



**Report of the  
European Nuclear Safety Regulator's Group  
ENSREG**

**November 2015**

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## EXECUTIVE SUMMARY

This is the fourth report from the European Nuclear Safety Regulators Group (ENSREG) and covers the period June 2013 – 2015. ENSREG's priorities, as an independent expert advisory group to the Commission, have been to promote high standards and continuous improvement in nuclear safety, spent fuel and radioactive waste management with full openness and transparency to the public and key stakeholders. ENSREG is pleased to report that high standards of nuclear safety have been maintained at European nuclear plants and facilities during the reporting period. Where there have been developments pertinent to nuclear safety, such as the flaw indications identified on the reactor pressure vessel of Doel-3 and Tihange-2, member states have shared information and worked together in the interest of ensuring high standards of nuclear safety in Europe. The safety of the operating nuclear plants continues to be the highest priority for the national regulators with a positive safety culture and continuous improvement for safety remaining the focus for all European national regulatory systems.

ENSREG continued to follow up on the requirement for EU-Member States (MS) to at least every 10 years arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and/or authorities with the aim of continuously improving nuclear safety as legislated within the Nuclear Safety Directive. ENSREG supports Member States to meet this requirement through cooperation with the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS). ENSREG hosted a workshop in January 2014 on issues and trends arising from the European IRRS missions. The implementation of these peer reviews is a further leg of ENSREG's objective to secure continuous improvement and maintain high standards of nuclear safety. ENSREG is pleased to report that IRRS missions have to date been completed to plan in Europe and a full indicative European IRRS program has been established until 2022. This program will be continuously reviewed and updated by ENSREG WG1

Member States first national reports on the implementation of the Spent Fuel and Radioactive Waste Directive were required to be submitted to the Commission by 23 August 2015. ENSREG provided guidance on the structure and format of the MS reports, on the scheduling and resourcing of self-assessments and on the requirement for Peer reviews. The reports will be reviewed by ENSREG to identify learning opportunities and inform the scope of future national reports.

ENSREG held its third conference in Brussels in June 2015. The UK-led organising committee brought together around 300 delegates including national regulators, NGOs, nuclear operators and academics. An objective of the conference was to promote greater International outreach which was delivered through presentations from Argentina, China, South Korea and the USA. Building on the previous conferences in 2011 and 2013, this year's event focused on promoting continuous improvement in nuclear safety and reinforced the common goal of securing full implementation of the European nuclear safety legal framework in all member states.

The reporting period was also characterised by the global response to the Fukushima Dai-ichi nuclear accident and the international nuclear community's actions to secure the learning and deliver the identified improvements to nuclear safety. In Europe this important work was conducted through the programme of 'stress tests' and has remained of the highest priority with a strong ongoing commitment by member states to implement improvements through the ENSREG monitored National Action Plans.

The 2<sup>nd</sup> ENSREG National Action Plan (NACP) Workshop was held in April 2015. The workshop identified commendable practices within European countries supported by the consistency of actions, sharing of technical information and overall high standard of application.

The workshop established that a considerable number of actions identified within the NAcPs have been completed under the oversight of the respective national regulatory authorities. However, the overall status of implementation varies from almost complete in some member states to the scheduling of actions for completion by some member states by 2020. The workshop confirmed that all participating countries are strongly committed to the full implementation of identified improvement actions in their respective NAcPs. This important work to secure in full the necessary improvements to nuclear safety will remain a high priority within the ENSREG work program. The summary report<sup>1</sup> of the workshop which is made public on the ENSREG website was endorsed by ENSREG in July 2015.

In December 2015, ENSREG issued a statement on "the progress in the implementation of post-Fukushima National Action Plans (NAcPs)". In this statement, ENSREG noted that the status of implementation differs compared to the original deadlines presented in the 1<sup>st</sup> National Action Plan summary report<sup>2</sup> where major modifications were to be implemented by 2015-2018, and at the latest by 2020. ENSREG considered that the rate of safety upgrade implementation should be strengthened to target agreed implementation deadlines, taking into account other safety priorities and quality requirements. ENSREG also recommends that a status report from each participating country on the implementation of the NAcPs should be updated and published periodically to ensure a transparent monitoring with the aim of publishing a report on the implementation in 2017.

ENSREG exchanges information and cooperates as appropriate with the Western European Nuclear Regulators Association (WENRA) and in particular with the WENRA/Reactor Harmonisation Working Group (WENRA/RHWG). The ENSREG Working Group 1 (WG1), a permanent working group associated with nuclear safety, is monitoring the WENRA approaches and activities on updating the WENRA Safety Reference Levels.

In coordination with the WENRA/RHWG, ENSREG WG1 is developing a proposal for the Topical Peer Review process required under the revised Nuclear Safety Directive. WENRA/RHWG will develop the technical specifications and WG1 is preparing the Terms of reference for the review process. The Topical Peer Review approach builds on the success of the European Stress Tests, which were completed after the Fukushima accident, with the objective of periodically challenging and testing the robustness of European nuclear safety arrangements.

ENSREG Working Group 2 has focussed on the implementation of the EU (Council) Directive 2011/70/EURATOM establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (the 'Waste Directive'). This included providing guidance for Member States (MS) on the structure and format of the national reports required under Article 14(1), taking account of experience in producing the three yearly reports to the IAEA Joint Convention. Now that the 1<sup>st</sup> MS implementation reports under the "Waste Directive" have been submitted to the EC, WG2 is reviewing the experience gained from the first set of reports and programmes to facilitate the reporting procedure for MS 2<sup>nd</sup> implementation reports to be submitted to the EC in 2018.

Looking ahead to the next reporting period, ENSREG's focus will continue to be the delivery of its mission to promote high standards of nuclear safety and radioactive waste and spent fuel management within a positive safety culture and promote the need for continuous improvement.

ENSREG's priority objectives will include:

- Working with member states to provide a mechanism to conduct the first 'Topical Peer Review' as required by the amended Nuclear Safety Directive. The peer review

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<sup>1</sup> <http://www.ensreg.eu/node/3889>

<sup>2</sup> <http://www.ensreg.eu/node/1343>

will consider ageing management considering the long term operation of nuclear power plants;

- Monitoring and influencing the completion of Member State 'National Action Plans to secure the improvements to nuclear safety as identified from the EU Stress Test process.
- Reviewing the ENSREG guidance on reporting against the Nuclear Safety Directive and the "Waste Directive" utilising the lessons learned from the first reports to assist in future reporting; and
- Providing advice to the EC and coordinating efforts between regulatory bodies on key topics (e.g. Long Term Operation) relevant to securing high standards of nuclear safety and ensuring a harmonised implementation of the Nuclear Safety Directive and the "Waste Directive" in Europe

ENSREG will set out in further detail its key activities in a new work programme for the period 2016-19.

# 1. INTRODUCTION

## 1.1. Content of the report

This report is the fourth report of ENSREG following its establishment in May 2007. It is intended to update the Council and the Parliament on the work undertaken by ENSREG since mid-2013. ENSREG's earlier work is described in previous reports which were submitted in July 2009<sup>3</sup>, July 2011<sup>4</sup> and July 2013<sup>5</sup> respectively.

Chapter 1 provides background information on the arrangements for nuclear safety, spent fuel and radioactive waste management in the European Union, together with a short history of ENSREG. Chapters 2, 3 and 4 summarise the work undertaken by ENSREG to improve arrangements for nuclear safety, for the safe management of spent fuel and radioactive waste and for transparency in nuclear safety within the European Union. Chapter 5 summarises ENSREG's achievements to date and outlines its proposals for future actions.

