

Nuclear waste management in the EU: Implementation of Directive 2011/70/EURATOM Joint Project Assessment Report

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Introduction

In the Joint Project, European NGOs and research institutions cooperate since 2003 on safe and sustainable energy issues with a focus on anti-nuclear activities in Central and Eastern Europe. One of our topics is nuclear waste – an unsolved and dangerous problem which will stay with us for a minimum of one million years.

In 2011 the “**Council Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste**” introduced an EU-wide regulation to solve the nuclear waste problem. This Directive had to be transposed into national law by the member states until 23 August 2013. Until 23 August 2015 every member state had to develop a national programme for the management of spent fuel and radioactive waste, based on a national policy and a national framework. A first national report had to be submitted to the European Commission (EC) in 2015 to document these activities. The second national report was due in August 2018.

Nearly two years after the first deadline of 2015 has passed, **the European Commission published its first report on the implementation of the Nuclear Waste Directive on 15 May 2017**. This report is accompanied by three documents, which can be found on the eurlex website <http://eur-lex.europa.eu/homepage.html?locale=en>:

1. 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. Brussels, 15.5.2017, COM(2017) 236 final. *(referred to as EC Report)*
2. Commission Staff Working Document: Progress of implementation of Council Directive 2011/70/Euratom. Accompanying the document “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.” Brussels, 15.5.2017, SWD(2017) 159 final. *(referred to as Accompanying Report)*
3. Commission Staff Working Document: Inventory of radioactive waste and spent fuel present in the Community’s territory and the future prospects. Accompanying the document “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." Brussels, 15.5.2017, SWD(2017) 161 final. (*referred to as Inventory Report*)

A second report was issued by the EC end of 2019.

Since the very first steps, the Joint Project is keeping a close watch on the implementation of the Nuclear Waste Directive. Those activities consisted in national groups getting involved in the broader topic of nuclear waste management and the measures required by the new Directive. They continuously monitored the implementation on national level and EU level and participated in Strategic Environmental Assessments (SEA), organized events for the interested public and a discussion with European Commission representatives. For more information see <http://www.joint-project.org/>.

In our "Assessment Report v1" 2017 we analysed the EC's report "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" to understand whether the national programmes solved the pressing problems for nuclear waste management and are dealt with in a satisfying way.

For the updated version 2.0 of our Assessment Report we included the results on **multinational (also: shared) repositories** of an inquiry we conducted recently on the following questions: What is a multinational repository, who wants it, what is the status of implementation?

Furthermore, in 2018 we participated in two **Strategic Environmental Assessments (SEA) on national waste management programmes (CZ and AT)** and monitored other public participation procedures in EU member states. Conclusions and experiences made during these procedures we used for updating our assessment of the contribution of Directive 2011/70/EURATOM to the solution of the nuclear waste problem.

In version 3.0, an assessment of the **new national reports** was planned, but they were not publicly available in time. Instead, we monitored the **infringement procedures** of the Commission and the IAEA **ARTEMIS** missions.

In version 4.0, we monitored the activities of the ERDO Working Group and of IFNEC for a revival of the concept of a **multinational repository**.

Nuclear waste management under Directive 2100/70/EURATOM: problematic aspects

Member states' poor implementation of the Directive

Out of 28 member states **only three implemented the Nuclear Waste Directive in such a way that they avoided an infringement procedure**. These three states are Finland, Luxembourg and Slovakia.

Cyprus, France and Sweden were able to fulfil the demands of the EC with a delay, their infringement procedures for non-communication of final transposing measures relating to Directive 2011/70/Euratom are closed by now.

Three member states have already been transferred to court due to their failure to notify their national programmes (Austria, Croatia and Italy). For Austria and Croatia, the transfer to Court was withdrawn, for Italy the procedure is still ongoing.

The following **table 1** lists all infringement procedures in relation to the 2011/70/Euratom implementation as published in the EU's infringement data base, with infringement case number and status.

