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	Second Report

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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE

on Member States implementation of the Council Directive 2006/117/EURATOM on the supervision and control of shipments of radioactive waste and spent fuel Second Report

{SWD(2018) 4 final}

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1. Introduction

Council Directive 2006/117/EURATOM¹ lays down a Community system of supervision and control of transboundary shipments of radioactive waste and spent fuel, so as to guarantee an adequate protection of the population. It ensures that Member States concerned are informed about shipments of radioactive waste and spent fuel to or via their territory with the obligation to give either their consent or reasoned refusal to the shipments. The Directive complements the Council Directive 2011/70/EURATOM² which focuses on the policy and responsibilities for long term management of radioactive waste and spent fuel.

This is the second report from the Commission on the implementation of Council Directive 2006/117/EURATOM, providing an overview of the respective shipments and related aspects. It provides complementary information to the Commission report on the implementation of Council Directive 2011/70/EURATOM³.

All Member States in the EU produce radioactive waste, generated by different facilities (e.g. nuclear power plants, research reactors) and activities, such as radioisotope applications in medicine, industry, agriculture, research and education. Radioactive waste is defined as radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the countries of origin and destination, or by a natural or legal person whose decision is accepted by these countries, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the countries of origin and destination.

In addition, the operation of nuclear power and research reactors also generates spent fuel. Spent fuel is defined as nuclear fuel that has been irradiated in and permanently removed from a reactor core. It may either be considered as usable resource that can be reprocessed or be destined for final disposal with no further use foreseen and treated as radioactive waste.

When spent fuel and radioactive waste are generated they are stored prior to possible (re)processing and disposal. From the sites where these materials have been generated or managed, spent fuel and radioactive waste are transported mainly by road, rail or sea and in limited cases by air.

Council Directive 2006/117/EURATOM of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel, OJ L 337, 5.12.2006, pp. 21 – 32.

Council Directive 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, OJ L199, 2.8.2011, pp. 48 – 56.

Report from the Commission to the Council and the European Parliament on progress of implementation of Council Directive 2011/70/Euratom and an inventory of radioactive waste and spent fuel present in the Community's territory and the future prospects, COM(2017)236 final of 15.5.2017.

Import, export and transit of radioactive waste and spent fuel through Member State(s) are regular practices in the EU. Movement of such material, also referred to as shipment, occurs in the majority of Member States regardless of the scale of their nuclear programmes.

To date, 16 Member States⁴ have nuclear power reactors on their territories, of which operating nuclear reactors are located in 14 Member States. In addition, 20 Member States⁵ have operated or still operate research reactors within the EU. Some of the Member States ship spent fuel for reprocessing in the EU or to third countries. The majority of Member States with research reactors foresee return of spent fuel to the supplier (USA or Russian Federation) before 2020, although for a number of training and research reactors the long term management route for the spent fuel (for example disposal) is still to be defined. Radioactive waste has also been shipped within and outside the EU in many cases with the view of radioactive wastes minimization through processing (e.g. melting, incineration) prior to storage and/or disposal.

According to Article 20(1) of the Council Directive 2006/117/EURATOM, as of 25 December 2011 Member States have to report every three years on the implementation of the Directive to the Commission. Therefore, the deadline for submission of the second reports was 25 December 2014.

All Member States have submitted their second national report on shipments of radioactive waste or spent fuel on their territories for the period 2012-2014, while Croatia reported for the first time⁶. During this second reporting round important delays were noticed as only three Member States notified on time⁷ (others notified with different delays⁸).

On the basis of the national reports and after an exchange of views with and adoption by the Advisory Committee⁹ the Commission has prepared the present report to the European Parliament, the Council and the European Economic and Social Committee, in accordance with Article 20(2) of the Directive. It is based on all Member States notifications and follows up the first report of the Commission for the period 2008-2011, issued in 2013¹⁰.

Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, The Netherlands, Romania, Spain, Sweden, Slovenia, Slovakia, and the United Kingdom (Lithuania and Italy have shut down power reactors).

Denmark, Lithuania, and Romania.

Austria, Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Denmark, Greece, Hungary, Italy, Latvia, The Netherlands, Poland, Portugal, Romania, Spain, Sweden, Slovenia, and the United Kingdom.

Croatia joined the EU on 1 July 2013.

Within 6 months: Bulgaria, Czech Republic, Greece, Estonia, Finland, Latvia, Luxembourg, Poland, Portugal, Slovenia, Slovakia, Sweden, the United Kingdom; within 6-12 months: Austria, Belgium Croatia, Cyprus, France, Germany, Hungary, Ireland, Malta, The Netherlands and Spain; later than 1 year: Italy.

The Advisory Committee was established in 2007 as required by Article 21 of the Directive.

¹⁰ COM(2013) 240 final, Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee on the implementation by the Member

The reporting is intended to provide an overview of shipments of spent fuel and radioactive waste in the Community; of the recent trends and challenges on import, export and transit of spent fuel and radioactive waste, reported refusals and failed shipments, as well as proposed actions.

More detailed information on the implementation of the Directive in each Member State is provided in the Commission Staff Working Document SWD(2018)4. The conclusion of this report highlights topics that require further attention.

1.1. Legal framework

Safe and responsible management of radioactive waste and spent fuel, including safe shipment of these materials in and outside the territories of Member States, is a legal requirement. This requirement is stemming from both international and EU law.

At international level, the main reference in this field is the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention)¹¹. Among other provisions, the Joint Convention imposes obligations on Contracting Parties in relation to the safety of transboundary movements (import, export and transit) of spent fuel and radioactive waste. It requires, in its Article 27, each Contracting Party involved in transboundary movements to take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of the Convention and relevant binding international instruments. Since the first Commission's report on implementation of the Directive 2006/117/EURATOM, Malta became a Contracting Party to the Joint Convention making all 28 EU Member States Contracting Parties to this Convention¹² which demonstrates Member States commitment to ensuring high level of safety of spent fuel and radioactive waste – from generation to disposal.

At EU level, since the first Commission report on the implementation of Directive 2006/117/EURATOM, the Council Directive 96/29/EURATOM on basic safety standards was revised in 2013, maintaining the overall objective to enhance the protection against the dangers arising from exposure to ionizing radiation, also during transport of spent fuel and radioactive waste. The revised 96/29/EURATOM Directive (new Directive 2013/59/EURATOM¹³) repeals and consolidates in a single piece of legislation the

States of Council Directive 2006/117 EURATOM on the supervision and control of shipments of radioactive waste and spent fuels, 25.4.2013 and SWD(2013) 150 final.

As of 26 September 2016 there are 73 Contracting Parties to this Convention (http://www.iaea.org/Publications/Documents/Conventions/jointconv status.pdf).

The 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 Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities.

Directive 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing directives 89/618/Euratom, 90/641/Euratom, 96/29/EURATOM, 97/43/EURATOM and 2003/122/EURATOM, OJ L 13, 17.1.2014, pp. 1-73.

provisions of five EU Directives, including the Directive 2003/122/EURATOM with regard to high-activity sealed sources¹⁴. The new Directive that shall be transposed by Member States by 6 February 2018 also defines harmonised clearance criteria and general levels for release of material from regulatory control. With respect to naturally occurring radioactive materials (NORM), the scope of the Directive 2013/59/EURATOM has been extended to cover human activities which involve the presence of natural radiation sources, including the processing of material with naturally occurring radionuclides (NORM). The Directive requires that protection against natural radiation sources, rather than being addressed separately in a specific title, should be fully integrated within the overall requirements. In particular, industries processing materials containing naturally-occurring radionuclides that require regulatory control should be managed within the same regulatory framework as other practices¹⁵. It requires (Article 23) Member States to identify classes or types of practice involving NORM and leading to exposure of workers or members of the public which cannot be disregarded from a radiation protection point of view. A list of industrial sectors involving NORM that need to be taken into account during the identification process, in addition to the uranium mining and milling industry, is provided in Annex VI of the Directive 2013/59/EURATOM. If a Member State declares NORM waste as radioactive waste, its shipment should be reported under Article 20 of the Directive 2006/117/EURATOM.

