukushima accident.

It is expected that the Fukushima accident will increase the role of the EU in the nuclear regulatory field. In fact the potential trans-boundary radiological consequences of a nuclear accident could exceed the emergency preparedness and response capability of an even effective cooperation and mutual assistance established between neighbouring countries. This would therefore require both the enhancing of emergency preparedness and response provisions in place in the Member States as well as an appropriate coordination on a large scale which can be ensured only at regional and international level. In our view the EU should take such a regional coordination role to be conceived so to fit with the IAEA international role in the field of emergency preparedness and response. Italy's policy would therefore contribute to enhance this EU specific role.

Among the actions initiated after the Fukushima accident, Italy has communicated to the IAEA an invitation at receiving an IRRS mission on 2015. Such a decision responds to the need to comply with the obligation established in the Safety Directive and with the willing to submit to a third party review the expected new Regulatory Authority referred under the topic 4.

As introduced under the topic 4, ISPRA has in place the development of a KM project functional to primarily cope with a process of retirement that led to lose in the last years a significant number of senior experts. It is expected that in the upcoming reorganization of the regulatory function this process will be also underpinned by the recruitment of new personnel.

Based on the IAEA model, this Knowledge Management Program will be developed and tailored to the ISPRA needs primarily through a continuous comparison with Regulatory Authorities of foreign countries and appropriate mechanisms of peer review.

In the framework of the ISPRA's participation in the international cooperation, activities made in the WENRA and ENSREG contexts as well as the most recent made in the EU Stress Tests and the associate peer reviews performed by the national Nuclear Regulatory Authorities can be referred as valuable experiences. Competences in the field of nuclear safety have to cover many multidisciplinary aspects to be dealt with in an integrated manner on both prevention and mitigation of assumed accidents, even severe ones.

The importance of such an approach has been clearly demonstrated by the Fukushima accident and the methodology applied for the extraordinary review conducted through the stress tests has been clearly based on it, dealing with the prevention by the natural events, the reliability of plant systems providing electric power supply, the heat removal capacity, the severe accident management. The maintaining the competences in these multidisciplinary areas is a key target for ensuring safety of nuclear installations.

## **International support programmes**

Italy has continued its technical participation in international programmes of assistance to the eastern European Countries in the frame of TACIS, now under the INSC intended as programmes of cooperation, extended to Mediterranean Countries, and in the frame of IPA (Instrument for Pre Accession to European Union).

In addition to the ISPRA cooperation in the regulatory assistance projects, the national nuclear industry participated both in realisation activities already in progress (e.g.: Ansaldo for Rumanian Chernavoda units) and in international tenders for the realisation of new nuclear installations (e.g. ENEL for Bulgarian Belene and Rumanian Chernavoda) and of NPPs on-site assistance programmes (e.g. SOGIN for Armenia/Medzamor, Mexico/Laguna Verde).

More recently, following an inter-governmental agreement concluded with France on 2009 for a cooperation on nuclear technologies, ENEL signed an agreement with EDF to participate (with a share of 12,5%) in the construction of the new EPR plant at Flamanville. ENEL participation in abroad nuclear activities includes the 66% of Slovenske Elektrarne, (including Mochovce 3 and 4 under construction), and of 92% of Endesa, Spain.

The national participation in the international nuclear research projects is primarily ensured by ENEA, involved in particular in EU research programmes.

## **Communication to public**

ISPRA participates since 1992 to the EU programs for cooperation with regulators of countries which are not members of the EU. After the Fukushima accident attention has been given also to the aspects related in some way to the reaction of Regulators to this event, mainly in the field of the communication to public as well as in the field of safety culture.

