

Report of the European Nuclear Safety Regulator's Group (ENSREG)

November 2020

CONTENTS

EXE	CUTIVE SUMMARY	3
1.	INTRODUCTION	5
1.1.	Background	5
1.2.	ENSREG – establishment	5
1.3.	ENSREG – purpose and structure	5
1.4.	Nuclear Safety in the EU	6
1.4.1.	National responsibility	6
1.4.2. 1.4.3	FU legislation	6 7
1.4.4.	International guidance on nuclear safety and the safe management of radioactive waste and spent fuel .	9
1.5.	ENSREG's current work programme	10
2.	SAFETY OF NUCLEAR INSTALLATIONS	11
2.1.	EU topical peer review on ageing management	11
2.2.	Nuclear safety in the EU	13
2.2.1.	Activities to support effective implementation of the Nuclear Safety Directive	.13
2.2.2.	Member State reports under Article 9(1) of the Nuclear Safety Directive	.14
2.2.3.	Follow-up on implementing post-Fukushima national action plans	. 14
2.2.5.	Initiative on counterfeit, fraudulent and suspect items (CFSI)	.16
2.3.	International cooperation in nuclear safety	16
2.3.1.	Stress tests in EU neighbouring countries.	.16
2.3.2.	Cooperation with the IAEA and WENRA	.18
3.	SAFE MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE	18
3.1.	Activities to support effective implementation of Council Directive 2011/70/EURATOM	18
3.2.	ENSREG activities	18
3.3.	Revision of ENSREG Guidelines	19
3.4.	ARTEMIS peer review missions to Member States	19
3.5.	Other activities	20
4.	OPENNESS AND TRANSPARENCY	21
4.1.	ENSREG Website	21
4.2.	Fifth ENSREG Conference on Nuclear Safety	21
4.3.	Survey of ENSREG member organisations on application of the ENSREG principles for openness and transparency	22
4.4.	ENSREG communication on the Ru-106 incident	22
4.5.	Update of the guidance documents of 'Guidance on Openness and Transparency for Europea Nuclear Safety Regulators'	an 23
5.	CONCLUSIONS	23
6.	REFERENCES	24

EXECUTIVE SUMMARY

This sixth report from the European Nuclear Safety Regulators Group (ENSREG) covers activities carried out in 2018 and 2019.

As an expert advisory group to the European Commission, ENSREG's priorities include promoting the highest nuclear safety standards and ensuring continuous improvement in nuclear safety and in spent fuel and radioactive waste management while maintaining full openness and transparency to the public and key stakeholders.

During the period covered by this report, ENSREG working groups on nuclear safety, waste management, and communication and transparency carried out in-depth work to prepare decisions by the heads of the regulatory and safety authorities of the Member States. This work included:

- successfully implementing the first topical peer review (TPR) on 'ageing management of nuclear power plants and research reactors', in accordance with the requirements of Article 8(e)(2) and (e)(3) of Directive 2009/71/Euratom (amended by 2014/87/Euratom). The TPR is the most important safety-related exercise in Europe since the post-Fukushima stress tests. The final report presenting the results of the peer review process was endorsed by ENSREG at its 37th meeting in October 2018 and published on the ENSREG website¹. The results were also presented at a public meeting in Brussels in November 2018;
- following up on the implementation of post-Fukushima national action plans. Participating countries should update their plans every 2 years until completion. The updates are published on the ENSREG website²; the latest updates were due by the end of 2019;
- revising the Guidelines for Member States reporting under Article 14(1) of Council Directive 2011/70/EURATOM establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (in 2018);
- revising the Guidelines for Member States reporting under Article 9 of Council Directive 2009/71/EURATOM establishing a Community framework for the nuclear safety of nuclear installations (in 2019);
- updating the Guidance on Openness and Transparency for European Nuclear Safety Regulators (in 2019);
- developing the ENSREG position on radioactive waste and spent fuel inventories reporting (March 2020);
- supporting IRRS³ and ARTEMIS⁴ peer reviews in coordination with the International Atomic Energy Agency (IAEA), including long-term planning and maintenance of the pool of experts and contributing to discussions on synergies between both programmes. Only two IRRS peer reviews still need to be performed to complete the first cycle of peer reviews under Article 8e(1) of Directive 2009/71. These should take place in 2020⁵. Eight

¹ <u>http://www.ensreg.eu/document/report-first-topical-peer-review</u>

² <u>http://www.ensreg.eu/EU-Stress-Tests/Country-Specific-Reports</u>

³ Integrated Regulatory Review Service (IRRS): <u>https://www.iaea.org/services/review-missions/integrated-regulatory-review-service-irrs</u>

⁴ Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS): <u>https://www.iaea.org/services/review-missions/integrated-reviewservice-for-radioactive-waste-and-spent-fuel-management-decommissioning-and-remediationartemis</u>

⁵ Denmark was planning to have its first IRRS mission in the spring of 2020, but this was postponed to April 2021, due to COVID-19.

ARTEMIS review missions¹ to the EU Member States had been performed in coordination with the IAEA by the end of 2019; 17 Member States have plans for ARTEMIS peer reviews²;

 holding the fifth ENSREG conference in Brussels in June 2019. The National Inspectorate for Nuclear Safety and Radiation Protection from Italy headed up the organising committee and brought together around 220 delegates from European and non-European countries, representing regulators, governmental offices, industry, nongovernmental organisations, and academics. The conference focused on ageing management in light of the topical peer review, decommissioning and waste management, component obsolescence, standardisation in the supply chain, as well as knowledge management and skills preservation.

¹ Bulgaria, Estonia, France, Germany, Latvia, Luxembourg, Poland, and Spain.

² Tentative schedule for Austria, Croatia, Cyprus, Czechia, Denmark, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Malta, the Netherlands, Romania, Slovakia, Slovenia, and Sweden.

1. INTRODUCTION

1.1. Background

This is the sixth report on ENSREG's activities since it was established in May 2007. Issued every two years since 2009, these reports are intended to inform the Council and European Parliament of ENSREG's work to improve the safety of nuclear installations and spent fuel and radioactive waste management in EU Member States.

1.2. ENSREG – establishment

In May 2007, the Council supported the establishment of a high-level group at EU level to define 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. The group was established by a Commission Decision in July 2007¹ as the European High Level Group on Nuclear Safety and Waste Management and was later renamed ENSREG (European Nuclear Safety Regulators Group).

ENSREG is composed of senior representatives from the Member States' regulatory or safety authorities competent in the areas of the safety of nuclear installations and the safe management of spent fuel and radioactive waste.

ENSREG's main goal is to continuously improve nuclear safety in the operation of nuclear facilities and to promote and adopt the relevant regulatory framework in order to deploy an appropriate safety policy. This is based on the knowledge and experience gained from the Fukushima Daiichi accident and on the use of the latest technologies to serve this goal.

ENSREG is committed to encouraging initiatives to improve nuclear safety, spent fuel and radioactive waste management across the EU where these initiatives add value to activities already undertaken at national and international level.