## 1.2. Establishment of ENSREG

In May 2007, the Council of the European Union, in a set of detailed conclusions, supported the establishment of a High Level Group at EU level aimed at furthering a common approach to the safety of nuclear installations, the management of spent fuel and radioactive waste and the financing of the decommissioning of nuclear installations. Such a High Level Group was established by a decision of the European Commission in July 2007<sup>6</sup>. The group later adopted the acronym ENSREG (European Nuclear Safety Regulators Group). ENSREG is an independent expert advisory group to the Commission composed of senior officials from the national nuclear safety, radioactive waste safety or radiation protection regulatory authorities and senior civil servants with competence in these fields from all 28 EU Member States. ENSREG believes that striving for continuous improvement is a vital safeguard against any sense of complacency in the operation of a nuclear facility and nuclear regulatory arrangements, and that it must be at the heart of any organisation's safety culture. It is a continuous leadership challenge. In adopting this as the fundamental principle for the work of ENSREG, it does not imply in any way that ENSREG considers that nuclear facilities in EU Member States are unsafe or that nuclear oversight arrangements are inadequate. ENSREG is committed to encouraging initiatives aimed at improving nuclear safety, spent fuel and radioactive waste management at the EU level where they add value to the activities already undertaken in international and national contexts. It also considers that a vital aspect of its work, as independent expert advisory group to the Commission is to develop proposals to improve the cooperation and openness between Member States, and the overall transparency on issues relating to the safety of nuclear installations and effective radioactive waste management practices within their jurisdiction. In addition ENSREG also provide a platform to share best practice and technological improvements etc.

## 1.3. Purpose and Structure of ENSREG

All EU Member States that operate nuclear installations follow the basic principles set internationally for assuring nuclear safety and the safe management of radioactive waste and spent fuel. These principles are established in the CNS and the Joint Convention on the

<sup>3</sup> ENSREG Report 2009 [http://www.ensreg.eu/sites/default/files/HLG\\_p%282009-09%29\\_35.FINAL\\_ENSREG%20Report%202009\\_0.pdf](http://www.ensreg.eu/sites/default/files/HLG_p%282009-09%29_35.FINAL_ENSREG%20Report%202009_0.pdf)

<sup>4</sup> ENSREG Report 2011 <http://www.ensreg.eu/sites/default/files/ENSREG%20Report%202011%20final.pdf>

<sup>5</sup> ENSREG Report 2013 [http://www.ensreg.eu/sites/default/files/HLG\\_p%282013-24%29\\_117%20ENSREG\\_REPORT\\_2013.pdf](http://www.ensreg.eu/sites/default/files/HLG_p%282013-24%29_117%20ENSREG_REPORT_2013.pdf)

<sup>6</sup> Commission Decision of 17 July 2007 on establishing the European High Level Group on Nuclear Safety and Waste Management: [http://www.ensreg.eu/sites/default/files/HLG\(2007\)1.1.P.pdf](http://www.ensreg.eu/sites/default/files/HLG(2007)1.1.P.pdf)

Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. ENSREG's role is to help to establish the conditions for continuous improvement and to reach a common understanding in these areas. As independent expert advisory group to the Commission, ENSREG is working to:

- improve the cooperation and openness between Member States on nuclear safety and radioactive waste issues;
- improve the overall transparency on nuclear safety, spent fuel and radioactive waste issues; and
- where appropriate, advise the European Commission on additional European rules in the fields of the safety of nuclear installations and the safety of the management of spent fuel and radioactive waste.

ENSREG has established four working groups to undertake its Work Programme.

- Working Group 1 (WGNS) - Improving Nuclear Safety arrangements;
- Working Group 2 (WGRWMD) - Improving Radioactive Waste Management, Spent Fuel and Decommissioning arrangements;
- Working Group 3 (WGTA) - Improving Transparency Arrangements.
- Working Group 4 (WGIC) - International Cooperation.

These working groups meet as necessary and report back to ENSREG, which meets at least twice a year.

#### **1.4. Nuclear Safety in the EU context**

The ground for nuclear energy in Europe was laid in 1957 by the establishment of the European Atomic Energy Community (EURATOM). Its main functions consist of furthering cooperation in the field of research, protecting the public by establishing common safety standards, ensuring an adequate and equitable supply of ores and nuclear fuel, monitoring the peaceful use of nuclear material, and cooperating with other countries and international organisations.

There are some 130 nuclear power reactors in operation in the EU (June 2015). Some reactors are being decommissioned while others are having their working lives extended, with several new units planned or under construction. In addition to power reactors, a full range of fuel cycle plants (from enrichment to waste storage and recycling) are in operation in Europe. It is the responsibility of each EU Member State to decide on its preferred choice of energy mix. Currently 17 EU Member States out of 28 use nuclear energy for power generation.

Many Member States also operate research reactors and all use radioactive sources in medicine and industry. As a result, all Member States generate radioactive waste to a greater or lesser extent, with the greatest volume coming from nuclear power generation and associated activities. The management of certain types of radioactive waste has reached a mature stage of development, but the establishment of disposal facilities for the higher activity and longer-lived wastes remains a main challenge for the future.

Nuclear safety is of the utmost importance to the EU and its people. It is therefore essential for European society and the economy to avoid the occurrence of any nuclear accidents in the European Union by ensuring the highest possible quality of regulatory oversight and standards of nuclear safety in each and every EU Member State.

#### 1.4.1. National Responsibility

Nuclear safety is a national responsibility exercised where appropriate in an EU-framework. Decisions concerning safety actions and the supervision of nuclear installations remain solely with the operators and national authorities. The national nuclear safety regulators of each of the EU countries are listed on the ENSREG website<sup>7</sup>. The standards applied in each country are developed based on European law, international requirements and guidance on best practice.

#### 1.4.2. International Safety Conventions

All EU Member States are signatories to the Convention on Nuclear Safety (CNS) and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The CNS was adopted in Vienna on 17 June 1994, and entered into force on 24 October 1996. Its aim is to legally commit participating states operating land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which states would subscribe. The obligations of the states cover the siting, design, construction and operation of nuclear power plants as well as the availability of adequate financial and human resources, assessment and verification of safety, quality assurance and emergency preparedness. The CNS obliges states to submit reports on the implementation of their obligations for "peer review" at meetings of the states held at the IAEA, every three years. The 6<sup>th</sup> Review Meeting of CNS was held at the IAEA in Vienna in March 2014.

At the Diplomatic Conference held last February, all the attending Contracting Parties, including the 28 EU Member States and the Euratom Community, agreed upon a text for a Declaration (the "Vienna Declaration") containing a set of principles and implementation mechanisms to improve and enhance the safety of nuclear power plants with a view to prevent nuclear accidents and, should an accident occur, mitigate their consequences on the population and long-term off-site contamination. National Reports to be submitted in the framework of the next CNS Review Meeting in 2017 will be the basis for ensuring the proper conduct of their peer reviews regarding these set of principles and implementation mechanisms to which all the Contracting Parties should actively commit themselves.

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of radioactive Waste Management (Joint Convention) entered into force on 18 June 2001. It applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and applications and to spent fuel and radioactive waste from military or defence programmes, if and when such materials are transferred permanently to and managed within exclusively civilian programmes, or when declared as spent fuel or radioactive waste for the purpose of the Convention by the Contracting Party. The Joint Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities. As in the case of the CNS, the Joint Convention obliges states to submit a report on the implementation of their obligations for "peer review" at meeting of the states held by the IAEA every three years. The 5<sup>th</sup> Review Meeting was held at the IAEA in Vienna in May 2015. Major issues discussed under the Joint Convention at the moment include international solutions for disposal.