Infringement procedure	Non-communication of final transposing measures relating to Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste	Failure to communicate and/or notify all the transposition measures for Council Directive 2011/70/Euratom on safe management of spent fuel and radioactive waste	Failure to notify the national programme for the implementation of a spent fuel and radioactive waste management policy	Failure to correctly transpose certain requirements of Directive 2011/70/Euratom	Failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom	Failure to comply with the requirements of the Radioactive Waste Directive 2011/70/Euratom
Member State						
<i>Start of procedure</i>	20. Nov 2013		28. Apr 2016	17 May 2018, 07 Jun 2018	17 May 2018	24 January 2019
Austria	20132234, closed 29 Sept 2016		20162028, referral to court 17 May 2018 Withdrawal from the Court 08 Nov 2018	20182038, formal notice		
Belgium	20132224; closed 16 Dec 2014		20162026, closed 17 Nov 2016		20182013, formal notice, reasoned opinion on 27 Nov 2019	
Bulgaria					20182017, formal notice, reasoned opinion on 2 July 2020	
Croatia	20132226, closed 10 Dec 2015		20162024, referral to court 17 May 2018 Withdrawal from the Court 07 March 2019	20182112, formal notice		
Cyprus	20132230, closed 16 Dec 2014					
Czech Republic			20162025, closed 17 May 2018	20182035, formal notice, closed 25 July 2019	20182025, formal notice	

Infringement procedure	Non-communication of final transposing measures relating to Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste	Failure to communicate and/or notify all the transposition measures for Council Directive 2011/70/Euratom on safe management of spent fuel and radioactive waste	Failure to notify the national programme for the implementation of a spent fuel and radioactive waste management policy	Failure to correctly transpose certain requirements of Directive 2011/70/Euratom	Failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom	Failure to comply with the requirements of the Radioactive Waste Directive 2011/70/Euratom
Member State						
Denmark				20182113, formal notice	20182027, formal notice, reasoned opinion on 2 July 2020	
Estonia				20182114, formal notice	20182028, formal notice	
Finland						
France	20132228, closed 29 Sept 2016					
Germany	20132225; closed 29 Sept 2016				20182015, formal notice	
Greece					20182029, formal notice, reasoned opinion on 2 July 2020	
Hungary			20162023, closed 17 Nov 2016	20182037, formal notice		
Ireland				20182115, formal notice, closed 25 July 2019	20182030, formal notice	
Italy	20132229, closed 16 Dec 2014		20162027, referral to court 17 May 2018	20182021, formal notice		
Latvia		20132231, closed 25 Jan 2018	20162022, closed 04 Oct 2016	20182117, formal notice		20182368, formal notice

Infringement procedure	Non-communication of final transposing measures relating to Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste	Failure to communicate and/or notify all the transposition measures for Council Directive 2011/70/Euratom on safe management of spent fuel and radioactive waste	Failure to notify the national programme for the implementation of a spent fuel and radioactive waste management policy	Failure to correctly transpose certain requirements of Directive 2011/70/Euratom	Failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom	Failure to comply with the requirements of the Radioactive Waste Directive 2011/70/Euratom
Member State						
Lithuania	20132232, closed 26 Nov 2014				20182016, formal notice, reasoned opinion on 2 July 2020	
Luxembourg						
Malta				20182116, formal notice, closed 10 Oct 2019	20182031, formal notice	
Netherlands			20162021, closed 17 Nov 2016	20182022, formal notice	20182014, formal notice	
Poland	20132235, closed 16 Dec 2014			20182036, formal notice	20182032, formal notice, reasoned opinion on 2 July 2020	
Portugal			20162020, closed 07 Dec 2017	20182033, formal notice		
Romania	20132237, closed 16 Dec 2014			20182034, formal notice, reasoned opinion on 2 July 2020	20182018, formal notice, reasoned opinion on 2 July 2020	
Slovakia						
Slovenia					20182020, formal notice	
Spain	20132227, closed 16 Dec 2014				20182019, formal notice, reasoned opinion on 27 Nov 2019	

Infringement procedure	Non-communication of final transposing measures relating to Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste	Failure to communicate and/or notify all the transposition measures for Council Directive 2011/70/Euratom on safe management of spent fuel and radioactive waste	Failure to notify the national programme for the implementation of a spent fuel and radioactive waste management policy	Failure to correctly transpose certain requirements of Directive 2011/70/Euratom	Failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom	Failure to comply with the requirements of the Radioactive Waste Directive 2011/70/Euratom
Member State						
Sweden	20132238, closed 16 Dec 2014					
United Kingdom				20182039, formal notice	20182024, formal notice	

Source: EU [Infringement Database](#), viewed in regular intervals

An Austrian Member of Parliament made an inquiry at the European Commission about the reasons of the infringement procedures. In Feb 2019, an answer was given by Mr. Cañete. We were informed that these reasons are secret, but the Commission will conduct appropriate measures in time.