Within the scope of this comprehensive EU nuclear and radiation safety framework, Directive 2006/117/EURATOM specifically addresses regulatory authorisations and procedural aspects of transboundary shipments of radioactive waste and spent fuel generated from civilian facilities and activities. The Directive applies whenever:

- The country of origin, the country of destination or any country of transit of the spent fuel or radioactive waste is an EU Member State;
- The quantities and concentration of the spent fuel or radioactive waste for shipment (referred to as consignment) exceed the levels laid down in Article 3(2) points (a) and (b) of Directive 96/29/EURATOM¹⁶, replaced recently by Council Directive 2013/59/EURATOM.

1.2. General principles for supervision and control of shipments

In line with Directive 2011/70/EURATOM, each Member State remains fully responsible for the choice of its own policy on the management of radioactive waste and spent fuel within its jurisdiction, which could include export of spent fuel and radioactive waste or import of such materials (e.g. for (re)processing) on its territory.

Council Directive 2003/122/EURATOM of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources, OJ L 346, 31.12.2003, pp. 57-64.

The definition of a "practice" in Article 4(65) is the following: "a human activity that can increase the exposure of individuals to radiation from a radiation source and is managed as a planned exposure situation".

Council Directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation, OJ L 159, 29.6.1996, pp 1 – 114.

Article 17(1) of Directive 2006/117/EURATOM requires Member States to use a standard document for the supervision and control of shipments of radioactive waste and spent fuel. When such materials are intended to be shipped to third countries, Member States are also required to apply the criteria for shipment as per Article 16(2) of the Directive and Commission Recommendation¹⁷.

Where a shipment cannot be completed or if the conditions for shipment are not complied with in accordance with this Directive, the competent authorities of the Member State of origin shall ensure that the radioactive waste or the spent fuel in question is taken back by the holder, unless an alternative safe arrangement can be made. These competent authorities shall ensure that the person responsible for the shipment takes corrective safety measures where necessary. In such case the holder shall be liable for costs arising in cases where the shipment cannot or may not be completed (Article 12 of the Directive).

Any refusal of authorisation for shipment of spent fuel and radioactive waste (i) needs to be justified on the basis of the criteria set out in the Directive; (ii) should not be arbitrary; and (iii) should be founded on relevant national, Community or international law. Member States decisions for exports or refusals must be in line with the provisions set out in the Joint Convention and Article 16 of the Directive which prohibit export of radioactive waste or spent fuel to a destination south of latitude 60° south, to African, Caribbean or Pacific countries or to a third country which does not have the resources to manage the radioactive waste or spent fuel safely.

In addition to the 3 yearly reporting to the Commission (as per Article 20(1) of the Directive 2006/117/EURATOM), Member States shall:

- Notify every year the Commission and the Advisory Committee any unauthorised shipments to a third country, due to non-compliance with the technical or administrative capacity and regulatory structure for the safe management of spent fuel and/or radioactive waste (Article 16(1)c of the Directive).
- Forward to the Commission the contact details of the competent authority(ies) and all the necessary information for rapid communication (Article 18 of the Directive).

Commission Recommendation of 4 December 2008 on criteria for the export of radioactive waste and spent fuel to third countries (notified under document number C(2008) 7570) (2008/956/EURATOM).

^{&#}x27;holder' means any natural or legal person who, before carrying out a shipment of radioactive waste or spent fuel is responsible under the applicable national law for such materials and plans to carry out a shipment to a consignee.