#### 1.4.3. European Legislation

On 25 June 2009 the Council of the European Union adopted a Directive (2009/71/EURATOM) establishing a Community framework for the nuclear safety of nuclear installations that provides binding legal force to the main international nuclear safety principles. The objective of the Directive is to maintain and promote the continuous

<sup>7</sup> List of Nuclear regulators in EU countries: <http://www.ensreg.eu/members-glance/national-regulators>

improvement of nuclear safety. The right of each Member State to use nuclear energy or not in its energy mix is recognised and fully respected.

On the basis of nuclear stress tests<sup>8</sup> carried out in 2011 and 2012, the lessons learned from the Fukushima nuclear accident and the safety requirements of the Western European Nuclear Regulators Association and the International Atomic Energy Agency, the EU amended its Nuclear Safety Directive in 2014 (2014/87/EURATOM).

The amended Directive requires EU countries to give highest priority to nuclear safety at all stages of the lifecycle of a nuclear power plant. This includes carrying out safety assessments before the construction of new nuclear power plants and ensuring significant safety enhancements for old reactors. Specifically, the Directive:

- strengthens the role of national regulatory authorities by ensuring their independence from national governments. EU countries must provide the regulators with sufficient legal powers, staff, and financial resources
- creates a system of peer reviews. EU countries choose a common nuclear safety topic every six years and organise a national safety assessment on it. They then submit their assessment to other countries for review. The findings of these peer reviews are made public
- requires a safety re-evaluation for all nuclear power plants to be conducted at least once every 10 years
- increases transparency by requiring operators of nuclear power plants to release information to the public, both in times of normal operation and in case of incidents

An ambitious EU-wide safety objective for all types of nuclear installations has been introduced in this amended Directive. The new safety objective requires that nuclear installations are designed, sited, constructed, commissioned, operated and decommissioned with the objective of preventing accidents and, should an accident occur, mitigating its consequences and avoiding early and large radioactive releases<sup>9</sup>. As for the existing nuclear installations, this objective enshrines the principle of continuous improvement of nuclear safety by indicating the need to identify and implement in a timely manner reasonably practicable safety improvements to the nuclear installation. These safety objectives being the core of the European Commission approach in this area, they are expected to be implemented as part of the new directive. ENSREG has been informed that to ensure a timely implementation, the European Commission will check the conformity with the directive in an accelerated way.

All Member States generate spent fuel and radioactive waste from nuclear power generation or waste in the course of industrial, medical and research activities, or through decommissioning of nuclear facilities involving the clean-up of contaminated facilities or land.

On 19 July 2011 the Council of the European Union adopted a new Directive (2011/70/EURATOM) establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste. The Directive applies to all stages of spent fuel and radioactive waste management, where the spent fuel or radioactive waste arises from or is managed within civilian activities. It includes the general principles to be applied, as well as provisions relating to the establishment and elements to be included in national legislative, regulatory and organisational framework.

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<sup>8</sup> EU Stress test: <http://ec.europa.eu/energy/node/102>

<sup>9</sup> Article 8a(1)(a) and (b). Early radioactive releases are those that would require off site emergency measures but with insufficient time to implement them, and large radioactive releases are those that would require protective measures that could not be limited in area or time.

The EU's Radioactive Waste and Spent Fuel Management Directive (2011/70/EURATOM) requires that:

- EU countries should have a national policy and framework, as well as financial mechanisms and resources for spent fuel and radioactive waste management;
- EU countries draw up national programmes for long term management of all types of spent fuel and radioactive waste. These programmes have to include plans for predisposal and disposal of these materials, e.g. development of radioactive waste disposal facilities;
- Relevant information on radioactive waste and spent fuel management be made available to the public, as well as mechanisms for public participation;
- EU countries perform regular self-assessment and invite international peer reviews of the national programme, framework and competent authorities at least every ten years;
- the export of radioactive waste to countries outside the EU is allowed only under strict conditions.
- EU countries shall have mechanisms for research, development and demonstration (including safety demonstration), as well as for development of skills and competence on spent fuel and radioactive waste management;

The Directive also requires that Member States meet the following obligations regarding reporting and transposition:

#### **Article 14 Reporting**

1. Member States shall submit a report to the Commission on the implementation of this Directive for the first time by 23 August 2015, and every 3 years thereafter, taking advantage of the review and reporting under the Joint Convention.

2. On the basis of the Member States' reports, the Commission shall submit to the European Parliament and the Council the following:

- a) a report on progress made with the implementation of this Directive; and
- b) an inventory of radioactive waste and spent fuel present in the Community's territory and the future prospects.

#### **Article 15 Transposition**

Member States shall for the first time notify to the Commission the content of their national programme covering all the items provided for in Article 12.

##### **1.4.4. *International Guidance on Nuclear Safety and the Safe Management of Radioactive Waste***

As indicated above, two of the main influences on the development of national nuclear safety and radioactive waste management requirements are the International Safety Conventions and EU legislation. Another key influence is the international guidance and regulatory methodologies developed under the auspices of international bodies such as IAEA and the OECD's NEA, and other groups such as WENRA.

*International Atomic Energy Agency - IAEA*

In addition to providing the secretariat for the international conventions described above, the IAEA also seeks to build and strengthen the international safety and security regime through the development of advisory international standards, codes, and guides. In the safety area, they cover nuclear installations, radioactive sources, radioactive materials in transport, and radioactive waste. The IAEA promotes the application of international safety standards for the management and regulation of activities involving nuclear and radioactive materials.

*Nuclear Energy Agency - NEA*

The majority of EU Member States are also members of the OECD/NEA. The mission of the NEA is to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for the safe, environmentally friendly and economical use of nuclear energy for peaceful purposes. To achieve this, the NEA works as: a forum for sharing information and experience and promoting international co-operation; a centre of excellence which helps Member countries to pool and maintain their technical expertise; a vehicle for facilitating policy analyses and *developing consensus based on its technical work*.

*Western European Nuclear Regulators Association - WENRA*

WENRA is a non-governmental organisation comprised of the heads and senior staff members of all the national nuclear regulatory authorities of European countries with nuclear power plants. The main objectives of WENRA are to develop a common approach to nuclear safety, to provide an independent capability to examine nuclear safety in applicant countries and to be a network of chief nuclear safety regulators in Europe exchanging experience and discussing significant safety issues.