ENSREG also provides a platform for sharing best practice and technological improvements.

1.3. ENSREG – purpose and structure

All Member States that operate nuclear installations follow international principles for ensuring nuclear safety and the safe management of radioactive waste and spent fuel set out in the Convention on Nuclear Safety² and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management³. They also comply with the relevant EURATOM legislation, notably the directives on nuclear safety and the management of spent fuel and radioactive waste.

As an expert advisory group to the Commission, ENSREG works to:

- improve the cooperation between Member States on issues of nuclear safety and safe management of spent fuel and radioactive waste;
- improve the overall openness and transparency in these fields; and
- advise the Commission on additional EU rules in these fields.

ENSREG currently has three working groups to carry out its work programme⁴:

• Working Group 1 (WG1) – Improving Nuclear Safety Arrangements;

¹ Commission Decision of 17 July 2007 on establishing the European High Level Group on Nuclear Safety and Waste Management: <u>http://www.ensreg.eu/sites/default/files/HLG(2007)1.1.P.pdf</u>.

² <u>https://www.iaea.org/topics/nuclear-safety-conventions/convention-nuclear-safety</u>

³ <u>https://www.iaea.org/topics/nuclear-safety-conventions/joint-convention-safety-spent-fuel-management-and-safety-radioactive-waste</u>

⁴ <u>http://www.ensreg.eu/document/ensreg-work-programme-2018-2020</u>

- Working Group 2 (WG2) Improving Radioactive Waste Management, Spent Fuel and Decommissioning Arrangements; and
- Working Group 3 (WG3) Improving Transparency Arrangements.

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

1.4. Nuclear safety in the EU

The establishment of the European Atomic Energy Community (Euratom) in 1957 formed the basis for nuclear energy policy in Europe. 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.

Each Member State is fully responsible for deciding on its energy policy and related energy mix. During the period covered by this report, 14 out of 28 Member States used nuclear energy to generate power.

In January 2020 – before Brexit – there were 124 nuclear power reactors in operation in the EU¹. With an average age of just over 30 years, many nuclear operators are facing the choice between either moving to a long-term operation regime or shutting down and decommissioning. Several Member States are planning new reactors, with five currently under construction in four Member States (this still includes the Hinkley Point C in the UK). In addition to power reactors, a broad range of fuel cycle plants (from conversion to reprocessing and final disposal of radioactive waste) are in operation in the EU.

Many Member States also operate research reactors and all use radioactive sources in medicine or industry. As a result, all Member States generate radioactive waste to a greater or lesser extent, with the bulk coming from nuclear power generation and associated activities. In Europe, the management of radioactive waste, including its transport, has reached a mature stage of development. However, establishing disposal facilities for intermediate, high-level and long-lived waste remains a major challenge for the future. The first European facility for the geological disposal of spent nuclear fuel is expected to enter into service by the mid-2020s in Olkiluoto, Finland.

1.4.1. National responsibility

The national responsibility of states for the safety of nuclear installations is the fundamental principle on which nuclear safety regulation has been developed at the international level, and it was enshrined in the Convention on Nuclear Safety. The prime responsibility for the safety of a nuclear installation lies with the licence holder under the supervision of its national competent regulatory authority.

The national nuclear safety regulators of each of the EU countries are listed on the ENSREG website². The standards applied in each country are developed based on EU law, international safety standards and guidance on best practices.

1.4.2. International safety conventions

All Member States and Euratom are Contracting Parties to the **Convention on Nuclear Safety (CNS)** and the **Joint Convention**.

The **CNS** was adopted in Vienna in June 1994 and entered into force in 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.'

¹ <u>https://pris.iaea.org/PRIS/home.aspx</u>

² <u>http://www.ensreg.eu/members-glance/national-regulators</u>

The obligations of the participating states cover the siting, design, construction and operation of nuclear power plants as well as the availability of adequate financial and human resources, the assessment and verification of safety, quality assurance and emergency preparedness.

The CNS requires contracting parties to submit reports on the implementation of their obligations for peer review every 3 years. The Convention's Eighth Review Meeting was planned to be held from the end of March to the beginning of April 2020, but was postponed to March 2021.

The **Joint Convention** was adopted in September 1997 and entered into force in June 2001. It applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and civilian applications and to spent fuel and radioactive waste from military or defence programmes. However, it only applies if 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 and other facilities using radioactive material, including naturally occurring radioactive materials (NORM) waste from the nuclear fuel cycle.

As with the CNS, the Joint Convention requires participating states to submit reports every 3 years for peer review on the implementation of their obligations. The Sixth Review Meeting was held by the IAEA in Vienna in May 2018. Sixty-nine Contracting Parties, including Euratom, participated, presenting, discussing, and reviewing national reports.

1.4.3. EU legislation

The goal of improving the safety of nuclear power plants is to prevent nuclear accidents and, should an accident occur, to mitigate their consequences on the population and minimise the long-term impact off-site.

On 25 June 2009, the EU adopted **Council Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations**, which provides binding legal force to the main international nuclear safety principles. The Directive aims to maintain and promote the continuous improvement of nuclear safety.

The Nuclear Safety Directive was amended and strengthened in 2014 (Council Directive 2014/87/Euratom) in light of the lessons learned from the Fukushima nuclear accident and the nuclear stress tests¹ carried out in 2011 and 2012 (coordinated by ENSREG). It built upon the safety reference levels of the Western European Nuclear Regulators Association (WENRA) and the IAEA safety standards.

The amended Directive requires EU countries to give the highest priority to nuclear safety at all stages of the lifecycle of a nuclear installation. This includes carrying out safety assessments before building new nuclear installations, including nuclear power plants, and identifying and implementing reasonably practicable safety improvements in a timely manner for existing installations. 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;
- EU countries perform regular self-assessments and invite international peer reviews of their national programme, national framework and competent regulatory authority at least every 10 years;
- creates a system of topical peer reviews. EU countries choose a common nuclear safety topic every 6 years and organise a national safety assessment on it. They then submit

¹ <u>http://www.ensreg.eu/EU-Stress-Tests</u>

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 by the licence holder 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 the event of incidents.

The amended Directive introduces an ambitious EU-wide safety objective for all types of nuclear installations. The new safety objective requires that nuclear installations be designed, sited, constructed, commissioned, operated and decommissioned to prevent accidents and, should an accident occur, to mitigate its consequences and avoid early or large radioactive releases¹. As for 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.

The Commission checks the transposition of the Directive's provisions into national law and its implementation within Member States. The Commission has launched an initial analysis of the implementation of the Nuclear Safety Objective (Article 8a-c), in parallel with the ongoing detailed analysis undertaken by WENRA's Reactor Harmonisation Working Group (RHWG). The Commission analysis takes the form of a study contract awarded to a consortium of ETSON² members. The initial findings were presented in November 2019 at a workshop for the Commission, national regulators, and other stakeholders. In addition, discussions have already taken place between the Commission, ENSREG's WG1, and WENRA-RHWG concerning the context of the study in the light of other ongoing initiatives.