Nuclear Transparency Watch (NTW) requested in April 2020 a copy of the reasoned opinions sent to Belgium and Spain on their infringement procedures for “Failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom”. The EC did not disclose these documents.

That Finland, Luxembourg and Slovakia avoided an infringement does not mean that their management of spent fuel and radioactive waste is good practice:

Luxembourg has a bilateral contract with Belgium to export its small amount of radioactive waste. However, Belgium has not fulfilled the requirements of the Directive until now and has therefore an open infringement for “failure to adopt a national programme compliant with the requirements of Directive 2011/70/Euratom”. Moreover, Belgium first has rejected to conduct a SEA. It has done so only in 2020¹.

Slovakia has a strategy for spent fuel and radioactive waste since 2008, it was updated in 2014. In 2015, another update was conducted due to requirements of Directive 2011/70/Euratom. While the first version of the strategy was subjected to a transboundary SEA in 2008, this did not happen with the updated version from 2015. Therefore the public did not have a chance to participate properly in the preparation of the national programme. In the national programme topics like costs and transparency/participation were included which were not part of the first version of the strategy.

Finland is the first EU member state which started the construction of a spent fuel repository at the Olkiluoto site. Finland is planning to use copper canisters – but according to information from the Swedish nuclear waste office MKG, independent scientific studies in Sweden and Finland have shown that the copper canister may in fact corrode long before the canister has fulfilled its purpose, which in turn would mean a failure of the main barrier at a point in time the waste is still hazardous.

Fulfilling the requirements of Directive 2011/70/Euratom is no guarantee for good practice in nuclear waste management!

Transparency: Please wait

By September 2015, only 16 member states had notified their programmes, draft programmes or overviews to the EC, even though the EC requested to receive officially approved national programmes. The EU Commission refused to publish those documents. In March 2016, Nuclear Transparency Watch (NTW, a European network for citizen watch on nuclear safety and transparency) requested access to all national programmes and national reports from the European Commission; this request was met in July 2016. All national programmes and national reports available at that time were made public by NTW: <http://www.nuclear-transparency-watch.eu/a-la-une/access-to-national-programmes-on-radioactive-waste-management.html>.

¹ see <http://www.nuclear-transparency-watch.eu/activities/transparency-and-public-participation/belgian-nuclear-waste-programme-sea-public-participation-too-little-too-biased.html>

One of the newly introduced features of the Directive 2011/70 however is article 10 (1) on transparency: “Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public.” To increase transparency it should be clarified from the European Commission that national programmes and national reports should be made publicly available right after they have been submitted to EC.

This is also important for future results of peer reviews according to Art. 14(3). These peer reviews will be organised as ARTEMIS missions by IAEA in close cooperation with EC.

The **second national reports** were to be submitted until 23 August 2018 to the EC. Until Dec. 2018, only five were available in the internet (in English language), and in June 2019 eight. According to the answer of Mr. Cañete of Feb 2019 to the questions of an Austrian MEP, all Member States but two have submitted the second national reports. It could be that they are only available in the original language, but research of the Joint Project NGOs did not result in those, either.

The following table shows the links to the second national reports that were available in English until June 2019.

Member State	Authority in charge	2nd National Report	Link 2nd national report
Croatia	State Office for Radiological and Nuclear Safety (Državnizavod za radiološku i nuklearnu sigurnost = dzrns)	Aug.18	http://cms.dzrns.hr/images/50000884/2.%20national%20report%202018.(1).pdf
Lithuania	State Nuclear Power Safety Inspectorate (VATESI)	2018	http://www.vatesi.lt/fileadmin/documents/leidiniai/en/National_Report_of_Lithuania_on_Implementation_of_Council_Directive_201170_2018.pdf
Germany	BMU	Aug.18	https://www.bmu.de/download/nationales-entsorgungsprogramm/
Netherlands	Authority for Nuclear Safety and Radiation Protection (Autoriteit Nucleaire Veiligheid en Stralingsbescherming = ANVS)	Aug.18	https://www.rijksoverheid.nl/documenten/rapporten/2018/08/29/national-report-for-the-council-directive-2011-70-euratom