2. IMPLEMENTATION OF THE GENERAL PROVISIONS

2.1. Transposition of the Directive

During the reporting period 2012-2014, Croatia joined the EU (1st of July 2013) and transposed the Directive.

On that basis, the transposition of this Directive is considered completed in all 28 Member States.

2.2. Standard document for the supervision and control of shipments

The standard document (established by Commission Decision in 2008¹⁹ and amended in 2011) includes forms for:

- Application for authorization for shipment of spent fuel or radioactive waste;
- Acknowledgement of receipt of application request for missing information for spent fuel and radioactive waste;
- Refusal or consent of radioactive waste or spent fuel shipment by the competent authorities concerned;
- Description of radioactive waste consignment and list of packages;
- Acknowledgement of receipt of radioactive waste and spent fuel;
- Authorisation of shipment of spent fuel and radioactive waste.

Some Member States provided suggestions for further improvement of the standard document. For example, it was suggested to clarify the explanatory notes and to add a specific section to the standard document allowing for cross-reference to a previous authorisation/consent whenever the application for shipment is linked to the repatriation of residues arising from that previous shipment. This would facilitate monitoring and provide an audit trail between outgoing shipment for processing/reprocessing and shipment(s) of resulted waste and by-products. In addition, the need for more consistency of the information required in Section B-1 "Application for authorisation of shipment(s) of spent fuel", which does not include radioactivity levels of spent fuel, and information in Section B-5 "Description of spent fuel consignment and list of packages" (which does ask for this information) of the standard document was highlighted.

These proposals will be followed up by the Commission.

Commission Decision of 5 March 2008 establishing the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/EURATOM, (notified under document number C(2008) 793), (2008/312/EURATOM), OJ L 107, 17.4.2008, pp. 32 – 59.

2.3. Competent authorities

As of July 2017, all Member States have provided updated information on their competent authorities in the sense of Article 5(13)²⁰ of the Directive which is presented in Commission Staff Working Document SWD(2018)4.

In compliance with the requirement of Article 19 of Directive 2006/117/EURATOM, and the Recommendation²¹ for a secure and effective system of transmission of the documents and information relating to the provisions of the Directive the updated list of competent authorities in the Member States is available on the Commission website: https://ec.europa.eu/energy/en/topics/nuclear-energy/radiation-protection/transport-radioactive-materials.

3. OBSERVATIONS AND TRENDS ON SHIPMENTS OF SPENT FUEL AND RADIOACTIVE WASTE

For the 2012-2014 period the majority of Member States reported shipments of spent fuel and radioactive waste on their territories using a non-binding template with information on (i) the implementation of the Directive; and (ii) imports, exports and transits of spent fuel and radioactive waste.

In general, differences were observed as to the reporting format, level of detail and quality of the information provided by the Member States in their reports to the Commission. For example:

- The terminology used in the Member States' reports with regard to shipments of spent fuel and radioactive waste was not always in line with that defined in the Directive and in the Decision 2008/312/EURATOM (e.g. import to, export from and transit through the Community, as well as authorisation and consent);
- Similarly, the information provided in the Member States' reports did not always include details on the shipments or distinguish spent fuel from radioactive waste shipments;
- Two Member States' reports that count for 48% of the overall authorisations for shipment of spent fuel and radioactive waste were to some extent only presented as a summary, without sufficient details on the shipments as required by the reporting template;
- Inconsistencies in some Member States' national reports regarding authorisations for shipments.

In the context of this second report, the Commission has not been informed about

Article 5(13) of the Directive 2006/117/EURATOM defines "competent authorities" as "any authority which, under the law or regulations of the countries of origin, transit or destination, are empowered to implement the system of supervision and control of shipments of radioactive waste or spent fuel".

