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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

**on the evaluation and implementation of the EU nuclear decommissioning assistance
programmes in Bulgaria, Slovakia and Lithuania**

{SWD(2018) 344 final}

1 INTRODUCTION

When they acceded to the EU, Bulgaria, Slovakia and Lithuania committed to shutting down eight nuclear reactors before the end of their scheduled lifetime:

- Kozloduy nuclear power plant in Bulgaria (units 1 to 4);
- Bohunice V1 nuclear power plant in Slovakia (2 units); and
- Ignalina nuclear power plant in Lithuania (2 units).

The EU itself committed to providing financial assistance for safely decommissioning those reactors.

Two Council Regulations^{1,2} were adopted on 13 December 2013 to provide support to these decommissioning programmes in the Multiannual Financial Framework (MFF) 2014-2020, continuing the assistance provided in previous periods.

This report summarises the conclusions of the mid-term evaluation of the EU nuclear decommissioning assistance programmes (hereinafter the programmes) in Bulgaria, Slovakia and Lithuania; it also reviews the progress made in 2017 and in previous years. The report fulfils the reporting requirements of both Articles 6 and 9 of the Regulations.

During the MFF 2014-2020, the Commission has reported three times on this subject^{3,4,5}. The present report, as set out in the mid-term evaluation roadmap⁶, analyses and presents:

- to what extent the Kozloduy, Bohunice and Ignalina programmes have achieved their objectives in terms of results and impacts;
- the efficiency of the use of resources; and
- EU added value.

¹ Council Regulation (Euratom) No 1368/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programmes in Bulgaria and Slovakia, and repealing Regulations (Euratom) No 549/2007 and (Euratom) No 647/2010 (OJ L346, 20.12.2013, p. 1) & correction (OJ L8, 11.1.2014, p. 31).

² Council Regulation (EU) No 1369/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programme in Lithuania, and repealing Regulation (EC) No 1990/2006 (OJ L346, 20.12.2013, p. 7) & correction (OJ L8, 11.1.2014, p. 30 & OJ L121, 24.4.2014, p. 59).

³ Report from the Commission to the European Parliament and the Council on the implementation of the work under the nuclear decommissioning assistance programme to Bulgaria, Lithuania and Slovakia in 2016 and previous years — COM(2017) 328 final.

⁴ Report from the Commission to the European Parliament and the Council on the implementation of the work under the nuclear decommissioning assistance programme to Bulgaria, Lithuania and Slovakia in 2015 and previous years — COM(2016) 405 final.

⁵ Report from the Commission to the European Parliament and the Council on the implementation of the work under the nuclear decommissioning assistance programme to Bulgaria, Lithuania and Slovakia in the period 2010-2014 — COM(2015) 78 final.

⁶ http://ec.europa.eu/smart-regulation/roadmaps/docs/plan_2016_249_ndap_evaluation_en.pdf.

As per Article 9 of the two Regulations, the evaluation also addresses whether there is a need to modify the specific objectives and implementation procedures⁷ described in Article 2(2) and Article 7 respectively.

It is important to note that the current Regulations restrict the scope of the programmes to decommissioning activities only, excluding mitigation measures in the energy sector that were supported in previous periods. Such a shift from financing a complex mix of energy and decommissioning projects towards a single and focused effort on decommissioning programmes underpinned by approved detailed decommissioning plans was a key prerequisite for increased effectiveness and efficiency.

2 OBJECTIVES

The two Regulations pursue the general objective of helping the respective Member States to reach safely the decommissioning end state while maintaining the highest safety standards.

In all three cases, the programmes are properly defined in terms of scope, budget and planning, with end dates scheduled beyond the current financing period. The disposal of spent fuel and radioactive waste in a deep geological repository is not included in the scope of the programmes, and has to be developed by each Member State in its national programme for the management of spent fuel and radioactive waste as required by the relevant Directive^{8,9}.

The Regulations also define the specific objectives:

All three programmes

- performing dismantling in turbine halls and auxiliary buildings;
- safely managing the decommissioning waste in accordance with detailed waste management plans.

Kozloduy and Bohunice programmes

- dismantling of large components and equipment in the reactor buildings.