Denmark	Danish Health Authority (Sundhedsstyrelsen)	2018	https://www.sst.dk/da/udgivelser/2018/council-directive-201170euratom-for-the-responsible-and-safe-management-of-spent-fuel-and-radioactive-waste-second-report-from-denmark
Sweden	Swedish Radiation Safety Authority (Strålsäkerhetsmyndigheten)	Aug.18	https://www.stralsakerhetsmyndigheten.se/contentassets/05f6a902c96d4ca79d859b029cb9da13/swedens-second-national-report-on-implementation-of-council-directive.pdf
Czech Republic	State Office for Nuclear Safety (Státníúřad pro jadernou bezpečnost = SUJB)	May 2018	https://www.sujb.cz/fileadmin/sujb/docs/zpravy/narodni_zpravy/EuroNZ_VP_RAO_2_1_A.pdf
Slovakia	UJD SK	Jul.18	https://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Slovak_national_report/\$FILE/Report%20of%20the%20SR%202018%20-%20EU%20SNF%20and%20RAW%20-%20EN.pdf

From the Joint Project countries, only the Czech Republic's second national report is available on the internet.

It was only in 2020 when the complete list of national programmes and reports was published on DG Energy's website after a formal request by NTW: https://ec.europa.eu/energy/topics/nuclear-energy/radioactive-waste-and-spent-fuel/national-programmes-management-spent-fuel-and-radioactive-waste_en?redir=1.

The quality of the second national report is not sufficient. In the second EC report it is summarised (p. 18): "Many Member States need to improve the quality of their national reports, notified to the Commission. Information missing, or repeated from the previous reporting cycle, as well as listing the

requirements instead of indicating progress “on the ground”, do not give the Commission the necessary information to report at EU level.”

Results of Peer Review Missions

Until 2023, the IAEA is planning to conduct in close cooperation with the EC expert missions under Article 14.3 of Directive 2011/70/EURATOM (so-called ARTEMIS missions). These missions monitor and assess the national waste management programmes and national frameworks of 23 member states. European countries: Five ARTEMIS missions have already been finalized between 2017 and 2018 in Poland, France, Bulgaria, Luxembourg and Spain. Four more missions were conducted in 2019 to Germany, Estonia and Latvia. In 2020, missions are planned to Romania and Cyprus.

Member states are free to choose if they want to publish results or not. France, Luxembourg, Bulgaria, Poland and Spain have published the results of the missions.

These reports can be found here:

- Bulgaria: <https://www.iaea.org/node/41657>
- Poland: <https://www.iaea.org/node/41655>
- France: <https://www.iaea.org/node/41656>
- Luxembourg: <https://www.iaea.org/node/41852>
- Spain: <https://www.iaea.org/node/41846>

The IAEA remarks in each mission report: *“The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety. Comparisons of such numbers between ARTEMIS reports from different countries should not be attempted.”* But when analyzing the reports it becomes obvious that good practices are rare – Bulgaria has not a single good practice-assessment, neither have Poland, Luxembourg or Spain.

The number of recommendations and suggestions may not be comparable, but nonetheless shows that there is indeed need for improvement on very different levels.

For example:

- Bulgaria, recommendation 4: “The Government should ensure that financial provisions for geological disposal are made.” This recommendation was made because the peer review team was informed that the cost for geological disposal was not included in the activities covered by the RAW fund.
- Poland, suggestion 1: “The Government should consider enhancing the transparency of the site selection process for the new surface facility by making publicly available the description of the process for involving the public and potential host municipality at the various stages of site selection”
- Poland, recommendation 3: “ZUOP should prepare up to date safety case for the Rózan Facility including a safety assessment and waste acceptance criteria and submit these to the regulator for review.” (ZUOP = organization responsible for the overall radioactive waste and spent fuel management in Poland)

Problems became visible in nearly all sectors that were assessed.