Although not having nuclear power stations in operation ISPRA is fully involved in evaluations concerning the nuclear safety specially as far as it concerns the plants located in neighbouring countries. In fact, the concern of the public is also directed to the risks connected to the presence of nuclear power stations not far from the national territory, and, the capability of the Regulator to respond professionally to issues coming from this presence, is essential for the credibility of the nuclear authority. The Fukushima accident really gave the possibility to test the capability of ISPRA in managing an emergency situation. In this case prompt and transparent information had to be provided and adequate structures were activated to evaluate and analyze the evolution of the accident and its consequences. Information had also to be elaborated in order to make it clear and easily accessible to the public. The media, in these cases, makes pressure on the Regulator to obtain an interpretation of what was happening and rapid but effective answers had to be provided. The Nuclear Department of ISPRA, having by law the role of nuclear safety Authority and being part of a larger structure dedicated also to more general tasks in the environmental protection and research, had available several competences either in technical and in the communication and relationships with the public fields. This circumstance allowed ISPRA to positively respond to the communication needs arose in the onset of the accident and subsequently to share this experience in the context of international cooperation projects.

## **Knowledge management**

The test has also been meaningful from the point of view of the accident evaluation capability inside the Institute. It has been verified that this capability is still well rooted in the ISPRA Nuclear Department, in spite of the lack of nuclear power stations in operation. Nevertheless some drawbacks came out and the need of an improved capitalization of the existing knowledge and

experience has been recognized. This need is evident not only for Italy but also for many other countries and international cooperation projects including the issue of knowledge management have been undertaken.

## **Training programs**

ISPRA is also involved, as far as consistent with the available resources, in international training programs on nuclear safety and licensing issues. In fact ISPRA assumes that through this mean an effective promotion and diffusion of safety culture around the world can be gained and, although not in the foreground, actively participates to the opportunities occurring in this field. Especially after the Fukushima accident, ISPRA considers the topic of training an important way to provide its own contribution to a global regime of nuclear safety.

## **Bilateral Agreements**

A plan to establish bilateral cooperations with neighboring countries having NPPs was launched late 2009 and concluded in 2010-11. The implementation activity of such a cooperation was expedited in the aftermath of Fukushima Daiichi NPP accident.

### *Agreement between ASN (France) and ISPRA*

A cooperation agreement between the French and Italian nuclear safety Authorities (ASN and ISPRA) was signed on April 2010. The agreement envisages the early exchange of information in the event of a radiological emergency and for the co-operation in the field of the nuclear safety.

In case of an event that could endanger the population of the other country, the Party will notify to the other one the event, its nature, the time and location of its occurrence and any further available information relevant to minimize the radiological consequences on the population of the other country.

The arrangement provides for setting up a joint expert group which will provide a common identification of the set of specific data to be transmitted both at onset of the event and during the

evolution of the accident, and the transmission method. The points of contact of the Parties will be available on 24h/7d bases and will be put periodically under test.

As far as the co-operation on nuclear safety matters, the Arrangement provides for the information exchange and cooperation in many areas of the nuclear safety regulatory matters, for example:

- legislation, regulation, safety guides and technical criteria regarding siting, design, construction, operation, decommissioning and waste management,
- licensing, inspection and enforcement procedures;
- regulatory procedure and assessment methodologies related to nuclear safety, radiation protection, quality assurance, emergency planning, environmental impact evaluation, waste management and transportation;
- major public information activities;
- information concerning research and development programs.

### *Agreement between SNSA (Slovenia) and ISPRA*

Likewise the aforementioned French agreement, a second arrangement was ratified on May 2010 by the ISPRA and the Nuclear Safety Administration (SNSA) of the Republic of Slovenia, for the early exchange of information in the event of a radiological emergency and for the co-operation in nuclear safety matters. This Agreement will apply to the notification and provision of information for emergency response in case of the radiological emergencies which include accidents involving facilities or activities referred to in Article 1 of the Convention on Early Notification of a Nuclear Accident and also to exchange of information and cooperation for emergency preparedness and other nuclear and radiological safety matters. Also in the case of events not specified in the mentioned Article 1 but which are of potential interest, the Party may request information about the nature of the event, its consequences and on the undertaken countermeasures.

### *Agreement between ENSI (Switzerland) and ISPRA*

A last agreement with a neighboring country having nuclear power installations in operations was concluded by ISPRA with the Federal Inspectorate on Nuclear Safety of Switzerland on June 2011. Such an agreement was addressed to establish a cooperation between the respective Regulators of Italy and Switzerland on nuclear safety matters so complementing an early agreement concluded at State level in 1990 on a prompt Exchange of information in case of a nuclear accident.