Ignalina programme

- defueling of the reactor core of unit 2 and the reactor fuel ponds of units 1 and 2 into the dry spent fuel storage facility;
- safely maintaining the reactor units.

⁷ Commission Implementing Decision of 7.8.2014 on the rules of application for the nuclear decommissioning assistance programmes for Bulgaria, Lithuania and Slovakia for the period 2014-2020 — C(2014) 5449 final.

⁸ Council Directive 2011/70/Euratom of 19 July 2011 on establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, OJ L199, 2.8.2011, p. 48-56.

⁹ 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 — C(2017) 236 final.

The implementation procedures⁷ establish the baseline for each decommissioning programme up to the respective end state and provide concrete targets for each specific objective.

3 TOOLS

The Commission has based its mid-term evaluation mainly on:

- (1) An external study¹⁰ carried out in 2017, which included in-depth desk research, interviews with targeted stakeholders, field visits, an analysis of the public consultation and an additional targeted consultation, a benchmarking exercise with comparable instruments, and an expert panel.
- (2) An external study¹¹ carried out in 2016, which included an evaluation of the global cost estimates of the programmes, an overall risk assessment, an analysis of the national funds and other sources, and an analysis of the robustness of the State budgets.
- (3) A thematic verification of procurement procedures carried out by an external contractor.
- (4) The internal assessment of the results of periodic monitoring action conducted by the Commission and the documentation provided by stakeholders.
- (5) The Special Report¹² of the European Court of Auditors.

4 ASSESSMENT OF RELEVANCE, COHERENCE, EFFECTIVENESS, EFFICIENCY AND EU ADDED VALUE

This report assesses whether the programmes are on track to accomplish their intended objectives and includes recommendations on how to improve their implementation. The report is accompanied by a staff working document that provides factual information and analysis.

The decommissioning operators are all fully working on decommissioning activities. Slovakia has advanced the most and is currently carrying out Dismantling & Decontamination (D&D) in the reactor building at the Bohunice site. D&D is well advanced in the auxiliary buildings at the Kozloduy and Ignalina sites. In addition, the key safety-related project in Lithuania to remove the spent nuclear fuel from the RBMK reactor (similar to that used in Chernobyl) is now well underway. Defueling of Unit 2 reactor core was finalised on 25 February 2018 (i.e. 15 months ahead of schedule).

The programmes are generally on track to achieve the specific objectives of the Regulations with the funding provided in this MFF. A clear trend towards increased efficiency has been observed throughout the monitoring activities, as confirmed by

¹⁰ ‘Support to the mid-term evaluation of the Nuclear Decommissioning Assistance Programmes’ Final report, EY, 2017.

¹¹ ‘Nuclear Decommissioning Assistance Programme (NDAP) — Assessment of the robustness of the financing plans considering the economic-financial-budgetary situation in each concerned Member State and of the relevance and feasibility of the detailed decommissioning plans’, Deloitte, NucAdvisor, VVA Europe, A study prepared for the European Commission DG Energy, 2016.

¹² ECA Special Report 22/2016 — *EU nuclear decommissioning assistance programmes in Lithuania, Bulgaria and Slovakia: some progress made since 2011, but critical challenges ahead.*

independent experts. In some areas, the risk of delays needs further mitigation and close follow-up.

The evaluation was conducted against five main criteria: relevance, coherence, effectiveness, efficiency and EU added value.

Relevance

- (1) As far as the MFF 2014-2020 is concerned, the general and specific objectives of the programmes remain highly relevant for responding to the needs that were identified when the MFF was prepared (i.e. progress in decommissioning past the point of no return and accomplishment of enhanced safety).

Coherence

- (2) The Regulations are coherent with EU policies that aim to ensure the highest level of nuclear safety. The programmes' legal basis is designed to be fully consistent with the Euratom Treaty's *acquis*, in particular in the area of nuclear safety^{13,14} and the management of spent fuel and radioactive waste⁸. This is without prejudice to the exceptional nature of EU funding resulting from the specific historical events that underpin the programmes. EU support ensured that immediate dismantling strategies were pursued and allowed for the level of radiological hazard to be reduced more rapidly and prevented undue burden from being transferred to future generations, while partially covering the liabilities of the Member States.
- (3) By fulfilling ex-ante conditionalities, the Member States shaped the programmes' scope. As a result, the long-term management of spent fuel and high level radioactive waste has been explicitly excluded from the programmes and remains under the financial responsibility of the Member States in line with Council Directive 2011/70/Euratom.
- (4) The programmes are also consistent with EU policies in areas such as environmental and social protection.