Commission Recommendation of 7 July 2009 for a secure and effective system of transmission of documents and information relating to the provisions of Council Directive 2006/117/EURATOM, OJ L 177, 8.7.2009, pp. 5 – 6.

reshipments related to non-authorised shipments of undeclared radioactive waste (as per Article 4); shipment failures (as per Article 12), or prohibited exports that would fall under the provisions of Article 16(1)c of the Directive. There were only two refusals of authorization linked to contaminated scrap metal and, in one case, incomplete information for shipment. All the cases of refusal were solved by the concerned Member States.

Further details on Member States' shipments are presented in the accompanying Commission Staff Working Document SWD(2018)4.

3.1. Overall shipments

Directive 2006/117/EURATOM provides the framework for shipments of radioactive waste and spent fuel between Member States that should take place only with the prior informed consent of the competent authorities of all Member States involved (including transit Member States).

For the 2012-2014 period, 20 Member States have reported authorised shipments within the scope of the Directive. Member States reported 400 issued approvals²², which include 192 authorisations of Member State of origin and 208 consents²³ to shipments of spent fuel and radioactive waste. Five²⁴ out of the 20 reporting Member States account for 74 % of all 192 reported authorisations for the period 2012-2014.

Also 81% (157) of all issued authorisations are related to shipment of radioactive waste; 17% (32) to spent fuel and 2% issued for materials other than radioactive waste and spent fuel. In the previous reporting period, 74% of authorisations were related to shipments of radioactive waste and remaining 26% were shipments of spent fuel.

The Commission notes that the overall number of authorisations has increased (15%) compared to the previous reporting period (2008-2011), where 14 Member States delivered 161 authorisations within the scope of the Directive.

Although the Directive does not define the term "approval" and clearly refers only to "authorisation" of Member State of origin, "consent" and "refusal" of the Member States of transit and destination, national reports from Member States do not always make the difference between authorisations and consents. Therefore, for the purpose of this Commission report, the term "approval" is used to include both "authorisations" and "consents".

According to Article 9 not later than two months from the date of acknowledgement of receipt the competent authorities of all Member States concerned shall notify the competent authorities of the Member State of origin of their consent, or of the conditions which they consider necessary for giving their consent, or of their refusal to grant consent.

Belgium, Germany, France, Sweden and the United Kingdom.

3.2. Imports, exports and transits through the Community

In the 2012-2014 reporting period, most of the spent fuel and radioactive waste shipments took place between Member States and only around 17% of all transboundary movements were for imports into and exports out of the Community.

In particular, 11 Member States²⁵ reported issuing 30 authorisations for exports of either radioactive waste and/or spent fuel to third countries - Russia (47%), USA (30%), Switzerland and Japan (each 10%) and Norway (3%).

Twenty out of 30 authorisations for export from the Community (i.e. 67%) were related to shipment of spent fuel. All but one of these exports of spent fuel were reported for reprocessing; while one export of spent fuel was reported for research activities

In the previous reporting period (2008–2011), 29 authorisations for export were granted by nine Member States and 59% of the authorisations for export from the Community were related to export of spent fuel, which shows increase of the number of Member States exporting spent fuel and/or radioactive waste. While there is a slight increase of the export authorisations for spent fuel and radioactive waste altogether, the Commission observes an overall decrease of the number of authorisations for export of spent fuel since 2011.

Exports of radioactive waste for return and for treatment to third countries were reported by five Member States, representing in total nine authorisations for export from the Community.

Three Member States (France, Sweden and the United Kingdom) have reported imports of radioactive waste/spent fuel, whereas no transits of spent fuel and/or radioactive waste through the Community were reported for this period.

3.3 Follow-up from the First Commission Report

As a result of the first Member States reporting on implementation of Directive 2006/117/EURATOM, two issues were identified requiring attention as detailed in the Commission Report COM (2013) 240 final:

• It was noted that there was no **harmonisation of clearance levels** for radioactive waste in the EU that could lead to the possibility that materials containing radioactive substances were released in one Member State but could still be considered as radioactive waste in another Member State.