## **1.5. ENSREG Work Programme 2014-2016**

ENSREG's central mission is to strive for the continuous improvement in nuclear safety and radioactive waste and spent fuel management and their regulation, and to promote openness and transparency in those areas. The ENSREG Work Programme 2014-16<sup>10</sup> was agreed at the 26<sup>th</sup> Meeting of ENSREG and building on the achievements of the 2012-13 work programme focuses on:

- seeking continuous improvement in nuclear safety arrangements through:
  - continuing to follow up on the indicative program for the conduct of IRRS-Missions in EU-Member States (MS)
  - conducting technical discussion regarding reporting according to Art. 9(1) of the Nuclear Safety Directive
  - conducting a second workshop to peer review the updated National Action Plans (NACPs) in 2015
- seeking continuous improvement in radioactive waste management, spent fuel and decommissioning arrangements through:
  - finalising the guidelines for reporting under Art. 14(1) of the Waste Directive and reviewing the guidelines for MS National Reports

<sup>10</sup> [http://www.ensreg.eu/sites/default/files/HLG\\_p\(2014-27\)\\_135%20ENSREG%20Workprogramme%202014-16%20final.pdf](http://www.ensreg.eu/sites/default/files/HLG_p(2014-27)_135%20ENSREG%20Workprogramme%202014-16%20final.pdf)

- continuing to follow up on interaction with IAEA regarding Peer Review services also for peer reviews under the Waste Directive
- organizing a workshop on European approaches to responsible and safe management of spent fuel and radioactive waste
- seeking enhanced openness and transparency by:
  - reviewing and assessing the progress achieved by European Nuclear Regulators in transparency issues
  - maintaining a comprehensive ENSREG website
  - organizing an ENSREG led European Conference, accessible to all stakeholders, dedicated to furthering the central mission of ENSREG for continuous improvement.
- In the context of international cooperation developing and promoting a common understanding and continuous improvement in the fields of nuclear safety, spent fuel management and radioactive waste management worldwide through:
  - providing ENSREG with the ability to advise the European Commission in the areas of nuclear safety and radiation protection (where related to radioactive material management) within the Instrument for Nuclear Safety Co-operation (INSC) (and Instrument for Pre-accession Assistance (IPA))
  - evaluating the needs for nuclear regulatory safety cooperation and defining overall and country-specific strategies for nuclear safety cooperation
  - identifying preliminary proposals for nuclear regulatory safety cooperation activities and coordinating nuclear regulatory safety cooperation

### **Work Programme 2016-19**

As a result of discussions within ENSREG concerning priorities and the effectiveness of ENSREG and working group practices, ENSREG tasked a 'reflection group' to review the work programme format and produce a new work programme for 2016-19. The new work programme will aim to provide greater clarity on the key tasks to be achieved by ENSREG and when and how they will be completed- enabling greater oversight by the plenary and increased transparency of the work of ENSREG. The new work programme is shaped by recent European legislative changes, in particular Council Directive 2014/87/EURATOM (the amended Nuclear Safety Directive) and Council Directive 2011/70/EURATOM (the Spent Fuel and Radioactive Waste Directive) and will focus in preparing the implementation of this legislation.

## 2. SAFETY OF NUCLEAR INSTALLATIONS

### 2.1. Activities in the support of the effective implementation of the Nuclear Safety Directive

On 25 June 2009, the Council of the EU adopted the Directive 2009/71/EURATOM establishing a Community framework for the nuclear safety of nuclear installations (the 'Directive'), which provides binding legal force to the main international nuclear safety principles. In July 2014, an amendment to the 2009 Nuclear Safety Directive was adopted. The amending Directive 2014/87/Euratom takes account of a review of the EU framework on nuclear safety in the light of the Fukushima accident in 2011 and the findings of the EU Stress Tests.

The general objective of the Directive is to maintain and promote the continuous improvement of nuclear safety and its regulation. It further aims to ensure that Member States shall provide for appropriate national arrangements for a high level of nuclear safety to protect workers and the general public against the dangers arising from ionizing radiations from nuclear installations.

The amended Directive, which came into force in August 2014 and which has to be transposed into Member States' legislation by 2017, reinforces the provisions of the existing Directive, such as:

- Strengthening the role and independence of the national regulatory authority.
- Introducing a high-level EU-wide nuclear safety objective, emphasising accident prevention and the avoidance of significant radioactive releases.
- Setting up a European system of regular topical peer reviews.
- Increasing transparency on nuclear safety matters (information and cooperation obligations and involvement of the public).
- Providing for regular safety reassessments of nuclear installations.
- Enhancing accident management and on-site emergency preparedness and response arrangements and procedures.
- Promoting nuclear safety culture in the workplace.

Considering the principles and obligations from the Directive, ENSREG included in its work program for 2014-2016 various activities related to continuous improvement in nuclear safety:

- Continuing to follow up on the indicative program for the conduct of IRRS-Missions in EU-Member States (MS) in cooperation with IAEA and conducting dedicated European workshops to exchange lessons learned and experience every two years.
- Conducting technical discussion regarding reporting according to Article 9.1 of the Nuclear Safety Directive reflecting the reported issues directly related to nuclear safety of the European NPPs.
- Reviewing the ENSREG guidelines regarding MS reports on spent fuel and radioactive waste management for their applicability according to the MS experiences gained during preparation of the first set of reports under the 2011/70/EURATOM Directive and exploring approaches to facilitate future reporting (e.g. in 2018).
- Conducting a second workshop to peer review the updated National Action Plans (NAcPs) in 2015 and if appropriate developing after the workshop a further procedure to follow-up implementation.

ENSREG has a permanent working group on nuclear safety (Working Group 1). The WG1 counts on designated representatives from many ENSREG members and the EC Secretariat and is currently chaired by Mr. Antonio Munuera (Spain's Nuclear Safety Council). The group meets at least twice a year, and its Chairman reports to ENSREG in every plenary meeting. WG1 advises and prepares proposals for endorsement by the plenary of ENSREG, as well as coordinate several activities of ENSREG. The work program for the group is based on the previous activities, and is reviewed periodically to satisfy any demand or task requested by ENSREG. WG1 works along with ENSREG working groups devoted to spent fuel and waste management (WG2), transparency arrangements (WG3), and international cooperation (WG4). Also, in particular cases, WG1 coordinates at technical level with representatives from other international organizations or associations, such as the IAEA or WENRA (mainly through its Reactor Harmonization Working Group).

This chapter describes the main activities related to nuclear safety carried out by ENSREG from the last ENSREG report (dated July 2013).

## **2.2. Member States' reports under Article 9.1 of the Nuclear Safety Directive.**

Member States produced their first national reports as required under Article 9.1 of Council Directive 2009/71/EURATOM and submitted them to the European Commission by July 2014. These reports demonstrate how the Member States are addressing the objectives of the Directive by fulfilling their obligations under the Directive and illustrate their national approaches. On the basis of the Member States' reports, the Commission shall submit a report to the Council and the European Parliament on progress made with the implementation of this Directive. This report was released in the last quarter of 2015. As agreed in the Council (Working Party on Atomic Questions group), national implementation reports will be made public by the Commission.

ENSREG considered that it would be appropriate to assist Member States in the preparation of these reports by providing guidance on the type of information and material that it may be useful to include in the reports and consequently produced the "ENSREG Guidelines regarding Member States Reports as required under Article 9.1 of Council Directive 2009/71/EURATOM". ENSREG guidelines have no legal status, nor do they set out to interpret, modify or extend the obligations of the Directive. The use of these Guidelines was voluntary and Member States could submit their national reports in any format, length and structure they believe necessary to describe how they comply with the obligations under the Directive. The Guidelines should be revisited by ENSREG to incorporate experience after the first Member States reports.

## **2.3. IRRS Missions to EU countries: Indicative program and pool of experts.**

Article 8e.1 of the Directive requires that Member States shall, at least once every 10 years, arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and competent regulatory authorities with the aim of continuously improving nuclear safety.

ENSREG agreed that the best way forward to carry out this obligation was cooperating with the IAEA Integrated Regulatory Review Service (IRRS) program. ENSREG also agreed that self-assessments should be based on IAEA IRRS practices, noting that IRRS missions look beyond the scope of the CNS and the Joint Convention obligations and Full Scope IRRS missions are beyond the scope of the Directive.

A full indicative European IRRS program has been established until 2022 and is continuously reviewed and updated by WG1. The indicative program includes schedules for EU Member

States to carry out self-assessments and IRRS missions for a 10 year period. In accordance with this program, IRRS missions have been conducted in Belgium, Bulgaria, Croatia, Czech Republic, Ireland, France, Hungary, Malta, Netherlands and Poland from 2013 to 2015.