Effectiveness

- (5) To date, progress has been made in all three programmes, and long-standing issues that were carried over from the previous financial framework were eventually resolved. Key infrastructures for managing spent fuel and radioactive waste either became operational or are in the final stages of commissioning, injecting fresh momentum into decommissioning activities.
- (6) In all three sites, D&D in the turbine halls and auxiliary buildings has progressed well. The decommissioning operators have successfully managed to identify and remove bottlenecks in the processes.

¹³ Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, OJ L 172, 2.7.2009, p. 18-22.

¹⁴ Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, OJ L 219, 25.7.2014, p. 42-52.

- (7) Progress has been made on D&D in the reactor buildings (controlled area) at the three sites, consistent with the respective programme schedules and end dates.
- (8) The main outputs of decommissioning programmes are materials to be either reused or recycled and conditioned radioactive waste to be either stored temporarily (interim waste store) or disposed of. For the three programmes, these outputs have been lower than planned to date for several reasons: (i) inherent uncertainties in the characterisation of the plants caused the target values to be overestimated; (ii) lower input to waste management facilities from dismantling activities; and (iii) technical challenges related to specific legacy waste streams. Nonetheless, the waste management processes have proved to be generally capable of providing the necessary productivity throughput with the highest safety standards.

Efficiency

- (9) At the outset of the current MFF, the three Member States established detailed decommissioning plans to fulfil the ex-ante conditionalities. The overall cost estimates of the programmes were therefore included and updated with respect to previous issues. In 2016, the Commission finalised its assessment of these new plans and concluded that they were complete, relevant, comprehensive and that the overall cost estimates were generally appropriate — as supported by the results of an independent review¹¹ — provided that contingencies are increased to a level of 16 %. Both the limits of the scope of EU support and the baseline costs have therefore been clearly set in order to monitor cost-effectiveness.
- (10) The analysis shows that the programmes have generally been implemented in a cost-effective manner in the current financial framework, and that the programming process has a much higher level of maturity.
- (11) Financial benchmarking of decommissioning activities remains a challenge worldwide. This limitation is reflected in the difficulties involved in comparing the three programmes with each other and with other decommissioning programmes despite the wider use of the International Structure for Decommissioning Costing¹⁵.
- (12) The analysis also identified the main factors that influence cost-effectiveness:
 - The governance in place since 2014 has steered the programmes towards increased efficiency, and organisational changes have had a positive impact on cost-effectiveness.
 - Increasing levels of national contributions have allegedly supported greater accountability and economic self-interest in the Member States. However, there was no evidence that a higher share of national contributions at the level of individual projects corresponds to higher performance.
 - Timely implementation is key to cost-effectiveness. The removal of roadblocks carried over from the previous financial framework and the recovery, when possible, of accumulated delays has contributed to cost-effectiveness (e.g. resolution of long-standing contractual disputes in

¹⁵ International Structure for Decommissioning Costing (ISDC) of Nuclear Installations, OECD 2012, NEA No 7088.

Ignalina). Furthermore, the earned value management¹⁶ methodology and the set of key performance indicators equipped the programmes' stakeholders with a toolkit to anticipate the impact of delays, with the prospect of mitigating or avoiding negative effect on costs (see for example the info box on the Bohunice programme).