The study will shortly be finalised and published. The final published report should be presented to ENSREG in 2020 in order to decide how best to make use of the conclusions in the light of other ongoing initiatives, including WENRA's work.

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

On 19 July 2011, the Council of the EU adopted **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 management and radioactive waste management when the spent fuel or radioactive waste results from civilian activities. It includes the general policy principles to be applied as well as provisions on the establishment and implementation of national programmes and elements to be included in national legislative, regulatory and organisational frameworks.

The Radioactive Waste and Spent Fuel Management Directive (Council Directive 2011/70/Euratom) requires that:

- EU countries 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 the long-term management of all types of spent fuel and radioactive waste (including inventories, cost assessments, key performance indicators). These programmes must include plans for the predisposal and disposal of these materials, e.g. by developing radioactive waste disposal facilities.

¹ 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; large radioactive releases are those that would require protective measures that could not be limited in area or time.

² European Technical Safety Organisations Network (<u>www.etson.eu</u>).

- relevant information on the management of radioactive waste and spent fuel be made available to the public, as well as mechanisms for public participation.
- EU countries perform regular self-assessments and invite international peer reviews of their national programme, national framework and competent regulatory authority at least every 10 years.
- the export of radioactive waste to non-EU countries only be allowed under strict conditions.
- EU countries have mechanisms for research, development and demonstration (including safety demonstration) and for developing skills and competence on spent fuel and radioactive waste management.

The Directive also requires that Member States meet certain obligations on reporting and transposition¹.

The Euratom legal framework is completed by the Directive laying down basic safety standards for protection against dangers arising from exposure to ionising radiation (2013/59/EURATOM).

1.4.4. International guidance on nuclear safety and the safe management of radioactive waste and spent fuel

As indicated above, two of the main influences on the development of requirements for national nuclear safety and the management of radioactive waste and spent fuel are the international legally binding safety conventions and EU legislation.

Another key influence is the international guidance and regulatory methodologies developed under the auspices of international bodies such as the IAEA and the OECD's Nuclear Energy Agency (NEA) or other groups such as WENRA (safety reference levels²).

International Atomic Energy Agency (IAEA)

In addition to providing the secretariat for the international conventions described above, the IAEA seeks to promote the safe, secure and peaceful use of nuclear technologies by developing international advisory safety standards, codes and guides. These apply to nuclear installations, radioactive sources, radioactive materials in transport, radioactive waste management and the decommissioning and remediation of contaminated sites. The IAEA promotes the application of international safety standards for managing and regulating activities involving nuclear and radioactive materials. It has observer status in ENSREG. It also actively participated in the 2019 ENSREG Conference on Nuclear Safety.

Nuclear Energy Agency (NEA)

Most EU Member States are also members of the OECD's NEA. The NEA's mission is to 'assist its member countries in maintaining and further developing, through international cooperation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes.' To achieve this, the NEA provides a forum for sharing information and experience and promoting international cooperation, a centre of excellence that helps its members pool and maintain their technical expertise and acts as a vehicle for facilitating policy analyses and developing consensus based on its technical work. The NEA also has observer status in ENSREG.

Western European Nuclear Regulators Association (WENRA)

WENRA was set up in 1999 (on 5 November 2019, it celebrated its 20th anniversary on the margins of an IAEA conference in The Hague, NL). It comprises, inter alia, the heads and

¹ Article 14 (1) and (2)(a)(b) and Article 15.

² <u>http://www.wenra.org/publications/?q=Safety+Reference+Levels</u>

senior staff members of all the national nuclear regulatory authorities of EU countries with nuclear power plants.

The main objectives of WENRA include developing a common approach to nuclear safety and safe management of spent fuel and radioactive waste, providing an independent capability to examine nuclear safety in applicant countries, and constituting a network of chief nuclear safety regulators in Europe exchanging experience and discussing significant safety issues.

Since its creation 20 years ago, WENRA has developed among other things:

- safety reference levels (SRLs) for existing nuclear power plants;
- safety objectives for new nuclear reactors; and
- different SRLs for radioactive waste and spent fuel management (storage, processing, decommissioning and disposal).

It has also provided extensive technical support to ENSREG, developing for example:

- the technical specifications for the stress test after the Fukushima disaster;
- the technical specifications for the first topical peer review under the amended Nuclear Safety Directive;
- a paper on the approaches for reasonably practicable improvements to the nuclear safety of the existing fleet.

WENRA was accorded observer status in ENSREG in November 2019.

1.5. ENSREG's current work programme

ENSREG's mission is to strive for continuous improvements in nuclear safety and the management and regulation of radioactive waste and spent fuel and to promote openness and transparency in these areas.

ENSREG's work programme, originally for the period 2016–2019, was shaped by EU 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). A large proportion of ENSREG's work during that period involved implementing the first topical peer review and taking measures that support the requirements of these Directives and help Member States implement them. ENSREG also continued to facilitate the follow-up of the implementation of the national action plans (NAcPs) following the EU stress tests.

While the work programme aimed to set out the key areas of work in 2016–2019, there was a need to make amendments in 2017 to align the wording of the ongoing activities with the final terms of reference for the upcoming topical peer review and to include the latest ENSREG decisions and outputs from the 2017 conference on this process. ENSREG was mandated to revise the work programme at its 34th meeting in June 2017. The revised version of the work programme, extended to 2020, was endorsed by ENSREG during its 36th plenary meeting in June 2018. The revision also included a special item on counterfeit, fraudulent and suspect items (CFSI) issues.

ENSREG's main activities under the revised working programme concern the following topics:

1. Supporting the implementation of the Nuclear Safety Directive and the Spent Fuel and Radioactive Waste Management Safety Directive: while it is Member States' responsibility to appropriately transpose and implement European legislation, ENSREG plays a role in assisting Member States in a number of ways, such as providing technical guidance to assist with reporting requirements (in particular those under Article 9 of the Nuclear Safety Directive and Article 14 of the Spent Fuel and Radioactive Waste Directive). A critical task for ENSREG in this period is to provide, in collaboration with WENRA, a mechanism to implement the first topical peer review as required by the Amended Nuclear Safety Directive. With reference to the implementation of the Spent Fuel and Radioactive Waste Directive, ENSREG continues to support Member States particularly for the specific aspect of the interface between national programmes and national reports.