In order to guarantee the availability of experts for the implementation of the EU IRRS program, a European pool of suitable experts has been established as well. This ensures an effective level of EU Member States participation in the IAEA IRRS program both within Europe and worldwide, and contributes to harmonisation of European regulatory practices. The pool of Experts available for IRRS missions is continuously increasing and, as of 2015, there are almost 230 experts available. This represents a yearly increase of 20-30 experts. This has been attributed to the 'Basic IRRS Training' courses organized each year by the IAEA.

WG1 follows up on the indicative program for the conduct of IRRS-Missions in EU-Member States. The pool of experts is updated regularly as well. WG1 Chair regularly provides ENSREG with the updated indicative program, in every meeting.

In 2011 a Memorandum of Understanding between ENSREG and IAEA for organizing international peer review missions in the EU Member States was prepared and signed by the ENSREG Chairman and by the relevant Deputy Director General of the IAEA. In 2013 and 2014, WG1 and WG2 discussed the MoU in force and the peer review requirements prescribed by the Council Directive (2011/70/Euratom). The MoU was updated to address these peer review requirements of this directive via IAEA - ARTEMIS missions. The MoU was approved by ENSREG in 2015 and is pending IAEA approval. In absence of a new MoU the 2011 version will remain in force. A consequence of the revised MoU is that the ARTEMIS and IRRS indicative programs will be combined in one single program and that additional experts should be needed and consequently requested in order to support the upcoming ARTEMIS missions.

#### **2.4. Workshop on IRRS Missions to EU countries.**

According to the Memorandum of Understanding between ENSREG and IAEA, in January 2014 a Workshop on issues and trends arising from the European IRRS missions was conducted in Brussels, with the active participation of EU countries, the EC and the IAEA. The workshop allowed participants to identify and present lessons learned and recommendations from the different phases of an IRRS Mission (preparation, hosting and follow-up), based on the experience of EU countries having hosted such missions. These lessons learned will be hopefully addressed by the IAEA in order to strengthen the efficiency of the international review service. In some cases, mission findings have contributed to significant changes in the regulatory organizations. In this regard, relevant improvements to regulatory processes resulting from IRRS missions to EU countries were identified and compiled, covering the following modules of the IRRS missions:

- Governmental Responsibilities and Global Nuclear Safety Regime.
- Responsibilities and Functions of the Regulatory Body.
- Management System of the Regulatory Body.
- Authorisation and review and Assessment.
- Inspection and Enforcement.
- Regulations and Guides.
- Emergency Preparedness and Response.

The workshop provided an important opportunity to strengthen the international peer review process and concluded that IRRS missions contribute to improve nuclear and radiation safety.

## 2.5. Workshop NAcP.

In the aftermath of the nuclear accident that occurred at the Fukushima Dai-ichi nuclear power plant in Japan on 11 March 2011, all EU nuclear power plants were reviewed on the basis of a comprehensive and transparent risk and safety assessment ("stress tests") in light of the accident lessons learned.

National action plans (NAcPs) describing actions to improve nuclear safety were prepared by each participating country. The NAcPs included the safety improvements planned and implemented, as well as their schedule for completion. These NAcPs were reviewed at the first workshop organised by ENSREG in spring 2013 and it was decided to convene a similar exercise two years later.

NAcPs were updated by 15 MS operating NPPs (plus Switzerland and Ukraine) by the end of 2014 and peer-reviewed in the framework of ENSREG. The peer review approach and associated ToR for the Workshop were developed by WG1 and endorsed by ENSREG. The 2nd ENSREG National Action Plan Workshop was held on 20-24 April 2015 in Brussels and was organised to peer review the contents and status of implementation of the updated NAcP via an open and constructive discussion process, including additional measures undertaken or planned and other changes compared to the original schedule. Special attention was devoted to the technical basis for the changes proposed as well as the review of studies and analyses identified and completed since the 2013 Workshop.

The 2015 workshop supported the consistency of actions contained in NAcPs, as well as promoted sharing of technical information, identifying commendable practices, experiences and challenges within European countries.

The workshop identified that a considerable number of actions listed on the NAcPs has been completed under the oversight of the respective national regulatory authorities. However, the status of implementation of actions differs between the participating countries. While some countries are almost finished with their implementations, others have clear schedules to complete their actions by 2016. Most of the countries are progressing adequately with the implementation of their NAcPs, although some countries have rescheduled some specific actions up to 2020.

The workshop concluded that all participating countries are strongly committed to the full implementation of identified improvement actions in their respective NAcPs, under the oversight of the regulatory authorities. A follow-up of the completion of implementation of the pending actions contained in the NAcPs is necessary and is to be defined under the work program of ENSREG.

A statement on "the progress in the implementation of post-Fukushima National Action Plans (NAcPs)" was published by ENSREG at the end of 2015. In this statement, ENSREG:

- Endorses the summary report of the workshop which is made public on the ENSREG website;
- Commends the importance of promoting the sharing of practices, experiences and challenges across European countries, with the aim of continuously improving safety;
- Recognizes the strong and continuous commitment of all participating nuclear operators and regulatory authorities towards the full implementation of all improvement actions identified in their respective NAcPs and;
- that an important number of actions listed on the NAcPs have been completed under the oversight of the national safety regulatory authorities.
- Notes that the status of implementation differs compared to the original deadlines presented in the 1<sup>st</sup> National Action Plan summary report where major modifications were to be implemented by 2015-2018, and at the latest by 2020. While many nuclear

operators have almost completed implementation, and others have clear schedules to complete actions by 2016 some have rescheduled specific actions later than 2020;

- Considers that the rate of safety upgrade implementation should be strengthened to target agreed implementation deadlines, taking into account other safety priorities and quality requirements
- Recommends that a status report from each participating country on the implementation of the NAcPs will be updated and published periodically to ensure a transparent monitoring with the aim of publishing a report on the implementation in 2017.

## 2.6. Cooperation (ENSREG/WG1, WG2, WG3, WG4, WENRA/RHWG)

ENSREG exchanges information and cooperates as appropriate with WENRA and in particular with the WENRA/Reactor Harmonisation Working Group (WENRA/RHWG). WG1 is monitoring the WENRA approaches and activities on updating the WENRA Safety Reference Levels. Discussion at the 2015 NAcP peer review workshop related to the revision of WENRA Safety Reference Levels for NPPs have been shared with WENRA-RHWG.

In coordination with the WENRA/RHWG, ENSREG WG1 is developing a proposal for the Topical Peer Review process required under the revised nuclear safety Directive. WENRA/RHWG will develop the technical specifications and WG1 is preparing the Terms of reference for the review process.

WG1 will participate in a task group to ensure the maintenance and update of the ENSREG website. This group is comprised of representatives from WG1, WG2, WG3 and WG4. The WG3 Chair will act as coordinator.

## 2.7. External Dimension of Nuclear Safety

As mentioned in the previous ENSREG activity report a dedicated group (WG4) was created to cope with the External Dimension of Nuclear Safety. More specifically, in May 2013, the ENSREG Terms of Reference of WG4 were finalised. This marked the official start of the cooperation on the implementation of the Instrument for Nuclear Safety Cooperation (INSC).

This instrument requires that the European Atomic Energy Community finance measures to support the promotion of a high level of nuclear safety, radiation protection and the application of efficient and effective safeguards of nuclear material in third countries. This cooperation includes the promotion of an effective nuclear safety culture at all levels, mainly through support provided to regulatory bodies and technical support organisations and the reinforcement of the regulatory framework. It also includes support for the safe management of radioactive wastes and spent nuclear fuels.