- Labour costs are a substantial and inherently time-dependent component of decommissioning costs. When labour is provided mainly by the decommissioning operators' staff, incurred delays may impact on the cost, especially when they affect the critical path, i.e. the programme's end date. To mitigate this risk, externalisation strategies provide adequate flexibility to adjust needs and efforts. The implementation of such strategies is well developed in Bohunice and is progressing in Ignalina, where a structured 'make or buy' plan was established in 2017.
- On the other hand, the deployment of plant staff (who were employed during the operational life of the reactors) is a good knowledge management practice as it ensures that relevant experience is carried over to reduce the time of implementation. However, this practice entails the risk of having too many staff and limiting the flexibility of the organisations, especially where alternative opportunities are not available.
- Some technical challenges remain intrinsic to the decommissioning process, and the decommissioning market is still in a developmental stage. This has led to instances of setbacks among contractors.
- Cost increases have been noted with regard to modifications in legislation, and delays have increased during regulatory approval processes in all three countries. Safety decisions in the nuclear domain must be made independent of specific economic factors; the decommissioning operators should therefore work with regulators to anticipate such developments in the regulatory domain and adequately account for regulatory processes in project planning. While some good practices were identified in Lithuania and Slovakia, this issue has impacted the Kozloduy programme.
- Bearing in mind that only 3 out of more than 90 reactors shut down in Europe have been fully decommissioned, the programmes initially had to seek increased efficiency mostly through learning by doing. In this respect, knowledge sharing between the three programmes has been a key tool towards efficiency during the current MFF. The Commission has continually encouraged stakeholders to share good practices, in particular between Slovakia and Bulgaria due to the similarity of their plants (VVER reactors).

EU added value

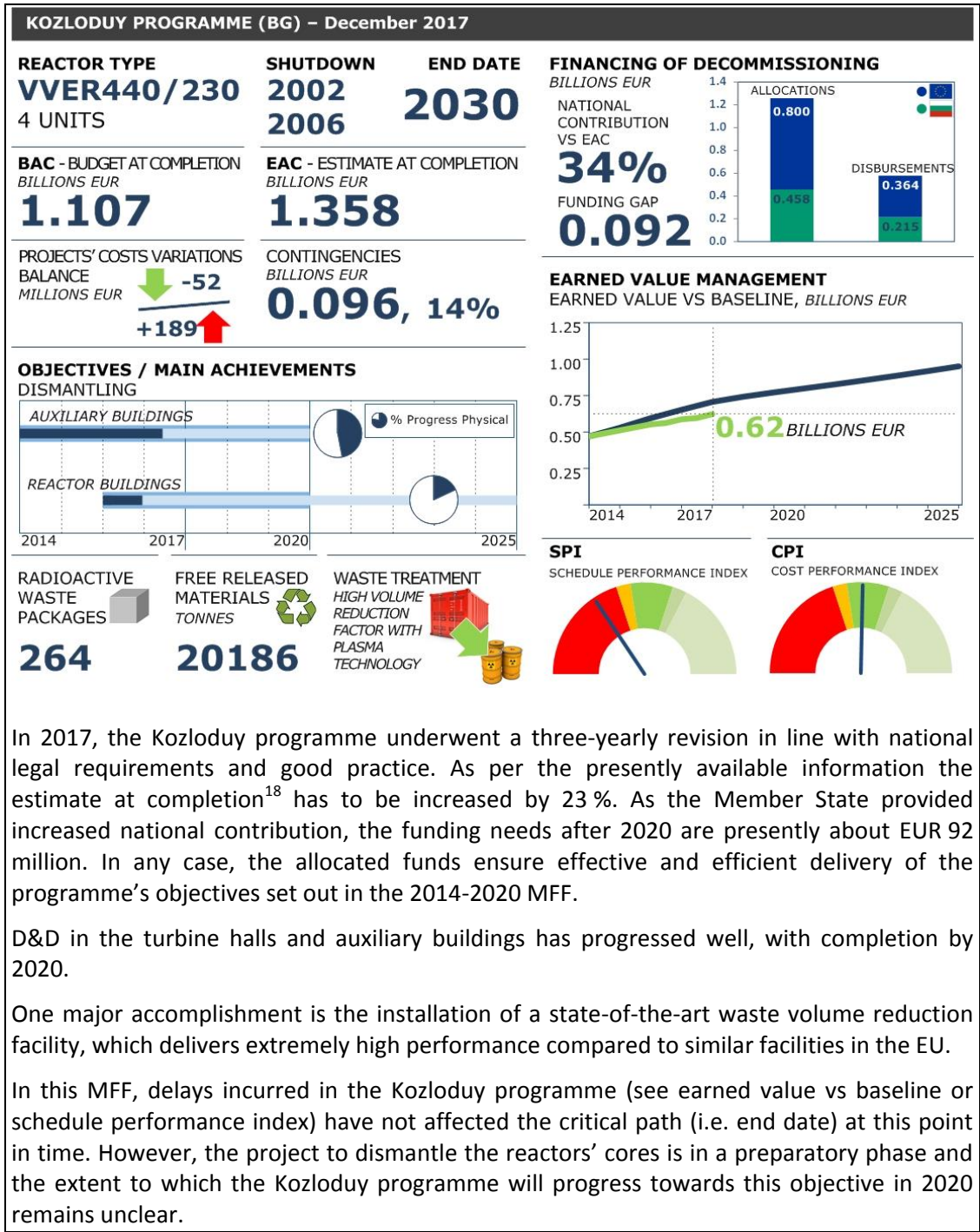
(13) The added value of the programmes, as it has historically been perceived, naturally declines as implementation advances. From their beginning, the programmes' added value has been cast in terms of nuclear safety and financial mitigation.