With the Member States transposing the Directive 2013/59/EURATOM on basic safety standards by February 2018, it is expected that the general clearance criteria and the set of harmonised **general clearance values** in the

Austria, Bulgaria, Czech Republic, Germany, France, Hungary, Italy, Poland, Romania, Sweden and the United Kingdom.

Member States will become more aligned. It is important to note that Member States, however, have the possibility to define specific clearance levels in line with the clearance criteria established in this Directive.

• Transboundary shipments of **waste containing NORM**, not arising from authorized "practices" as defined by the Directive 96/29/EURATOM, were excluded from the scope of both Directive 2006/117/EURATOM²⁶ and also from the Directive 2006/21/EC²⁷ on the management of waste from extractive industries.

The scope of the Directive 2013/59/EURATOM has been extended to cover all human activities which involve the presence of natural radiation sources, including the processing of material with naturally occurring radionuclides (NORM). Therefore, from a legal point of view, all waste containing NORM which require regulatory control and are categorised as radioactive waste²⁸ fall under the scope of the Directive 2006/117/EURATOM.

To ensure the smooth implementation of both Directive 2006/117/EURATOM and Directive 2013/59/EURATOM and address the above raised issues, the Commission has launched a study in 2016²⁹. The study aims to review current Member States' practices on the application of clearance levels and shipment of radioactive waste containing naturally occurring radioactive materials that could provide a better understanding of Member States' practices, challenges, good examples for shipment of such materials in the new EU legal framework, as well as needs for EU legislation and/or initiatives in this field.

4. CONCLUSIONS

The current EU legal framework consisting of the Directive 2006/117/EURATOM, the new Directive 2013/59/EURATOM and Directive 2011/70/EURATOM provides a comprehensive legal basis to ensure protection of the health of workers and the general public against the risks arising from ionizing radiations, including during shipments of spent fuel and radioactive waste.

Member States reported shipments within the national frameworks for the supervision and control of shipments of spent fuel and radioactive waste. These frameworks require that transboundary movements of radioactive waste and spent fuel take place only with the prior informed consent of the competent authorities of all involved

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See Article 1(5) of Directive 2006/117/EURATOM.

Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC, OJ L102, 11.4.2006, pp 15-33.

^{&#}x27;radioactive waste' means radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the countries of origin and destination, or by a natural or legal person whose decision is accepted by these countries, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the countries of origin and destination (Art 5(1) of Directive 2006/117/EURATOM).

Review of the Current Situation Regarding Transport of Radioactive Material in EU Member States.

Member States, and the standard document for import to, export from and transit through the Community is used.

Under the current reporting period, no shipment failures involving transboundary movements of radioactive waste or spent fuel were reported by Member States. Two refusals were reported due to radioactive material not declared as radioactive waste and insufficient information but this was resolved by the corresponding Member States.

The majority of the Member States national reports for this period were submitted with delays and show variation in the level of detail of the information and different approaches to reporting shipments of spent fuel and radioactive waste.

The Commission will take the findings presented in this report into due consideration and will initiate reflections or take the necessary measures to:

- Improve the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/EURATOM in light of the feedback provided by Member States and the recommendations of the Advisory Committee.
- Provide support to Member States to harmonise the reporting of shipments of spent fuel and radioactive waste of Member States (Article 20 of the Directive), thus enhancing ultimately also the level of consistency and detail of future reporting by the Commission to the Council, European Parliament and European Social and Economic Committee.

Moreover, the Commission will take appropriate measures on the basis of the findings of the on-going study on the review of the current situation regarding transport of radioactive material in EU Member States. The study includes the shipments of waste containing naturally occurring radionuclides and application of clearance levels, with the aim to identify specific actions required for improvement of transport at EU and national level, enhance transparency and increase public confidence.

The Commission will closely follow the implementation of the Directive and the identified measures to ensure timely reporting for the upcoming reporting 2015-2017 period (Member States' reports by 25 December 2017) in close collaboration with EU Member States.