- 2. Providing advice to the European Commission and ensuring coordination of Member State regulatory bodies on matters related to the safety of nuclear installations and of the management of spent fuel and radioactive waste: ENSREG has been requested by the Commission to provide advice on matters related to the longterm operation of nuclear power plants, emergency preparedness and response and the transport of radioactive material in the context of improving safety standards and facilitating harmonisation within the EU. The Commission has also asked ENSREG for its advice on the revision and implementation of assistance and technical cooperation programmes, such as those under the Commission's Instrument for Nuclear Safety Cooperation (INSC).
- 3. Facilitating active participation in peer review within the European Union and in some neighbouring countries and overseeing the completion of the stress test 'national action plans': ENSREG played a pivotal role in the 2011 European stress tests and has since held two workshops to review progress on the national action plans created by Member States. ENSREG continues to provide oversight in this area by putting in place an agreed reporting schedule. ENSREG also contributes to the peer review of stress-test reports and action plans from neighbouring countries. In 2018, ENSREG experts peer-reviewed the Belarusian stress-test report for the Astravyets (Ostrovets) nuclear power plant and in 2019, they peer-reviewed Armenia's national action plan. ENSREG continues to facilitate EU participation in peer review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation' (ARTEMIS). In so doing, ENSREG supports the continuous improvement of nuclear safety and management of spent fuel and radioactive waste in Europe.
- 4. **Seeking greater openness and transparency** throughout ENSREG's activities. This includes providing revised guidelines to Member States on reporting and transparency as part of the ENSREG wide work on reporting under the Directives, developing a communication strategy for ENSREG, implementing a new approach to the management of the ENSREG website and holding the ENSREG conference in 2019.

2. SAFETY OF NUCLEAR INSTALLATIONS

2.1. EU topical peer review on ageing management

Directive 2014/87/Euratom introduces a system of topical peer reviews to provide a mechanism for Member States to examine topics of strategic importance to nuclear safety, exchange experiences and identify opportunities to strengthen nuclear safety. The revised Nuclear Safety Directive includes the obligation for Member States to start the first topical peer review in 2017; subsequent reviews should take place at least every 6 years. The process will also enable EU neighbouring countries and other non-EU countries to participate in nuclear safety peer review exercises on a voluntary basis. During the Seventh Review Meeting of the Contracting Parties to the Convention on Nuclear Safety in 2017, the International Atomic Energy Agency (IAEA) recognised this first topical peer review as one of the four good practices identified by the Review Meeting.

WENRA's Reactor Harmonisation Working Group (RHWG) drew up a list of possible topics for the review, which served as a basis for ENSREG to select the 'ageing management' topic. ENSREG endorsed it at its 30th meeting in recognition of the safety significance of the topic together with the average age of the European reactor fleet and research reactors and the current trends on long-term operation.

ENSREG's WG1 developed a proposal for the scope and methodology of the first topical peer review. This was carried out with support from WENRA-RHWG, which drafted the technical specifications and guidance on the structure of national reports. The final versions of the technical specifications for the first topical peer review, terms of reference and stakeholder engagement plan were approved by ENSREG and published on the ENSREG website in January 2017, thus launching the peer review process.

The topical peer review consisted of three phases:

- National assessment: Nuclear safety regulators prepared national assessment reports based on the format and content described in the technical specifications. These were due by the end of 2017.
- Peer review: This included the exchange of comments and questions on national selfassessment reports, a peer review workshop, country-specific findings, a summary report setting out the overall findings, and ENSREG's proposed follow-up activities up to mid-2018.
- Follow-up: Definition and implementation of measures to address relevant findings from national assessments and peer reviews resulting in national action plans for participating countries and an overarching ENSREG action plan.

The process examined the programmatic part of ageing management and how these ageing management programmes are applied to the following systems, structures and components:

- electrical cables;
- concealed pipework;
- reactor pressure vessels (or equivalent structures);
- concrete containment structures.

WG1 coordinated preparatory activities until the appointment of a topical peer review board at ENSREG's 34th meeting in June 2017 to provide appropriate leadership and to supervise the peer review process.

ENSREG approved the report on the review and related country-specific findings¹ in October 2018. The review indicates that ageing management programmes are in place for all nuclear power plants. However, this is not the case for research reactors, which therefore require further attention from both regulators and licensees. The review did not identify any major deficiencies in European approaches to regulating and implementing ageing management programmes in power plants. It nevertheless highlights differences in national approaches and lists as many as 19 'expected levels of performance' that regulators need to achieve in order to meet the TPR Board's expectations with regard to the continuous improvement of safety. It also identifies four challenges that need to be addressed at EU level. Finally, it identifies eight good practices already in place in some countries.

As a follow-up, ENSREG's WG1 prepared a template for the national action plan, setting out how the country-specific findings are to be implemented. Based on this template, the participating countries prepared their national action plans, which were submitted by the end of September 2019 and published on the ENSREG website². Member States will report on the implementation status of their NAcPs in 2021 and 2023. ENSREG's WG1 will make use of the updated NAcPs to prepare summary reports of implementation status in 2021 and 2024. In March 2019, ENSREG decided that for other nuclear installations it would invite participating countries to report, on a voluntary basis, in 2020 (or already in September 2019).

¹ <u>http://www.ensreg.eu/sites/default/files/attachments/hlg_p2018-</u> <u>37_161_1st_tpr_country_findings.pdf</u>

² <u>http://www.ensreg.eu/tpr-national-action-plans</u>

In November 2019, ENSREG adopted an overall TPR action plan. Its goal is to ensure a structured follow-up to the first TPR, with the following overall objectives:

- ensure that the identified areas for improvement related to ageing management activities are addressed by national regulators,
- develop actions for EU-level challenges;
- improve the next TPR process.

In October 2018, ENREG sent letters to the IAEA and WENRA to request them to take the TPR findings into account when updating safety standards and safety reference levels, where applicable.

The November 2019 ENSREG plenary launched the initial preparatory actions for the second TPR, which will start in 2023.

2.2. Nuclear safety in the EU

2.2.1. Activities to support effective implementation of the Nuclear Safety Directive

Council Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, amended by Council Directive 2014/87/Euratom, aims to establish a Community framework to maintain and promote the continuous improvement of nuclear safety and its regulation. It also seeks to ensure that Member States provide for appropriate national arrangements for a high level of nuclear safety to protect workers and the general public against the dangers of ionising radiations from nuclear installations.

Taking into account the Directive's principles and obligations, ENSREG has included various activities in its work programme to continuously improve nuclear safety. These include:

- conducting technical discussions on the application of the Nuclear Safety Directive, such as the reporting obligations under Article 9(1), or how best to support a harmonised implementation of the nuclear safety objectives for nuclear installations under Article (8)(a);
- continuing to follow up on the indicative programme and pool of experts for conducting IRRS and ARTEMIS peer review missions to Member States in cooperation with IAEA and sharing lessons learned and experiences gained from these missions;
- coordinating the overall topical peer review cycle; the first topical peer review under the Nuclear Safety Directive (see earlier) has now entered the follow-up phase and preparations started for the second TPR;
- following up on the implementation of updated post-Fukushima national action plans following the 2017 updates of NAcPs, to be repeated every 2 years until completion of the NAcP in the relevant country;
- advising the Commission on the safety of nuclear installations;
- an initiative to address the issue of counterfeit, fraudulent and suspect items (CFSI).