- Beyond 2020, estimated financial gaps in Bulgaria and Slovakia do not endanger finalisation of the programmes by the planned end dates.

¹⁶ A measure of progress providing the value of work performed expressed in terms of the budget assigned to that work.

- In Lithuania, the financing gap beyond 2020 has also decreased thanks to the further engagement of Lithuania. However, the gap remains sizeable (EUR 1.331 billion).
 - While the three Member States' economies are clearly capable of absorbing the financial needs through national financial resources, the impact of doing so would be more significant for Lithuania (0.3 % - 0.5 % of its annual State budget).
 - The programmes have contributed to a substantial decrease in the level of radiological hazard and risk to the general public. The most important nuclear safety related risks have been eliminated in Slovakia and Bulgaria. In Lithuania, removal of spent fuel from reactor buildings is ongoing — by the end of this process (scheduled for completion by 2022, but financed under the current MFF), the residual radiological hazard will be substantially reduced by orders of magnitude and will be represented mainly by the irradiated graphite cores.
- (14) The EU nuclear industry is firmly moving into a new phase characterised by increased activities in the back-end of the lifecycle. However, only a few decommissioning programmes have made significant progress, including the Kozloduy, Ignalina and Bohunice programmes. It is therefore apparent that the decommissioning industry has not yet reached full maturity. In this context, EU support to the decommissioning programmes in Bulgaria, Slovakia and Lithuania has provided additional value to the entire EU decommissioning industry in terms of knowledge and expertise. Knowledge sharing and capitalisation aspects of the programmes therefore serve as a basis for ensuring continued EU added value enhancing this way nuclear safety. This process might be further exploited in managing irradiated graphite, which is a technical challenge worldwide¹⁷.

¹⁷ No power reactors with graphite cores have been dismantled yet, although many of them were shut down several years ago. Besides Lithuania, other Member States have to undertake similar projects as they own significant inventories of irradiated graphite: United Kingdom (86 000 t), France (23 000 t), Lithuania (3 800 t), Spain (3 700 t), Italy (3 000 t), Belgium (2 500 t), Germany (2 000 t).



In 2017, the Kozloduy programme underwent a three-yearly revision in line with national legal requirements and good practice. As per the presently available information the estimate at completion¹⁸ has to be increased by 23%. As the Member State provided increased national contribution, the funding needs after 2020 are presently about EUR 92 million. In any case, the allocated funds ensure effective and efficient delivery of the programme’s objectives set out in the 2014-2020 MFF.

D&D in the turbine halls and auxiliary buildings has progressed well, with completion by 2020.

One major accomplishment is the installation of a state-of-the-art waste volume reduction facility, which delivers extremely high performance compared to similar facilities in the EU.

In this MFF, delays incurred in the Kozloduy programme (see earned value vs baseline or schedule performance index) have not affected the critical path (i.e. end date) at this point in time. However, the project to dismantle the reactors’ cores is in a preparatory phase and the extent to which the Kozloduy programme will progress towards this objective in 2020 remains unclear.

¹⁸ The estimate at completion is the expected total cost of completing the programme work, which is calculated based on performance to date.
The budget at completion is the total planned value of the programme (baseline).