The first priority of the WG4 was to provide advice to the Commission on high-level, policy, definition of its cooperation activities with regulatory bodies in third countries.

WG4 however faced several challenges as the INSC was not adopted by the Council of Ministers before December 2013, following clearance of the overall Multiannual Financial Framework for the EU until 2020, which the EP had approved in November. The amount to be allocated to the INSC 2014-2020 was reduced from the more than €630 million proposed to €225 million.

Several meetings were held to examine in-depth key draft documents such as the INSC strategy paper (SP)<sup>11</sup> and the Multi Annual Indicative Program (MIP)<sup>12</sup>, taking duly into

<sup>11</sup> [https://ec.europa.eu/europeaid/sites/devco/files/insc-strategy-20140613\\_en.pdf](https://ec.europa.eu/europeaid/sites/devco/files/insc-strategy-20140613_en.pdf)

<sup>12</sup> [https://ec.europa.eu/europeaid/sites/devco/files/insc-mip-20140613\\_en.pdf](https://ec.europa.eu/europeaid/sites/devco/files/insc-mip-20140613_en.pdf)

account before approval of the INSC the scope and essential figures could be modified based on the WG4 recommendations.

ENSREG final opinion was delivered in due time to allow the Commission finalizing its SP and MIP early enough (June 2014). Hence reducing delays for developing and continuing cooperation where needed.

The main objectives of the delivered opinion was to put the priority on dedicated help of nuclear regulator of neighbouring countries with specific focus on key are of regulatory body activities like licensing & supervision, periodic safety review, technical support, training, etc. Specific attention was also drawn on using efficiently international safety standards and participating to international peer reviews.

Further on the Commission launched several exploratory missions to examine on the spot the states requests for assistance. ENSREG members participated to three of them in Thailand, South Africa and South East Asia. The two first mentioned were focused on assistance to the nuclear regulators as the third one aimed at developing regional capacities to cope with significant radiological events. Based on those missions the Commission could propose the best support under the form of projects to be approved by the INSC committee or further consultation and follow-up of requesting state needs.

Like other assistance instruments the INSC must deliver regular reports on its activities. Among them the mid-term review (2017) is an essential one. WG4 started to review with the Commission the planning of activities that will lead to provide sound opinion of ENSREG in due time helping to evaluate the 2014-2017 efficiency of the instrument and providing for guidance, where necessary, on the scope and the main strategy orientations. WG 4 will follow-up the issue in 2016.

### **3. SAFE MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE**

#### **3.1. Activities in the support of the effective implementation of the Waste Safety**

On 19 July 2011, the Council of the EU (Council) adopted the Directive 2011/70/EURATOM establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (the 'Waste Directive').

The general objective of the Directive is to ensure responsible and safe management of spent fuel and radioactive waste in order to avoid imposing undue burdens on future generations. It further aims to ensure that Member States provide for appropriate national arrangements to protect workers and the general public against the dangers arising from ionising radiation, as well as to ensure the provision of necessary public information and participation in relation to spent fuel and radioactive waste management.

Similar to the provisions in the Nuclear Safety Directive (2009/71/EURATOM), the Waste Directive enhances the role and independence of national regulatory authorities, confirming licence holders have the prime responsibility for the safety of spent fuel and radioactive waste management facilities and activities. In addition, the Waste Directive emphasizes that each Member State is ultimately responsible for managing and disposing of spent fuel and radioactive waste generated in it. Also, Member States are to provide for a national framework with national arrangements for a high level of safety in spent fuel and radioactive waste management, integrating all stages in spent fuel and radioactive waste management from generation to disposal, i.e. "cradle-to-grave" approach. The national framework shall provide for the establishment of a national programme for the implementation of spent fuel and radioactive waste management policies, subject to review and update on a regular basis.

The Waste Directive was to be transposed into national frameworks by 23 August 2013. The Directive requires, in Articles 13(1) and 15(4), Member States to notify the Commission the contents of their National Programme for the management of spent fuel and radioactive waste for the first time by 23 August 2015 and any subsequent significant changes.

It also requires, in Article 14(1), that Member States submit a national report to the Commission on the implementation of this Directive for the first time by 23 August 2015, and every three years thereafter.

Furthermore, it requires in Article 14(3) that Member States periodically, and at least every 10 years, arrange for self-assessments and invite international peer reviews. The outcomes of such peer reviews should be reported to the Commission and other Member States and made available to the public.

As was the case with the Nuclear Safety Directive, ENSREG identified that it had two significant roles in assisting the smooth implementation of the Waste Directive:

- to provide guidance for Member States on the structure and format of the national reports required under Article 14(1), taking account of experience in producing the three yearly reports to the Joint Convention; and
- to provide guidance and progress the scheduling and resourcing of self-assessments and peer reviews required under Article 14(3) of the Directive.

This work was incorporated into the ENSREG Work Programme. The importance of building on the experiences from developing corresponding guidance for the implementation of the Safety Directive was emphasized.

### ***Better use of the Joint Convention in the EU***

Taking into account the potential contribution from Member States reporting obligations under the Joint Convention, ENSREG decided to include in the ENSREG Work Program 2010-2011 a specific task for WG2 to identify synergies between the reporting under Joint Convention and the requirements on Member States to report under the Waste Directive. In response to this task WG2 arranged a seminar 3-4 November 2011, in Vienna to address this issue.

A general conclusion from the seminar was that the synergies between the reporting processes are less than expected. The main reason being that the purpose with reporting obligations are quite different but also due to the different scope for reporting under the Joint Convention compared to the scope for reporting under the Waste Directive.

The outcome from the seminar has, however, been used as input for developing guidance for Member States reports under the Waste Directive (see section 3.1.1).

### ***Implementing Integrated Management Systems***

ENSREG decided to include in the ENSREG Work Program 2012-2013 a specific task for WG2 addressing implementation of a management system at national level (see Article 5.1(d) of the Waste Directive) and an integrated management system by licence holders (see Art. 7.4), with specific emphases on interdependencies (interactions) among all steps (actors) involved in long-term management for spent fuel and radioactive waste.

The topics were discussed within WG2 on the basis of presentations from some member states. The outcome from this effort was integrated in the ENSREG Final Guidelines for MS Reports to the Waste Directive (see 3.1.1).

Further discussions of the concepts of (integrated) management system and management of interdependencies are planned at an ENSREG WG2 Workshop in 2016 on member state experiences from notification and reporting under the Waste Directive.

#### ***3.1.1. Format of and Guidance for Member States reports under Article 14 of the Waste Directive***

Article 14(1) of the Waste Directive requires that “Member States shall submit a report to the Commission on the implementation of this Directive for the first time by 23 August 2015, and every three years thereafter, taking advantage of the review and reporting cycles under the Joint Convention”.

ENSREG considered that it would be appropriate to assist Member States in the preparation of these reports, to provide guidance regarding information and material that may be useful to include in the reports and thereby facilitate the most efficient and effective reporting of the implementation by Member States of their obligations under this Directive. Such guidelines were also expected to facilitate for the Commission to compile and submit a report to the Council and the European Parliament on progress made with the implementation of the Directive.