ENSREG has a permanent working group on nuclear safety and international cooperation (WG1). WG1 consists of designated representatives from many ENSREG members and the Commission secretariat. The working group meets at least twice a year, and its Chairman reports to ENSREG at each plenary meeting. WG1 advises and prepares proposals for endorsement by the ENSREG plenary and coordinates several ENSREG activities. Its work programme is based on the previous activities and is reviewed periodically to ensure that it carries out any requests or tasks allocated by ENSREG. WG1 works together with other working groups devoted to spent fuel and waste management (WG2) and transparency arrangements (WG3).

In specific cases, WG1 ensures technical coordination with representatives from other international organisations or associations such as the IAEA or WENRA (mainly with WENRA's Reactor Harmonisation Working Group and only for nuclear safety issues).

2.2.2. Member State 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 Commission by July 2014. These reports depict how the Member States are addressing the Directive's objectives by fulfilling their obligations under the Directive and highlight their approaches. Based on these reports, the Commission published a report in 2015 on the progress made in EU countries on implementing the Nuclear Safety Directive. The next and final national reports are due by 22 July 2020.

To prepare the first set of national reports, ENSREG provided Member States with guidance on the type of information and material to include in the reports. It then produced the 'ENSREG guidelines regarding Member States reports as required under Article 9(1) of Council Directive 2009/71/Euratom'. With Council Directive 2014/87, the reporting requirements for Member States were amended. It specified that Member States should submit a report 'on the implementation of this Directive (...) by 22 July 2020'. Accordingly, WG1 revisited the guidelines¹, which were adopted in their amended form at the 38th ENSREG plenary on 25 March 2019.

As in 2014, the Commission will report to the Council and the Parliament on the basis of the Member States' reports.

2.2.3. IRRS missions to EU countries: indicative programme and pool of experts

To meet the obligations and in keeping with the spirit of Article 8e(1) of the Nuclear Safety Directive and Article 14(3) of the Radioactive Waste and Spent Fuel Management Directive on self-assessments and international peer reviews, Member States use the IRRS and ARTEMIS peer review services of the IAEA.

In particular, Article 8e(1) of the Nuclear Safety 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.'

The ENSREG working groups make use of the international services provided by the IAEA: the EU IRRS programme is coordinated by WG1 and the EU ARTEMIS programme by WG2.

ENSREG's WG1 and WG2 fulfil this coordination role by maintaining an up-to-date schedule of peer reviews, a pool of EU experts available for peer review missions, and a list of national contact points. The ARTEMIS and IRRS indicative programmes are presented as a single programme to give the best overview and ensure coordination of the two peer reviews, as appropriate. The pool of suitable experts guarantees the availability of experts for implementing the EU IRRS programme. This ensures an effective level of Member State participation in the programme both within the EU and worldwide and helps harmonise EU regulatory practices. ENSREG ensures that the pool of experts is maintained, noting also which modules individual experts can review. As of October 2019, 283 experts are available.

WG1 continuously reviews and updates the full indicative EU IRRS programme to 2026. The programme aims to ensure that Member States carry out self-assessments and arrange for IRRS missions following the required ten-year cycle. Based on this programme for 2018-2019, IRRS missions were conducted in Austria, Germany, Latvia, Luxembourg, Spain, and the UK. Follow-up visits usually take place 3-4 years after the initial IRRS mission and were conducted in Croatia, Estonia, Hungary, and the Netherlands. The IRRS mission in Spain in 2018 was

¹ <u>http://www.ensreg.eu/document/reporting-guidelines-eu-nuclear-safety-directive</u>

the first combined IRRS-ARTEMIS mission. The two missions were carried out in parallel. In 2019, Germany had IRRS and ARTEMIS missions back-to-back (ARTEMIS a few month later than IRRS). Based on these experiences, it was felt that further work was required to fully exploit the potential synergies between the two missions in order to achieve more effective and efficient missions in the future. To this end, a sub-group of interested Member States was established and coordinated by the Netherlands. The sub-group scheduled a meeting with the IAEA to discuss its findings in early 2020. These findings can then be fed into work undertaken by an IAEA taskforce and also be taken into account in the Commission support for the peer review programmes.

In recognition of IRRS's role in allowing Member States to carry out the peer review required under Article 8e(1), the Commission supports the IRRS programme financially, through a delegation agreement. The current Delegation Agreement runs from November 2016 to November 2020 and provides up to €1 million to support the programme. The negotiation of a new agreement with IAEA, covering both IRRS and ARTEMIS, is planned to seamlessly continue Commission support.

The Commission support also allows IAEA to carry out additional activities, some of which relate to the IRRS programme in Member States. Accordingly, IAEA held two workshops in Luxembourg in November 2018; the first for all IAEA Member States and the second for EU Member States. The workshops allowed IAEA to present its experience of the IRRS programme, firstly worldwide and secondly in the EU, including the overall findings (recommendations and suggestions) per module. It also allowed EU Member States to share their experiences of IRRS missions and provide feedback to IAEA and the Commission.

2.2.4. Follow-up on implementing post-Fukushima national action plans

In the aftermath of the nuclear accident at the Fukushima Daiichi 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'), drawing on the lessons learned from the accident.

National action plans (NAcPs) describing measures to improve nuclear safety were prepared by each country participating in these stress tests. The NAcPs included the safety improvements planned and implemented and their schedule for completion. These NAcPs were reviewed at the first workshop organised by ENSREG in spring 2013 and were again updated by 15 Member States operating nuclear power plants (plus Switzerland and Ukraine) at the end of 2014 and peer reviewed. WG1 developed the peer review approach and associated terms of reference for the second workshop, and ENSREG endorsed them. The second ENSREG National Action Plan Workshop was conducted in April 2015. It found that a large number of measures listed in the national action plans were completed under the supervision of the respective national regulatory authorities and concluded that most of the countries are making suitable progress in implementing their national action plans. All participating countries are committed to fully implementing the improvement measures identified in their respective national action plans under the supervision of the regulatory authorities. Despite the overall progress noted, ENSREG issued a statement on this topic¹ in November 2015 where it voiced its concerns '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 members agreed to follow up on implementation of the pending measures contained in the national action plans. They committed to updating and publishing periodically (every 2 years starting from 2017) a status report from each country on the implementation of its

¹ <u>http://www.ensreg.eu/document/ensreg-statement-progress-implementation-post-fukushima-national-action-plans-nacps</u>

national action plan until completion. Updates were provided by each participating country by the end of 2017 and published on the ENSREG website¹.

Following the Member States' 2017 updates of their NAcPs, ENSREG's WG1 reviewed the overall progress in implementing the planned measures in the NAcPs. While noting that most actions had been completed, delays were also reported for several Member States. Analysis of the reasons behind the delays gave several possible reasons, including;

- the measure cannot be applied, a new solution has to be found;
- it is difficult to identify a supplier or the supplier cannot deliver in a timely manner;
- delays were incurred during the regulatory assessment the regulator has requested additional information/analysis;
- in case of complex projects, the implementation may be influenced by administrative procedures (e.g. public procurement procedures);
- implementation is only possible during refuelling /reactor outage:
 - o small delays in preparation lead to delay to the next reactor outage;
 - o an event with major impact may lead to rescheduling of the reactor outages.