Limited public participation

The waste management programmes have to be subjected to a Strategic Environmental Impact Assessment procedure according to the SEA Directive, which applies to all planned programmes and plans

But in many member states the interested public was not able to participate adequately in the development of the waste management program due to the fact that no **Strategic Environmental Assessment** was conducted until now. In the Accompanying Report, table 1, a list of all countries is provided with the information if a SEA will be conducted/has been conducted. Out of 28 member states, nine will not conduct a SEA, for two there is no information available. The other 17 countries are labelled with “SEA yes”. But “SEA yes” does not mean that these countries have already finished their SEA. For example in Austria the SEA is ongoing, and Romania has not even started until now (July 2018). Poland only conducted a national SEA, but no trans-boundary SEA. Bulgaria did not conduct a SEA but another type of participation procedure. Among the countries refusing to conduct a SEA for their spent fuel and radioactive waste programmes there are many countries with NPPs (Finland, Netherlands, Slovenia, Sweden, UK).

A SEA is the only participation procedure that focuses on impacts for environment including human health and is legally binding.

Participation in the decision-making process is of uttermost importance for the interested public. The member states had to include measures for transparency and public participation in their national programmes in line with Art. 10. However, according to the EC Report almost half of the member states have not reported any mechanisms for participation in the decision-making process beyond public consultations. (EC Report, p. 16) This failure is not acceptable, and **the public has to be included in decision-making as well.**

Substantial changes to a national programme at a later point in time

The EC Report only refers to documents provided by the member states until September 2016. Therefore, a very important question was not discussed until now: How will substantial changes to national programmes be treated?

Some examples for changes with substantial consequences:

- In Germany’s national programme a timetable was given, including dates for site selection and start of operation for the final repository for spent fuel (2031 and 2050, respectively). But in July 2016 the final report of the German Commission on the Storage of High-Level Radioactive Waste was published with new dates for site selection and start of operation (2058 and 2083, respectively). The EC Report did not mention this very significant change of plans.
- In December 2016, the Hungarian parliament passed amendments to the Hungarian energy legislation which contained two paragraphs that directly undermine the independent position of the nuclear regulator HAEA to independently set and maintain, amongst others, the license conditions for radioactive waste management. It needs to be clarified if this substantial change in legislation in violation of the Nuclear Waste Directive. The EC Report did not mention this issue. On 15 Dec. 2016, in Budapest, the EC/DG Energy representative Mr. Garribba during the Joint Project event clearly answered the question on how to deal with substantial changes by explaining that according to the Nuclear Waste Directive the national programme would have to be re-submitted. Moreover, he stated that the EC

needed to agree on a definition of what change has to be understood as being substantial. The EC Report did not mention this issue.

- Another point of discussion during the SEA of the Czech Republic touched upon the question whether the construction of a new NPPs constitute a significant change for the national nuclear waste programme, because they would generate more radioactive waste and spent fuel capacity than was planned initially – the Czech side did not see this as a significant change according to the consultation report of the Austrian Ministry of Sustainability and Tourism².

Also ENSREG asked for a definition of the term “significant changes”: Article 13.1 requires MS to notify any “significant changes” to the Commission, but there is no definition or explanation of what “significant” means, or how these changes should be reported, which has caused confusion amongst MS.³

In Summer 2019 it could be verified with DG Energy, that a shift in timetables of 1 or 2 years did not result in the need to notify the Commission, if the target date for the final repository remains the same.⁴

Management without time frames and monitoring

Every management concept has to include timeframes and monitoring of progress. But the national programmes seem to be lacking such basic management instruments. The EC states: “[...] only about a third of the Member States have defined clear and detailed milestones and time frames for reaching their objectives [...]”, and “Most Member States have not clearly defined key performance indicators for monitoring progress towards implementation of the national programme [...]” (EC Report , p. 11).

The EC criticised that member states have too long timeframes or out-of-date schedules. Post-closure plans are missing in most member states, and measures for the preservation of knowledge loss after the closure of a disposal facility are by far not sufficiently.

In particular member states relying on the regional disposal idea gave no timeframes or indicators for this option at all.