## **ANNEXES**

Annex 1: Background information

### **Annex 1: Background**

#### *Nuclear Activities*

In Italy, four nuclear power plants (i.e. Garigliano, Latina, Trino and Caorso) were operated until middle of '80s. At present they are, at different stages, in the process of being decommissioned according to a single step decommissioning strategy, established in late '90s. The spent fuel and the largest part of the radioactive waste to be managed in Italy derive from the operation of the above mentioned NPPs and from a few fuel cycle facilities.

The present Italian legislative and regulatory system related to nuclear and radiation safety envisages a system of licensing of nuclear installations and activities as well as regulatory control. It is the result of an evolution of rules and standards that begun in the early '60s and that took into account the experiences of licensing and operation of NPPs of different types and generations and of other nuclear installations. This system fully applies to spent fuel and radioactive waste management activities.

The main regulations are Acts of Parliament, legislative Decrees, governmental or ministerial Decrees binding in law issued by the Government. Technical positions and guides are issued by the Nuclear Regulatory Authority ISPRA, the Institute for the Environmental Protection and Research, established in 2008 (Act n° 133/2008) through the merging of APAT (former ANPA and ENEA-DISP) and two other Institutes having specific competences in the environmental field. Licenses are granted by the Ministry of Economic Development, based upon a binding technical advice of ISPRA.

Italy is a Member State of the European Union. Thus, the Directives of the Union are implemented. When necessary, the Italian regulations have been modified to take into account the EU directives (e.g. to radiation protection, trans-boundary movements of radioactive waste and spent fuel, and control of high activity sealed sources and orphan sources and lately to nuclear safety).

The main national Implementer entitled to perform spent fuel management, radioactive waste management and decommissioning activities is Sogin (Società Gestione Impianti Nucleari), a Company whose shareholder is the Ministry of Economy and Finance, while the strategic and operational aims are given by the Ministry of Economic Development.

The national policy on spent fuel management calls for the shipment abroad of the spent fuel still present in Italy for reprocessing in foreign facilities. To this aim an agreement between the Italian and the French Governments was signed on November 2006.

The Government, the Ministry of Economic Development, the Ministry of Environment, together with other relevant Institutes and Ministries, according to their respective competencies and duties, with the technical assistance of the Nuclear Regulatory Authority, ISPRA, continue to develop, as in the past, legal, regulatory and administrative provisions related to the safe management of radioactive waste and spent fuel, taking into account contributions from national stakeholders.

Based upon the existing legislative framework, the licensing procedures allow to apply the international experience and practices (e.g. IAEA standards) which are considered in the authorization and regulatory supervision of any activity related to spent fuel and radioactive waste management.

Furthermore, ISPRA, as a fundamental task of its mission, is continuously performing reviews and inspections at the nuclear installations where spent fuel and radioactive waste are stored and/or managed. It is expected a further increase of these activities in the future, when decommissioning and waste conditioning operations will be extensively performed in all nuclear facilities.

The construction of interim storage facilities in the different sites is authorized on the bases of a comprehensive regulatory review aimed at ensuring a substantial improvement of waste storage safety conditions for the coming years, until a national centralized storage facility will be into operation. New licensing procedures for siting, construction and operation of such a national storage facility have been established by the L.ve Decree n. 31/2010.

Waiting for the implementation of these new procedures and for the availability of a national facility, radioactive waste are being stored in the nuclear installations of origin. Action plans are in progress to enhance the safety level of waste by implementing specific treatment and conditioning projects, by refurbishing existing buildings or by realizing new storage facilities on the sites. New



facilities will also be used to ensure temporary storage capacity for waste resulting from decommissioning activities.

In the context of the mentioned regulatory review the compliance with up-to-date safety principles and criteria for waste storage is being verified.

ISPRA is also implementing a plan to update existing technical guides, related to the management of radioactive waste and to issue new guides on waste storage facilities, largely based on WENRA reference levels.