The national regulators determine the acceptability of delays versus the total safety improvement activities that are ongoing, e.g. from periodic safety reviews. An optimisation of risk is applied.

Member States were requested to update their NAcPs by the end of 2019. Several updates were still outstanding at the end of 2019. Nevertheless, ENSREG's WG1 will be able to update the summary status report during 2020. The next update is foreseen in the first quarter of 2022.

2.2.5. Initiative on counterfeit, fraudulent and suspect items (CFSI)

Following its inclusion in the ENSREG work programme for 2018-2020, ENSREG's WG1 established a sub-group under the leadership of France to address the issue of counterfeit, fraudulent and suspect items in the supply chain. The group will focus on inspection practices. The sub-group will hold a workshop for its participating members, where regulators can share their practices. The workshop would also consider practices in other industrial sectors. It was hoped that the outcome could be presented by mid-2020, with the possibility of a broader workshop toward the end of 2020, but the workshops are delayed due to the pandemic.

2.3. International cooperation in nuclear safety

2.3.1. Stress tests in EU neighbouring countries

The events in Fukushima underlined the importance of nuclear safety, which should be addressed by the EU and its neighbouring countries as a key policy priority.

Following a meeting on 23 June 2011 with Energy Commissioner Oettinger², deputy energy ministers and senior representatives of energy ministries and national authorities responsible for nuclear energy in Armenia, Belarus, Croatia, Russia, Switzerland, Turkey and Ukraine, in cooperation with the EU:

 Confirm their willingness to undertake (if this has not yet been done) on a voluntary basis comprehensive risk and safety assessments ('stress tests'), taking into account the specifications agreed by the European Commission and the European Nuclear Safety Regulators Group (ENSREG) on 24 May 2011. The need for a consistent approach towards nuclear safety by all countries making use of nuclear energy is reinforced by

¹ <u>http://www.ensreg.eu/EU-Stress-Tests/Country-Specific-Reports</u>

² <u>https://ec.europa.eu/energy/sites/ener/files/documents/20110623_stress_test_joint_declaration_eu_neighbouring_countries.pdf</u>

today's shared vision that highlights the potential cross-border nature of nuclear accidents;

- Agree to commit nuclear operators to self-assessments of their nuclear power plants, as well as to invite national regulatory bodies to present national reports, and to make use of a transparent peer-review system enhancing credibility and accountability of the comprehensive risk and safety assessments;
- Agree to engage on a multilateral level and with the IAEA a discussion for strong and common safety standards as well as international peer reviews.

Switzerland and Ukraine directly participated in the entire stress test process with the other EU countries in 2012 and in the national action plan peer reviews in 2013 and 2015.

Armenia, Belarus and Turkey also expressed their interest in following the same peer review process. However, they were not ready at that time to join and submit a report. ENSREG has always indicated its willingness to support the peer review process in collaboration with the Commission when countries are ready.

Based on this commitment, Armenia submitted its national stress test report in 2015, with the peer review organised in 2016. The fully transparent peer review was performed by a group of EU experts nominated by ENSREG members. All reports related to this peer review are available on the ENSREG website¹. In 2017, the Armenian Nuclear Regulatory Authority, ANRA, prepared a national action plan translating the recommendations of their national report and the stress test peer review report into concrete actions for the enhancement of safety together with a timeline for their implementation. In October 2019, ANRA submitted an updated NAcP, including information on progress to date in implementing the recommendations.

At the end of November 2019, a review team composed of eight ENSREG experts examined both the way the actions included in the NAcP were developed on the basis of the Armenian national report, the peer review team's recommendations and other relevant recommendations (e.g. from the review conferences of the Convention on Nuclear Safety) as well as the implementation of the actions adopted in terms of content and timetable. Observers from the IAEA and the national regulators of Belarus, Iran and the Russian Federation also participated in this peer review, the final report of which is due to be published on the ENSREG website in February 2020.

Belarus submitted its national stress test report to ENSREG for peer review in October 2017. The peer review mission to Belarus took place in March 2018 by a team of seventeen ENSREG experts, accompanied by observers from the IAEA and the national regulators of Iran and the Russian Federation. The final report from the peer review was published on the ENSREG website in June 2018².

In August 2019 the Belarussian nuclear regulator, Gosatomnadzor, published on its website, in the Russian language only, the Belarus National Action Plan to address the recommendations arising from the overall stress test process, including the recommendations made in the report of the ENSREG peer review. ENSREG has proposed to the Belarussian nuclear regulator Gosatomnadzor that it should submit this national action plan for peer review by ENSREG.

In June 2019, Turkey submitted an update of the Stress Test National Report for Turkey, covering developments regarding the Akkuyu nuclear power project. At the end of 2019, discussions started with Turkey on the terms for carrying out an ENSREG peer review of its national action plan in 2020. Preparatory activities, including a public consultation, will begin

¹ <u>http://www.ensreg.eu/armenia</u>

² <u>http://www.ensreg.eu/EU-Stress-Tests/Country-Specific-Reports/EU-Neighbouring-</u> <u>Countries/Belarus</u>

in the first half of 2020, with the peer review mission taking place during the last quarter of 2020.

2.3.2. Cooperation with the IAEA and WENRA

ENSREG's WG1 and WG2 continued to cooperate during 2018-2019, working closely on planning IRRS and ARTEMIS peer reviews, together with the IAEA, in support of the continuous improvement of nuclear safety and management of radioactive waste and spent fuel in Europe, as per the respective Council Directives.

ENSREG exchanges information and cooperates where appropriate with WENRA, in particular, such exchange takes place between WG1 and RHWG. A meeting was held in January 2019 between the Commission, ETSON, WG1 and RWHG to discuss the ongoing work by the Commission and RHWG to implement the nuclear safety objective (as defined by the Nuclear Safety Directive). With input from RHWG, WG1 also developed a proposal for the topical peer review process required under the revised Nuclear Safety Directive. RHWG developed the technical specifications and WG1 prepared the terms of reference for the review process, while WG3 developed the stakeholder engagement plan.

3. SAFE MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE

3.1. Activities to support effective implementation of Council Directive 2011/70/EURATOM

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

The Directive's overall objective is to ensure responsible and safe management of spent fuel and radioactive waste in order to avoid imposing undue burdens on future generations. The Directive also seeks to ensure the public is informed about spent fuel and radioactive waste management and that mechanisms are in place for public participation.

Similar to the provisions in the Nuclear Safety Directive (2009/71/Euratom as amended by 2014/87/Euratom), the Directive gives national regulatory authorities a bigger role and more independence and confirms that licence holders have prime responsibility for the safety of spent fuel and radioactive waste management facilities and activities. The Directive also emphasises that each Member State is ultimately responsible for managing the spent fuel and radioactive waste generated on its territory. Member States are required 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 for disposal, i.e. 'cradle-to-grave' approach. The national framework must provide for establishing a national programme to implement spent fuel and radioactive waste management policies. National programmes have to be reviewed and updated on a regular basis.