Inventories and types of nuclear waste are incomplete

The EC report concluded that “a number of member states have not reported on all types of radioactive waste, particularly radioactive waste originating from decommissioning and new builds, future forecasts and institutional waste.” (EC Report, p. 7)

Waste containing naturally occurring radioactive material (so-called NORM) stems from uranium mining and milling is not categorized as radioactive waste in some countries. (Inventory Report, p. 9)

If the amount of waste is not known, capacities for storage and disposal, but also data on costs and financing cannot be reviewed properly. Therefore it is necessary that the EC issues strict guidelines to

²<http://www.umweltbundesamt.at/fileadmin/site/umweltthemen/umweltpolitische/SUP/Tschechien/REPO637.pdf>, p. 91

³http://www.ensreg.eu/sites/default/files/attachments/ensreg_wg2_ws_2016_-_summary_report.pdf, p. 4

⁴ Correspondence with DG Energy for the Czech delays in the national waste management programme.

include all types of radioactive waste incl. NORM, waste from decommissioning and new builds, and also future forecasts.

Moreover, the scope of the Directive should be broadened to include military waste.

Let sleeping dogs lie? Radioactive waste dumping excluded

In the Inventory Report, table 1.8 lists what activity has been disposed of into the Sea by several countries before 1975. But there is no further mentioning of this topic. Many of the dumped drums could and should be recovered. While the Nuclear Waste Directive does not explicitly cover this legacy in its scope, the EC is aware of the problem, as Mr. Garribba informed us in 2016.

If the Nuclear Waste Directive's core message is meant seriously, the ultimate responsibility for these drums still lies with the member states which have dumped them – and therefore they are responsible for recovering as many as possible.

Limits of ultimate responsibility?

In the first reading of Directive 2011/70/Euratom EC and Parliament wanted a complete export ban to non-EU countries. In the final version export to non-EU countries was allowed. Art 4(2) stipulates that “the ultimate responsibility for the safe and responsible disposal of exported materials shall remain with the Member State”. Spent fuel and radioactive waste can be shipped to another member state or a third country for reprocessing and processing, while the ultimate responsibility remains at the member state from which the material originated.

Of special interest is the question how this ultimate responsibility can be proven if nuclear waste is exported to the Russian reprocessing facility Mayak which is infamous for causing huge environmental damages. Also the Brexit will lead to the situation that nuclear waste from member states will be stored in a third country whose safe management has to be proven.

EC criticised that not all member states with existing agreements for shipments have notified those to the EC (EC Report, p. 12) and that the majority of member states are fully aware of the fact that the ultimate responsibility remains with them after shipment. (Accompanying Report, p. 23) Agreements have to be notified to the EC.

The Hungarian SEA showed that export contracts agreed before the Directive 2011/70 came into force are not covered by the Nuclear Waste Directive; thereby contradicting the purpose of the Waste Directive, that the ultimate responsibility should remain with the member state of origin. The scope of the Nuclear Waste Directive should be broadened to cover this issue.

The multinational disposal as loophole

The assessment of the national reports showed that **many states are setting their hopes on a multinational (regional, shared) disposal instead of developing national plans**. Also the European Commission seems to support this idea as was addressed by members of DG Energy at several events. So far, the multinational repository might serve as like a loophole at best, but not as a serious option. To verify the actual status the Joint Project conducted in 2018-2019 a survey among some member states that are or were formerly interested in a multinational disposal. After researching of websites and literature some authorities received our questionnaire and a few additional questions.

The following member states answered our questions: Austria, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovenia.

The most important results are:

- Member states are looking for different types of multinational repositories. Slovenia is only interested in a multinational repository for its spent fuel and high-level waste, while Austria is thinking about sharing a disposal for LILW (Low and Intermediate Level Waste).
- On its website the European Repository Development Organisation (ERDO) informs that not only shared repositories but also shared conditioning facilities would be of interest.
- The search for multinational repositories is taking place not only in the EU, but worldwide.

Therefore, a multinational repository could be not only a single facility, but different facilities that are located on different sites, in the EU and/or outside.

- No country has volunteered to host a site for nuclear waste from other countries until now.
- While the Working Group of the European Repository Development Organisation (ERDO) until recently had ten members (Austria, Ireland, Netherlands, Poland, Slovakia, Bulgaria, Italy, Lithuania, Romania, Slovenia) this list shrank to only six actively participating members in 2017: Austria, Denmark, Italy, Netherlands, Poland and Slovenia. According to information from the Ministry of Energy in 2018, Poland has recently left the ERDO-WG “due to lack of progress of its work”. In 2019, Poland was still listed as a member even though this is no longer true. Romania was a founding member; but now it is only observer because the ERDO-WG is not operated by a relevant international organisation.