BOHUNICE PROGRAMME (SK) – December 2017

REACTOR TYPE
VVER440/230
 2 UNITS

SHUTDOWN
 2006
 2008

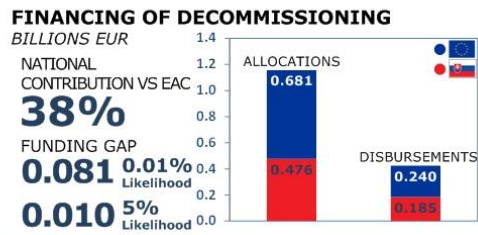
END DATE
2025

BAC - BUDGET AT COMPLETION
 BILLIONS EUR
1.245

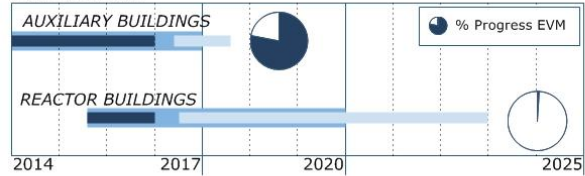
EAC - ESTIMATE AT COMPLETION
 BILLIONS EUR
1.238

PROJECTS' COSTS VARIATIONS
 BALANCE
 MILLIONS EUR
 -100
 +96

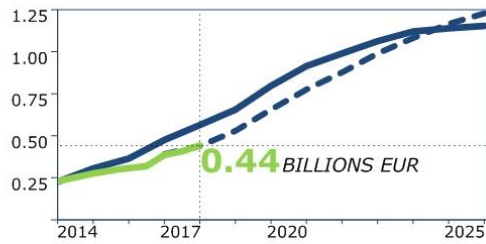
CONTINGENCIES
 BILLIONS EUR
0.110 99.99%
 Level of Confidence
15%



OBJECTIVES / MAIN ACHIEVEMENTS
 DISMANTLING



EARNED VALUE MANAGEMENT
 EARNED VALUE VS BASELINE, BILLIONS EUR



RADIOACTIVE WASTE PACKAGES
536

FREE RELEASED MATERIALS
 TONNES
86122

DECONTAMINATION OPTIMISATION OF STAFF FOR REACTORS DISMANTLING
300
30

SPI SCHEDULE PERFORMANCE INDEX
CPI COST PERFORMANCE INDEX



The Bohunice programme has reached a high level of maturity: the estimate at completion for the overall programme has been falling slightly and is supported by a state-of-the-art plan for risks and contingencies; this provides a high level of confidence in the estimates. The balance of variations in cost estimates at project level also shows that initial global estimates were sound despite inherent uncertainties in such complex programmes.

D&D in the turbine halls and auxiliary buildings is winding down; the last task, i.e. dismantling the cooling towers (see image as of November 2017), is well underway, to be completed in 2018.



Important D&D work has also been performed in the reactor building, despite technical challenges encountered in the early stages. As reported in previous communications³, decontamination of the reactors' primary cooling circuits has experienced delays, which could have impacted the decommissioning end date. However, the governance setup has proven to be apt at ensuring effectiveness and efficiency thanks to the early detection of issues (monitoring, key performance indicators and earned value management) and prompt identification of mitigation measures. As a result, the activity was put back on track and the decommissioning operator revised the programme's final phases, which avoided any impact on the duration; the initial end date (2025) is currently being upheld. This is reflected in the earned value parameters and indexes (the dashed line plots the new baseline and is based on the merger of three upcoming final decommissioning projects).

To date, the reactors' cooling circuits have been fully decontaminated. This process meant that fewer staff were needed to dismantle the reactors and that the programme end date in 2025 is being adhered to.

IGNALINA PROGRAMME (LT) – December 2017

REACTOR
RBMK-1500
 2 UNITS, 3000 MWe

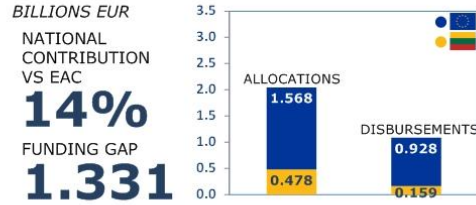
SHUTDOWN
2004
2009

END DATE
2038

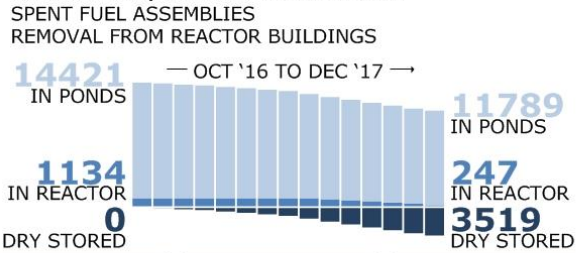
BAC
 BUDGET AT COMPLETION
 BILLIONS EUR
3.377