### *Competent Regulatory Authorities*

The key regulatory functions (rulemaking, licensing, assessment, inspection and enforcement) related to nuclear safety and radiation protection matters, including also the safe management of spent fuel and radioactive waste, and decommissioning, are mainly exploited in Italy by the following Authorities:

a) The Ministry of Economic Development is the Authority which grants the licence/authorization for nuclear activities (from the design and construction to the decommissioning and waste disposal) and for major practices involving the use of ionising radiations. Authorizations are granted on the bases of a binding technical advice provided by the Regulatory Authority, ISPRA – Institute for the Environmental Protection and Research. For specified activities, the authorisation shall take also into account environmental assessment provided by the Ministry of the Environment. Also the advice by the Ministries for the Interior, Labour Health and Social Affairs and by the Region where the installation is located shall be required.

b) ISPRA is the Governmental Institute entrusted with the role of Regulatory Authority responsible for the assessment and the inspection activities on nuclear installations, as well as for approving detailed designs or activities related to the construction of nuclear facilities, which are part of the general construction licence granted by the Ministry of Economic Development.

ISPRA operates under the aegis of the Ministry for the Environment.

Any licence/authorization issued by the Ministry of Economic Development is based on the technical advice and specifications formulated by ISPRA, which supervises, throughout its inspection activity, the compliance with the requirements established in the law, with the technical

specifications issued in the Ministerial authorization as decrees and with the conditions attached to its approval. ISPRA inspectors are entitled by the law with the proper authority to request the licensee any information deemed necessary to ascertain compliance with legal requirements and licence conditions.

In case of infringements, ISPRA inspectors report to the Public Attorney of the jurisdiction the installation belongs to and have the authority to establish specifications in order to interrupt any violations in place. ISPRA is also the competent Authority for giving support to the Governmental rule-making function in the field of nuclear safety and radiation protection and it is also entitled to issue technical guides pertaining the different operational aspects of the regulatory process.

As reported under the topic 4, a new Nuclear Safety Agency which was established by the Law 29/2009, but never made operative, was abolished on December 2011 by the Law n° 214/2011 and its functions have been maintained to ISPRA, waiting for a definitive reorganization.

The Regulatory Authority functions in ISPRA are performed by a specific Nuclear Department to which the Institute assigns human and financial resources. The recruitment of new personnel to ensure the continuity and the effectiveness of regulatory functions in the future is an issue to be addressed. With regard to financial and human resources assigned to the Regulatory Authority there is confidence that appropriate actions will be undertaken by the Government to respond, even in the context of the current economic difficulties, to the reported needs in the framework of involved institutions reorganization.

### *Independence of the Regulatory Function*

The main national Operator involved in the decommissioning and in the spent fuel and radioactive waste management, the Implementer, is SOGIN whose sole shareholder is the Ministry of Economy and Finance, while the strategic and operational aims are given by the Ministry of Economic Development.

SOGIN S.p.A. has the responsibility for :

- the management of the nuclear spent fuel and of the treatment and conditioning of radioactive waste stored at the Italian nuclear facilities;
- the decommissioning of the Italian nuclear facilities.

By the referred Law Decree n. 31/2010 which established new licensing procedures for siting, construction and operation, SOGIN was assigned also with the responsibility to construct and operate a national storage facility.

Authorisations are granted and can be revoked by the Ministry of Economic Development on the basis of the independent, binding technical advice of ISPRA. The other regulatory functions, such as the assessment activity during the licensing process and the inspection activity to supervise the compliance with law and the authorization conditions, are performed by ISPRA itself, which also grants directly the approval for the detailed designs and plans.

ISPRA is a Governmental Institution endowed with a full autonomy under the administrative aegis of the Ministry of Environment completely separate from other body or organization concerned with the promotion or utilization of nuclear energy, as well as with the radioactive waste and spent fuel management activities. Licensees have no voice in ISPRA internal organisation, finance matters, policy and in the decision making process of the Institute; moreover the Institute's budget is mainly funded by the State.