This is an indicator that trust in the shared disposal solution is decreasing.

- In its report the EC criticised that some member states have provided plans for such a regional option only. “While the Directive allows shared disposal solutions to be developed, a policy based only on this option, without a clear path towards implementation, cannot be regarded as being in line with the aims of the Directive.” (EC Report 2017, p. 9). On top of this they presented this option without timeframes, milestones, costs, plans for site selection, legal requirements etc.

This leads to the conclusion that member states regard a regional solution only as a loophole serving to formally fulfil the Nuclear Waste Directive, though it is an utterly unrealistic option.

- On the website of ERDO first only a few documents were published, after an update of the website more documents can be found online. Involved states mostly do not provide any detailed information. Nevertheless, opening up for public participation in some ERDO events would help to inform about the state of debates.
- How public participation in case of a multinational repository will be secured is utterly unclear. Until now, no debate with the public has been initialized.

Contrary to the sense of the Directive, transparency and especially participation are not taken into account sufficiently.

In its last meeting in November 2019 in Zagreb⁵, the ERDO Working Group came to the conclusion “that the WG needs to evolve so that it can be more efficient in both its promotional role (especially, interacting on an equivalent level with other organisations) and in being able to initiate and manage project.” Six projects are listed in the notes of the Zagreb meeting, in the next ERDO meeting in June 2020 in Rome the proposals for these projects will be discussed:

- Promote ‘dual-track’ to the public, media, politicians and liaise with national WMOs
- Manage the three current ERDO shared projects: Pre-Disposal Project – Legacy Waste Characterization (LWC); Borehole Disposal Project; MNR (multinational repository) Costs and Financing project
- Develop a single, common ERDO inventory
- Develop a shared solution to conditioning, packaging, storing and disposing of a specific ERDO waste stream
- Develop a set of GDF designs for the ERDO inventory

After years of low activity and waiting for funding, the ERDO WG seems to be ready to get more active. If this is a realistic approach remains to be seen. In the Zagreb notes, there is no information on funding of these projects, and the projects have a very extensive scope.

Even the EC was not successful yet to establish a common inventory where every member state used the same classification scheme and provides harmonized inventory projections: “Furthermore, the inventory projections for the scope of the national programmes, including decommissioning waste, institutional waste and waste from remediation activities, and the demonstration of sufficient capacities for storage and disposal, should be improved.” (second EC report, p. 18)

In a IFNEC webinar from July 2020 the protagonists of the multinational repository idea focused on the “win-win-win situation” of a shared solution and promoted advantages for the countries engaging in a shared solution, the global nuclear safety and security regime and for any host country. Nevertheless, such “wins” were only discussed in theory, as no country has stepped forward yet to consider the possibility of accepting spent fuel from another country for disposal as Alan Brownstein reported.

Costs and financing

In the report the EC recalls one of the requirements of the Directive, Article 4 (3): The costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials;

and

“Cost assessment, financing mechanisms and available resources Article 12(1)h of the Directive requires Member States to provide cost assessments for spent fuel and radioactive waste management in their national programmes, including assumptions used and profile over time.”

“Although most Member States have estimated the global costs of the actions that are included in their national programmes, in the majority of the cases this information is not sufficient to conclude on the completeness and accuracy of the figures reported. Some Member States need to demonstrate ownership of the cost assessments of their national programmes, as they appear

⁵ <http://www.erdo-wg.com/documents/Note%20of%20ERDO-WG%20Zagreb%20Nov%202019.pdf>

currently to rely mostly on the spent fuel and radioactive waste generators' cost assessments." (EC Report, p. 15)

This summary of EC confirmed what is widely been known by independent experts and suspected by the public: many member states do not have reliable data about the future costs of their nuclear programmes' back-end and certainly do not have the financial means to cover them.

Moreover, some member states report limitations in their funds which could lead to non-adequate human resources for the long-term nuclear waste management (EC Report, p. 14)

The key question – who will pay for waste management once the dedicated funds have run dry, in particular once the waste generators after decommissioning of the last NPPs will have stopped their contributions into those funds. There will hardly be another solution but making the taxpayers pay.