Starting from the approach that ENSREG had agreed for the development of guidelines under the Nuclear Safety Directive, the work to develop guidance for reporting under the Waste Directive was based on the principles that reports should be:

- newly written and concise, providing the necessary information to address the specific obligations of the Articles of the Waste Directive, including their implementation;
- self-standing while drawing information from existing sources (e.g. National Reports to the Joint Convention, where these are available);
- written in such a way as to make it also comprehensible for an informed non-expert audience; and to be

- consistent across Member States to enable the European Commission to compile its report to the Council and European Parliament

A draft proposal for guidelines was endorsed by ENSREG in March 2013 for trial use by volunteer Member States, to test the usefulness and viability of the guidelines. France, Spain and UK volunteered to develop example reports. These trial reports, which consisted of implementation experience and were not intended to represent the final Member State full scope report, were shared within the task group and evaluated to identify necessary amendments to the draft Guidelines. The final draft guidelines, as updated from the lessons learned from the trial use exercise was in May 2014 endorsed by ENSREG for their application to produce the first Member States reports, due in August 2015. They are publicly available at the webpage of ENSREG<sup>13</sup>:

ENSREG also noted that the Guidelines should be revisited by ENSREG to incorporate experience after the first Member States reports have been submitted.

The guidance document is using the structure:

#### I Introduction

#### II Overarching suggestions

A Basic considerations

B General suggestions on the structure and format of the National Report

C Reporting on inventories

D Member States without nuclear installations

#### III Detailed suggestions on the content of the National Report

A Introduction

B Summary

C Reporting article by article

#### Appendix 1 Relevant Articles of the Joint Convention

#### Appendix 2 Reporting of inventories under the Waste Directive

As emphasized in the introduction to the guidelines, they have no legal status neither do they set out to interpret, modify or extend the obligations of the Waste Directive, the text of the Directive prevails. The use of the Guidelines is voluntary and Member States have the right to submit their National Report with the form, length and structure they believe necessary to describe how they comply with the obligations under the Directive.

#### *3.1.2. Self-assessments and Peer Reviews - Article 14(3) of the Waste Directive*

Article 14(3) of the Waste Directive requires that “Member States shall periodically, and at least every 10 years, arrange for self-assessments of their national framework, competent regulatory authority, national programme and its implementation, and invite international peer review of their national framework, competent regulatory authority and/or national programme with the aim of ensuring that high safety standards are achieved in the safe management of spent fuel and radioactive waste. The outcomes of any peer review shall be reported to the Commission and the other Member States, and may be made available to the public where there is no conflict with security and proprietary information.”

<sup>13</sup> Final Guidelines for MS Reports to the Waste Directive: <http://www.ensreg.eu/node/3696>

By the time the Waste Directive entered into force, ENSREG had already agreed that, to satisfactorily meet both the obligations and spirit of Article 9(3) of the Nuclear Safety Directive, the best way forward was by cooperation with the IAEA Integrated Regulatory Review Service (IRRS) programme. ENSREG had further agreed that self-assessments should be based on IAEA IRRS practices, and that there was no need to modify the IAEA IRRS self-assessment guidance in order to use it for the purposes of the Nuclear Safety Directive. Thus, ENSREG decided that the best way forward was to establish an EU IRRS programme, supported by the services by the IAEA.

An indicative European IRRS programme was established which included schedules for EU Member States to carry out self-assessments and IRRS missions for the years 2011 to 2021. This programme has been updated as and when needed and at least annually. Also, in order to implement the EU IRRS programme, a European pool of suitable experts has been established. This ensures an effective level of EU Member States participation in the IAEA IRRS programme both within Europe and worldwide, and contributes to harmonisation of European regulatory practices.

Based on discussions with the IAEA, a Memorandum of Understanding between ENSREG and IAEA for organizing international peer review missions in the EU Member States was prepared and signed in 2011 by the ENSREG Chairman and by the relevant Deputy Director General of the IAEA.

As was the case for the guidance for reporting under Article 14(1) of the Waste Directive, ENSREG recommended that development of guidelines for self-assessment and Peer review under Article 14(3) of the Waste Directive should to the extent possible utilize the work that had been accomplished in developing guidelines for self-assessments and Peer Reviews under Article 9 (3) of the Safety Directive.

It was in this context emphasized that due consideration must be paid to the fact that the scope of the Waste Directive is principally different compared to the scope for the Safety Directive, as accounted for above. Also, the scope for self-assessment and Peer Reviews in the Waste Directive is different compared to scope in the Safety Directive. The scope of self-assessment according to the Nuclear Safety Directive covers the national framework on nuclear safety and competent regulatory authorities. The scope of self-assessments according to the Waste Directive includes also the national framework for spent fuel and radioactive waste management (including institutional waste), the national programme and its implementation. Likewise, the scope of inviting international Peer Reviews according to the Safety Directive covers relevant segments of their national framework and/or authorities whereas the scope of Peer Reviews according to the Waste Directive encompasses the national framework, competent regulatory authority and/or national programme.

A special task group was set up to explore what additional or other arrangements than the ones related to the Safety Directive obligations on self-assessment and peer review (EU IRRS programme) would or could be beneficial or necessary to satisfy requirements in Article 14(3) of the Waste Directive on self-assessment of National Programme and its implementation and invite international Peer Review of the National Programme.

During the course of work, the IAEA was invited to present the IAEA IRRS-process. The purpose was to explore the potential possibility to address also self-assessment of National Programme and its implementation as well as Peer Review of the National Programme in the "EU IRRS process", elements that are not included in the established IAEA IRRS-process. Also the OECD/NEA was invited to present the Peer Review activities carried out by the NEA. In addition, Member States provided information about their experiences from Peer Review activities.

The outcome of the task group work was presented to ENSREG in November 2012. ENSREG agreed to the general approach proposed by the working group as well as to the request to launch a preparatory interaction with IAEA in order to develop a specific

methodology as a service to EU Member States for the purpose of fulfilling the peer review obligations created by both the Safety Directive and the Waste Directive.

In 2014, building on many years' experience of conducting peer reviews in spent fuel and radioactive waste management field upon request of Member States, IAEA launched a new peer review service called ARTEMIS. ARTEMIS is anchored in the IAEA safety standards, technical guidance and international good practices, and provides for a comprehensive integrated review service in the field of radioactive waste and spent fuel management, decommissioning and remediation programmes.

The conclusion of the task group was that the IAEA ARTEMIS peer review service can be an adequate instrument for the Member States to meet the peer review obligations in the Waste Directive. Based on these conclusions, it was proposed to revise the existing Memorandum of Understanding between ENSREG and IAEA for international peer review missions to the EU Member States to encompass also peer reviews obligations in the Waste Directive. A meeting between WG 1 and WG2 representative was held in Brussels in 2014 to develop the revised text.

The conclusions of the task group as well as a final draft proposal for revised Memorandum of Understanding were presented to ENSREG in May 2014 and finally endorsed by ENSREG in October 2014. ENSREG also approved continued work to develop schedules for EU Member States to carry out self-assessments and ARTEMIS missions as well as to develop a pool of experts to support those missions. This work is initiated and will be conducted in close cooperation with WG1 to allow for MS to optimize their responsibilities as regards peer reviews under both Directives.

## 4. OPENNESS AND TRANSPARENCY

### 4.1. ENSREG Website <sup>14</sup>

The ENSREG website was launched in January 2010. Since then, it works as the main tool of ENSREG information dissemination towards the public and stakeholders in the field of nuclear safety. The information on the website is being updated regularly. At the same time, it ensures transparency and access to information. Moreover, in the framework of the EU Stress Tests and follow-up, stakeholders have the opportunity to participate in consultations via the ENSREG website (see 4.3).