3.2. ENSREG activities

Considering the Directive's obligations, ENSREG included in its work programme for 2018–2020 the following activities to continuously improve the safe and responsible management of spent fuel and radioactive waste:

- facilitating EU participation in peer reviews via the IAEA's 'Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation' (ARTEMIS), in particular by:
 - updating ARTEMIS indicative programmes;

- maintaining the ARTEMIS pools of experts.
- supporting Member States, particularly on specific aspects concerning the interface between national programmes and national reports. In particular, it will:
 - develop its position on specific common issues pertaining to the relationship between national programmes and national reports under Directive 2011/70/Euratom (high priority);
 - adopt ENSREG's position on radioactive waste and spent fuel inventories reporting (high priority); and
 - identify and/or set up links with and initiate collaboration with the Decommissioning Funding Group (DFG) on financial issues related to decommissioning, spent fuel and waste management (medium priority).

ENSREG has set up a Working Group on Improving Radioactive Waste Management, Spent Fuel and Decommissioning arrangements (Working Group 2, WG2). The group is composed of designated representatives from Member States¹ and the Commission secretariat. Two international organisations (IAEA and OECD-NEA) participate as observers. The group meets when necessary, but at least twice a year as required, and its chair reports to ENSREG in every plenary meeting. WG2 advises and prepares proposals for endorsement by the ENSREG plenary. WG2 interacts as required and when necessary with the other ENSREG working groups on nuclear safety arrangements (WG1) and on transparency arrangements (WG3).

The following sections describe the main activities carried out by ENSREG to improve the decommissioning and management of radioactive waste and spent fuel since the previous ENSREG report to the Council and Parliament in 2017².

3.3. Revision of ENSREG Guidelines

The guidelines developed to help Member States report on the implementation of Council Directive 2011/70/EURATOM, by providing guidance on the type of information and material that may be useful to include in the reports, were endorsed by ENSREG in May 2014, so they could be applied to produce the first Member State reports.

ENSREG entrusted WG2 with the task of reviewing the Guidelines to incorporate experience after submission of the first Member State reports.

A sub-group was formed within WG2 to take the lead in the work on revising the Guidelines. ENSREG adopted the revised version of the Guidelines in January 2018.

3.4. ARTEMIS peer review missions to Member States

Article 14(3) of Council Directive 2011/70/EURATOM requires that Member States at least every 10 years invite an 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.

In recognition of ARTEMIS's role in allowing Member States to carry out the peer review required under Article 14(3) of Council Directive 2011/70/EURATOM, the Commission supports the ARTEMIS programme financially through a delegation agreement with the IAEA. The current Delegation Agreement runs from December 2014 to December 2020 and provides up to ≤ 1.2 million to support the programme. As already mentioned (2.2.3), the next delegation agreement will combine support for both the IRRS and ARTEMIS programmes.

¹ Austria, Belgium, Czechia, Germany, Denmark, Spain, Finland, France, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, Slovenia, Slovakia, and Sweden, as well as the UK until 2019.

² <u>http://www.ensreg.eu/document/5th-ensreg-report</u>

As mentioned in more detail in Section 2.2.3, WG2, together with WG1, continued work in order to establish and maintain a comprehensive peer reviews schedule for EU Member States and to establish a comprehensive pool of experts to support the IAEA to carry out the EU peer reviews programme. WG1 and WG2 also cooperate on the improvement of the effectiveness and efficiency of the combined IRRS/ARTEMIS missions.

Regarding the status of the pool of experts, WG2 identified 75 experts from 17 Member States who could perform ARTEMIS missions, and submitted the full list to the IAEA. By the end of 2019, eight ARTEMIS review missions to the EU Member States had been performed.

3.5. Other activities

Analysis and development of ENSREG's position on specific common issues regarding the relationship between national programmes and national reports under Council Directive 2011/70/EURATOM (discussion and decision on specific topics for a WG2 position on key performance indicators)

A subgroup within WG2 has been created to draft a technical position, exploring the following: (i) the purpose and meaning of a key performance indicator in relation to monitoring progress towards implementation of national programmes; (ii) the link to elements of a national programme; (iii) examples from Member States; (iv) a summary of issues and difficulties; (v) a way forward. In this process, special focus will be on defining and implementing key performance indicators.

An Interim report on Implementation of National programmes and KPIs was developed in March 2020. This report will be complemented and updated when the results of an EC study on this topic are available.

Analysis and adoption of ENSREG's position on radioactive waste and spent fuel inventories reporting (discussion and decision on specific topics for WG2's position on inventory):

A subgroup within WG2 was created in October 2018 to draft a technical position on radioactive waste and spent fuel inventories reporting. The objective is to elaborate a technical position on the data to be reported in the inventories, considering the availability of the data, main assumptions underlying national inventories, reporting needs (including inventory data aggregated at EU level) and rationale for their provision. To reach the objective, the subgroup will focus on topics for possible harmonisation of reporting based on the IAEA's waste classification and the joint set of IAEA/Commission/NEA harmonised data (2017). Due consideration is also given to:

- national frameworks and needs;
- the Commission's first report on implementation of Council Directive 2011/70/EURATOM (COM(2017)236final);
- the IAEA Status and Trend project.

ENSREG WG2 members participated in the Commission workshop organised in the framework of the study on Benchmark Analysis of Member States Approaches to Definition of National Inventories for Radioactive Waste and Spent Fuel on 19-20 November 2019 (Brussels).

A technical position on radioactive waste and spent fuel inventories reporting has been developed.

4. OPENNESS AND TRANSPARENCY

4.1. ENSREG Website¹

ENSREG's WG3 is responsible for the ENSREG website, which was launched in January 2010. Since then, it has been ENSREG's main tool for informing the public and other nuclear safety stakeholders. At the same time, it ensures transparency and access to information. On several occasions (e.g. stress tests and follow-up, topical peer review on ageing management), the website has also worked as a platform for consulting stakeholders.

The information on the website is updated regularly. The ENSREG secretariat, ensured by the Commission, publishes documents as they become available and, when appropriate, posts news items.

In 2017, ENSREG decided to conduct a survey and collect feedback from website visitors, and an online survey feature was added on the website's homepage.

Until June 2018, the ENSREG secretariat had contracts with external providers to maintain the website and to provide occasional assistance. However, several years of experience showed that this solution was not optimal, and the secretariat decided to insource the maintenance and support. Working arrangements were concluded with the relevant Commission departments, and support has been operational since May 2019. Among other things, the website has been modified to comply with data protection rules.

The contract with an external service provider for hosting and domain names expired in October 2019. The ENSREG secretariat decided to keep the same hosting and domain name arrangements and extended the contract until October 2023.

4.2. Fifth ENSREG Conference on Nuclear Safety

ENSREG held its fifth biennial conference in Brussels on 6-7 June 2019. It was attended by around 220 delegates from European and non-European countries, representing regulators, governmental offices, industry and NGOs.

The different topics of the conference were linked to each other and presented four of the main challenges that EU Member States, regulators, and operators of nuclear installations are currently facing in Europe but also worldwide, in particular in the framework of long-term operation.