Next steps of EC

The EC Report's conclusions included four supporting measures the EC intends to provide to member states:

1. The EC stands ready to support member states in discussing options, esp. shared solutions, and public participation in the decision-making process.
2. The EC will compile an overview of total costs and how member states should ensure their financing.
3. The EC will explore possibilities for the harmonization of inventory reporting.
4. The EC sets hopes in the peer reviews and wants to promote open and transparent dialogue and facilitate good practices and knowledge.

These steps are certainly necessary, but by far not enough. There is no mentioning of sanctions if a member state does not fulfil its obligations. Critical topics like the definition of "substantial changes" are not discussed, neglected topics like the nuclear waste dumping in the Sea have not been brought on the agenda, even if Mr. Garribba has announced that the EC will look into this (Joint Project event in Budapest on 15 Dec. 2016).

The EC is going to present its report to the Council and the European Parliament (EP). But it is not clear when this will happen and what will happen there.

The next national reports were due in August 2018, three years after the first national reports. We were planning to assess them, but as they were not published in time, this was not possible until summer 2019.

Conclusions on implementing the Directive 2011/70/Euratom

Three major types of problems become obvious when analysing the implementation of Directive 2011/70/Euratom:

1. The Directive is not precise enough in some topics; other topics are not even mentioned, such as the nuclear waste dumped in the Sea. Therefore it has to be amended.
2. Member states do not fulfil the Directive. Sanctions and more support are needed. This is proven by the high number of infringement procedures (out of 28 member states only three managed to avoid infringement; three more were able to fulfil the requirements behind schedule). Also the EC Report criticises that only a part of the member states fulfilled the demands, others simply published some claims without proof or nothing at all.
3. The public cannot participate in all national programmes due to the fact that many Member States do not conduct a SEA. Also participation in activities for a multinational repository is not enabled yet.

We therefore ask EC to inform the interested public regularly on progress of negotiations with the member states about lacking and inadequately provided information.

- Transparency and participation should also be included in the discussions on multinational repository solutions – even if they seem to be unrealistic today.
- A Strategic Environmental Assessment (SEA) is the most effective means of public participation because it is comprehensive and legally binding. But in many countries the SEA is still pending or not foreseen at all. The EC doesn't agree on a common view on the SEA – DG Environment takes another view than DG Energy. **We ask the EC to promote SEAs in the implementation of the Nuclear Waste Directive.**
- The public has to be included in **decision-making**.
- Member states need to identify timeframes, milestones and key performance indicators properly. **We ask EC to define and implement stronger consequences of non-compliance**, otherwise the national programmes are not worth the paper they are written on.
- It is necessary that EC **gives strict guidelines to include all types of radioactive waste incl. NORM, waste from decommissioning and new builds, and also future forecasts**. The scope should also include military waste.
- **Legacies of nuclear waste** that has been dumped into the Sea and nuclear waste that has been **exported to third countries under agreements that are not covered** by the Waste Directive should be included in the scope. The **Brexit** could shift the responsibility for reprocessing waste and plutonium from member states back to the UK. Not dealing with these topics will undermine a key principle of the Waste Directive that every member state is ultimately responsible for its nuclear waste – which should include all legacies and former exports.
- The **multinational disposal solutions** which are favoured by some member states and the EC need to receive a reality check. They are highly unrealistic solutions and unless concrete projects are presented, they shouldn't be accepted as a solution under the radioactive waste management Directive. Until now, no member state has stepped forward to volunteer a site

in its country. It is therefore essential that **every member state also develops a national final disposal instead of relying solely on a vague multinational solution.**

- Data on costs and financing have to be provided for every step in the waste management programme, including decommissioning, new build, research reactors and institutional waste and of course also costs for the past-closure period. **EC has to give strict guidelines for the necessary data and methods to be applied for defining them. Data not provided yet need to be submitted within stringent timelines.**

Moreover, the interested public should be offered the opportunity to participate in discussions concerning the Nuclear Waste Directive's implementation.

In the Joint Project, European NGOs and research institutions cooperate since 2003 on safe and sustainable energy issues with a focus on anti-nuclear activities in Central and Eastern Europe. For more information see www.joint-project.org/.



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