EAC
 ESTIMATE AT COMPLETION
 BILLIONS EUR
3.377

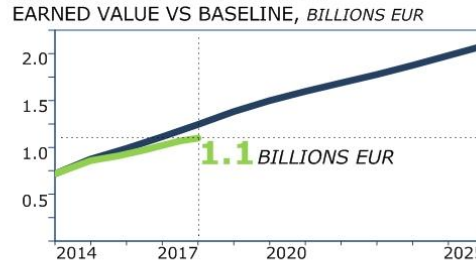
FINANCING OF DECOMMISSIONING



OBJECTIVES / MAIN ACHIEVEMENTS



EARNED VALUE MANAGEMENT



INTERNAL EQUIPMENT
119000
 TONNES METAL

16x

DISMANTLED MATERIALS
 PROGRESS

44000
 TONNES

FREE RELEASED MATERIALS
 PROGRESS

36200
 TONNES



Given the reactor type, the Ignalina programme is a first of a kind challenge. The budget estimate at completion of the programme has been stable since 2014. The financing gap beyond 2020 is reduced given the recent Lithuanian government’s political commitment to maintaining a minimum level of national contributions at 14 % for the programme’s entire duration. The presently allocated funds ensure effective and efficient delivery of the programme’s objectives set out in the 2014-2020 MFF.



The main accomplishment is the removal of spent nuclear fuel from the reactor buildings. This process started in the fourth quarter of 2016 and has progressed in line with plans; it could be completed earlier without endangering the operational safety. The image shows the stored spent fuel casks in the new interim storage facility as of October 2017.

D&D in the turbine halls and auxiliary buildings progressed well. Large volumes of equipment were dismantled, maximising any possible options for

reuse and recycling.

In this MFF, delays incurred in the Ignalina programme (see earned value vs baseline or scheduled performance index) have not affected the critical path (i.e. end date) at this point in time. However, the project to dismantle the reactors’ cores is in a preparatory phase and represents a risk for the programme’s timely development post-2020.

5 GOVERNANCE ASSESSMENT

The governance setup has ensured effective and efficient implementation of the programmes. The key success factors include clear definitions of roles and responsibilities as well as a strengthened monitoring framework.

Roles and responsibilities

Each Member State appointed a programme coordinator (deputy minister/state secretary) responsible for programming, coordinating and monitoring the decommissioning programme. This ensured comprehensive programme oversight at national level and improved the Commission's access to information in its supervisory role.

The analysis has also identified areas for further improvement:

- increased involvement of the Member States as financial stakeholders for increased ownership together with greater accountability of the decommissioning operators;
- the timeliness of the annual programming/reporting cycle should be enhanced by streamlining procedures.

Monitoring framework

Committees with monitoring and reporting functions exist for each Member State, co-chaired by a Commission representative and the programme coordinators. The committees are equipped with a dashboard of key performance indicators and detailed targets so they can steer the programmes through a well-informed assessment and decision-making process. The detailed objectives and indicators (proposed by the three Member States and approved by the Commission⁷) provided quantitative information to measure progress towards the Regulations' specific objectives. Moreover, the earned value management methodology has enhanced Commission supervision of both effectiveness and efficiency, with a positive trickle-down effect at national level.

This evaluation analysis now provides an opportunity to revise the performance indicators in order to:

- take stock of accomplishments and recalibrate the indicators to reflect actual progress over the coming periods;
- make it easier to compare the programmes' performance; and
- ensure effective monitoring until completion of all multi-annual projects funded in the current period.

Co-financing

The legal basis for EU financial support does not define the due level of national contributions. As a result, the co-financing practice continued in line with pre-accession deals. While this approach has created uncertainties, in the present financial framework national contribution levels have increased to the amounts reported in Tables 1 and 2. These show disbursements and established funds cumulated since the start of the decommissioning assistance programme.