The focus was on: (i) ageing management in light of the first EU topical peer review (TPR) exercise, which took place in 2017–2018, (ii) decommissioning and waste management, (iii) standardisation of supply chain and component obsolescence, and (iv) knowledge management and skills preservation.

Opening remarks were delivered by Stefano Laporta, the Conference President, Chair of the Advisory Board of the National Inspectorate for Nuclear Safety and Radiation Protection in Italy, and by representatives of the European Parliament, the European Commission, the IAEA, and national nuclear safety authorities. Representatives of the US and Chinese nuclear regulators, civil society and industry also participated as panellists.

The possibility of following the conference via web streaming was also available, and several hundred connections were made during the 2 days of the conference. The video recordings, presentations and speeches are available on the ENSREG website².

¹ <u>http://www.ensreg.eu</u>

² <u>http://www.ensreg.eu/ensreg-conferences</u>

4.3. Survey of ENSREG member organisations on application of the ENSREG principles for openness and transparency

In 2011, ENSREG adopted a set of principles for National Regulatory Organisations (NRO) on openness and transparency. As part of the process for reviewing and updating the principles, a survey of ENSREG member organisations was developed by the ENSREG Working Group on Improving Transparency Arrangements. The purpose of this survey was to have an overall picture of how the principles are being applied. The survey questions were based on the adopted principles.

The survey was conducted on 6 June 2018 through *SurveyMonkey* and was circulated through the ENSREG secretariat to all ENSREG members. ENSREG received 21 full responses and 2 partial responses. The responses came from the national regulatory bodies of a mix of nuclear and non-nuclear countries. From the survey results, the ENSREG Working Group on Improving Transparency Arrangements drew the following conclusions:

- There is still room for regulators to be more proactive, as compared to reactive, in engaging with the media and other stakeholders (including the public).
- The use of new media (social media) could be increased for public engagement this will become particularly important for the engagement of younger/wider stakeholder groups. It was noted that social media is more widely used for engaging with the media.
- The balance between open and transparent communication and the need to protect security/sensitive information is still an emerging area, which could benefit from more focus.
- The information may need to be adapted for different target audiences. For example, some audiences will require more technical and complex information. Provide translated information where deemed necessary.
- While the principles are generally being adopted by most NROs in their communication practices, the principle of measuring the effectiveness of own activities in this area is often not being fulfilled.

4.4. ENSREG communication on the Ru-106 incident

The radioactive isotope Ruthenium-106 was measured in the air in a number of European countries from the end of September to the beginning of October 2017.

ENSREG members provided a coordinated response targeting the regulatory authorities of the Russian Federation about this issue. In the exchange of letters, ENSREG members clearly express their expectations regarding the participation of several European regulators and technical support organisations in an Independent International Scientific Commission (IISC) set up by the Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE). These expectations included an assessment of the safety and health risk to the local population, the mandate to undertake in-situ investigations and public disclosure of the findings of the IISC. This IISC gathered two times, in January and April 2018, but no joint conclusions have been drawn on the source release to date.

ENSREG recognises that the cooperative efforts of the international commission have been a good basis for exchanges on this event of Ruthenium releases. However, ENSREG regrets that no joint conclusion was possible and maintains its analysis about the possible geographical source location.

Because of the importance of transparency in building trust among the various stakeholders involved in nuclear safety and the safe management of spent fuel and radioactive waste, ENSREG issued a communication on Ru-106 and published it, together with the links to measurement data collected by ENSREG members, on the ENSREG website¹.

¹ <u>http://www.ensreg.eu/events-0</u>

4.5. Update of the documents of 'Guidance on Openness and Transparency for European Nuclear Safety Regulators'

The document 'Guidance for National Regulatory Organisations, Principles for Openness and Transparency' was endorsed by ENSREG in 2011. In 2014, a decision was made to update the document to reflect new legislation, developments and needs. The update of the document was introduced as a dedicated task in the ENSREG work programme. To this end, the survey mentioned above on the implementation of the principles for openness and transparency was conducted among Member States in 2018. The findings from this survey have been reflected in the revised guidance that was adopted and published in November 2019. The guidance reflects the views of European nuclear safety regulators that openness and transparency significantly contribute to the continuous improvement of nuclear safety.

This document provides general guidance to the regulators for ensuring openness and transparency in their effective communication activities. The guidance goes beyond the legal obligations set out in Article 8 of the Nuclear Safety Directive, Article 10 of the Waste Directive and the relevant articles of the Basic Safety Standards Directive. It is generic in nature and may need to be adapted to the organisational structures of Member States, taking into account the financial and personnel feasibilities of each regulator. Therefore, the guidance should be implemented following a graded approach in order to take into account different infrastructures, situations and requirements. As an overarching model, the regulators must commit themselves to the principles of openness and transparency and to the mission of striving for continuous improvement.

5. CONCLUSIONS

During the reporting period, ENSREG continued to demonstrate its efficiency in improving and promoting (in multilateral fora) nuclear safety and the management of spent fuel and radioactive waste and its regulation, in accordance with the Directives. Thanks to these efforts, ENSREG was successful in:

- developing, carrying out and starting the follow-up of the first topical peer review on ageing management and helping to benchmark and identify best practices among regulators and licence holders. This review provided important input to the more general issue of the long-term operation of nuclear power plants and research reactors;
- following up on the implementation of post-Fukushima national action plans (as of 2017, participating countries update their plans every 2 years until completion);
- revising the guidelines for Member States reporting under Article 14(1) of Council Directive 2011/70/EURATOM (the 'Waste Directive');
- revising the guidelines for Member States reporting under Article 9 of Council Directive 2009/71/EURATOM (the 'Safety Directive');
- updating the Guidance on Openness and Transparency for European Nuclear Safety Regulators;
- developing the ENSREG position on radioactive waste and spent fuel inventories reporting (March 2020);
- supporting IRRS peer reviews and providing impetus to the ARTEMIS peer reviews in coordination with the IAEA;
- holding its fifth conference on nuclear safety, which opened the floor to upcoming challenges such as ageing management, decommissioning and waste management or knowledge management.

During the next reporting period, ENSREG will continue to play a central role in improving nuclear safety and the management and regulation of radioactive waste and spent fuel. It will

also continue to promote openness and transparency in those areas through a range of activities that include:

- ensuring the follow-up of the first topical peer review, as required by the amended Nuclear Safety Directive at both EU and Member State level, based on the ENSREG Action Plan for the Topical Peer Review;
- establishing the groundwork for the second topical peer review, due to start in 2023;
- reviewing the stress tests and their implementation in non-EU countries, as required;
- providing advice to the Commission and helping to coordinate efforts between regulatory bodies on key topics relevant to securing high standards of nuclear safety in Europe;
- holding the sixth ENSREG conference, scheduled for June 2021.

6. **REFERENCES**

All documents made publicly available by ENSREG can be downloaded from the ENSREG website <u>http://www.ensreg.eu/documents</u>.