Based on a user-friendly layout, visitors can navigate through the following thematic areas:

- ENSREG at a glance
- Nuclear Safety
- Safe management of spent fuel and radioactive waste
- Nuclear Safety and Waste Regulation
- Transparency and public involvement
- ENSREG conferences
- EU Stress Tests
- International Cooperation

Arrangements are in place to update the website with “news” and “documents” as they become available. These features make the navigation and the quick search easier.

According to web statistics that are gathered regularly the average number of visitors remains stable (around 2.300/month). The figures also show that the rate of new visitors is relatively high.

A new website management scheme has been decided in 2015, in order to enhance further the update and maintenance of the website. Aiming at further website content and layout improvement, ENSREG has decided to conduct a survey and collect feedback from website visitors.

### 4.2. Third ENSREG Conference on Nuclear Safety

The European Nuclear Safety Regulators Group held its third conference in Brussels on 29 and 30 June 2015. The event, which brought together around 300 delegates including national regulators, NGOs, nuclear operators and academics, had a global flavour with speakers from China, USA, South Korea and Argentina.

ENSREG's first conference in 2011 had mainly dealt with the work done by ENSREG, its achievements and perspectives and the second conference in 2013 had focused largely on the accident at Fukushima and the lessons learned from it. This year's event sought to build on and move forward from those experiences to promote the continuous improvement of nuclear safety.

In the opening session entitled “The EU approach to nuclear safety” the high level presentations focused on the fact that the EU has the most advanced legal framework for nuclear safety and stressed that the common goal now was the implementation of that

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<sup>14</sup> <http://www.ensreg.eu/>

framework at each member state level. The proactive role Europe takes in nuclear safety was highlighted and how valuable having a wide range of perspectives was to the continuous improvement of nuclear safety.

In the following sessions the key themes that emerged from the presentations given by invited speakers and the discussions with delegates were:

*Public engagement* - There is a large variety of instruments regarding public participation and the importance of effective and efficient implementation thereof. This includes participation in decision-making regarding Long Term Operation (LTO) and the challenge of providing comprehensive technical information that can be easily understood.

*Operation of nuclear plants* -The value of the European and international legal frameworks, the interface with security issues and the balance between the best available and best applicable nuclear safety solutions.

*New legislation* - The challenge for member states' competent regulatory authorities of ensuring that the intentions of the Nuclear Safety Directive are implemented and deliver real improvements in nuclear safety; the challenge of optimizing peer reviews and crosslinking them with reporting obligations.

*Spent fuel, decommissioning and radioactive waste management* - Recognition of legal provisions in place and several good practices, but also of the fact that progress is still needed (no final repository for high level radioactive waste/ spent fuel in operation), the challenge of the implementation of the legal provisions, as well as challenging technical and financial issues remaining.

*Improvements in emergency preparedness and response* -Recognition that improvements in emergency preparedness and response had been made since the previous ENSREG conference but that the question of whether enough had been done remained.

The final address was given by the European Commissioner for Climate Action and Energy who spoke about the role that nuclear energy can play in the Energy Union, in particular when it comes to investing in safety, the challenges of managing radioactive waste, and investment and research in the nuclear field in the future. He urged nuclear regulators and safety authorities to remain vigilant and to be critical of the status quo and ambitious when it comes to safety at home and abroad. The event was closed by the President of the Conference who noted the progress that had been made since the last ENSREG conference through the on-going co-operation between European partners, and more widely with the global nuclear community but also expressed his hope that the work would continue enabling the challenges, which had been discussed during the conference, to be met.

The conference was transmitted live on the ENSREG website. The presentations and a report, as well as photos and the video recordings from the event are available on the ENSREG website.

### **4.3. Second ENSREG National Action Plans (NACPs) Workshop**

The 2nd ENSREG National Action Plans (NACPs) workshop was held in Brussels on 20-24 April 2014. This second workshop was conducted to peer review the updated NACPs in 2015 with a view to develop after the workshop, if appropriate, a further procedure to follow-up implementation. It is recalled that NACPs were developed based on the European stress test peer review recommendations and suggestions. The first ENSREG workshop to discuss the NACPs took place in Brussels in April 2013, following which, updated NACPs were provided by end of December 2014. The updated NACPs were uploaded to the ENSREG website as soon as they became available. Stakeholders had the opportunity to put questions regarding the peer review of NACPs from 8 January to 28 February 2015 via the ENSREG website.

#### 4.4. Other activities

- The document “Current and International Law with relevance to Transparency” (HLG\_p(2009-09)\_31) has been updated to include the new important provisions on transparency foreseen in the European legislation established in the past two years, in particular in: Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation; Directive 2014/87/Euratom amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations. The updated document is subject to publication on the ENSREG’s website.
- A “Review of the rulings of the ACCC (Aarhus Convention Compliance Committee) and the ECIC (Espoo Convention Implementation Committee)” with a view to develop guidance for the European Nuclear Regulators is under preparation.

## 5. CONCLUSION AND FUTURE ACTIVITIES

During the reporting period ENSREG played an important role in maintaining and promoting the continuous improvement of nuclear safety and the management of spent fuel and radioactive waste and its regulation. Key activities have included:

- The 2<sup>nd</sup> ENSREG National Action Plan (NAcP) Workshop was held in April 2015. The workshop identified commendable practices within European countries supported by the consistency of actions, sharing of technical information and overall high standard of application. The workshop confirmed that all participating countries are strongly committed to the full implementation of identified improvement actions in their respective NAcPs. This important work to secure in full the necessary improvements to nuclear safety will remain a high priority within the ENSREG work program.
- Continued follow up on the indicative program for the conduct of IRRS-Missions in EU-Member States in cooperation with IAEA and in January 2014 hosting a workshop on issues and trends arising from the European IRRS missions. ENSREG is pleased to report that IRRS missions have to date been completed to plan in Europe with missions having taken place to all Member States with operating nuclear power plants and the majority of those without.
- Member States first national reports on the implementation of the Spent Fuel and Radioactive Waste Directive were required to be submitted to the Commission by 23 August 2015. ENSREG provided guidance on the structure and format of the report, on the scheduling and resourcing of self-assessments and on the requirement for Peer reviews.
- ENSREG held its third conference in Brussels in June 2015. The UK led organising committee brought together around 300 delegates including national regulators, NGOs, nuclear operators and academics. An objective of the conference was to promote greater International outreach which was delivered through presentations from Argentina, China, South Korea and the USA. Building on the previous conferences in 2011 and 2013, this year's event focused on promoting continuous improvement in nuclear safety and reinforced the common goal of securing full implementation of the European nuclear safety legal framework in all member states.

During the next reporting period ENSREG will continue to support its central mission to strive for the continuous improvement in nuclear safety and radioactive waste and spent fuel management and their regulation, and to promote openness and transparency in those areas through a range of activities, including:

- Working with member states to provide a mechanism to conduct the first 'Topical Peer Review' as required by the amended Nuclear Safety Directive. The peer review will consider ageing management considering the long term operation of nuclear power plants;
- Monitoring and influencing the completion of Member State 'National Action Plans to secure the improvements to nuclear safety as identified from the EU Stress Test process;
- Reviewing the ENSREG guidance on reporting against the Nuclear Safety Directive and the Waste Directive utilising the lessons learned from the first reports to assist in future reporting; and
- Providing advice to the EC and coordinating efforts between regulatory bodies on key topics relevant to securing high standards of nuclear safety in Europe.

ENSREG will set out in further detail its key activities in a new work programme for the period 2016-19.

## 6. REFERENCES

All documents made publicly available by ENSREG can be obtained from the site <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp> or the ENSREG Website <http://www.ensreg.eu/documents>