National contributions are generally within the ranges defined under the European Structural and Investment Funds (ESIF). Moreover, the analysis resulted in no evidence that a higher share of national contributions at the level of individual projects would correspond to better performance. In this context, the real issue does not appear to be the level of national contributions, but rather the general perception that the programmes are open-ended in nature. As the establishment of the baselines shaped the programmes' scope, time and costs, the key to obtaining the appropriate level of ownership is to complete the transfer of management risks (e.g. increases in project cost estimates and delays) to the beneficiary Member States.

Table 1 — Disbursements (payments to end beneficiaries), 31/12/2017 (€ million)

	Member State	EU*
Kozloduy	215 (37 %)	364 (63 %)
Bohunice	185 (44 %)	240 (56 %)
Ignalina	159 (15 %)	928 (85 %)

* Includes contributions from other donors.

Source: Monitoring Reports, EBRD, CPMA

Table 2 — Established funds (disbursements plus allocations), 31/12/2017 (€ million)

	Member State	EU*
Kozloduy	458	800
Bohunice	476	681
Ignalina	478	1568

* Includes contributions from other donors.

Source: Monitoring Reports, Annual Work Programs, EBRD, CPMA

Benchmark

Three 'comparator' instruments were selected as part of a benchmarking exercise: the Connecting Europe Facility, the budget support aid delivery mechanism and ESIF major projects. On the programmes, the chosen benchmark includes projects with high complexity and technical innovations that have very different management and governance systems. The exercise led to the following findings:

- The performance monitoring framework for the programmes is generally in line with best practice, in particular practices governing budget support operations.
- All instruments seek to ensure strong national ownership of project implementation through early buy-in and active Member State involvement.
- Two of the comparator instruments had a clearly defined framework for co-financing, with EU co-financing rates clearly established in the legal basis and time limits for disbursement to prevent delays.
- All benchmark instruments offer a multi-annual rather than annual framework for programming.

7 CONCLUSIONS

In line with the expectations set for the current MFF, Bulgaria, Slovakia and Lithuania have made effective and efficient progress in decommissioning their reactors. There have been challenges and setbacks due to the complexity of the programmes, although the management system has increasingly proven that it can cope with them. Roadblocks from the previous financial framework have been removed and delays carried over have been recovered as far as possible.

The preparation and endorsement of the respective decommissioning plans in 2014 was a major milestone and defined the limits of the assistance programmes, with the financing needs to achieve the decommissioning end state eventually established. At the mid-term stage, these needs were confirmed for the Bohunice and the Ignalina programmes; for the Kozloduy programme, the ongoing revision of the decommissioning plan may result in an increase in cost estimates post-2020.

In addition, the detailed objectives and indicators provided a good basis for measuring progress towards the achievement of the specific objectives. However, the analysis also showed that it would be opportune to recalibrate these indicators in order to ensure continued effective monitoring and possible comparability between the programmes.

No additional funding will be needed in the 2014-2020 MFF. However, the raising of additional funds needed in the long term (post-2020) for the Ignalina programme calls for a careful follow-up in Lithuania.

The national contribution levels achieved appear suitable for sustaining proper efficiency; however, they are not established in the legal basis, which creates residual uncertainties. Increasing national relative to EU contributions and defining a clear and formalised framework for ‘co-financing’ (either at programme or project level) would very likely continue to encourage greater national ownership and economy-seeking on the part of beneficiaries. Moreover, the explicit transfer of risks (cost overruns, delays) to the respective Member States would have a greater impact in the current context.

The analysis also demonstrated that greatly improved safety levels will be achieved at the sites as a result of EU funding in this MFF. Major expected developments in the field include:

- in Bulgaria: the steady progress of construction of the National Disposal Facility, the management of legacy waste and the start of major D&D works in the reactor building;
- in Slovakia: the final dismantling of the reactor cores;
- in Lithuania: the steady progress of defueling and the preparations for dismantling the irradiated graphite core, which is a first of a kind project of an unprecedented scale.
- Based on the results of this evaluation, the Commission deems that these measures should not be amended or suspended in the current MFF. The specific objectives (Article 2(2) of the Regulations) remain valid while the implementation procedures should be preferably revised to benefit from the lessons learned. Any such update should aim to reinforce the role of the Monitoring Committees and that of the Programme Coordinator as well as further improve the governance

system by streamlining the programme management cycle, refining the content of programming and monitoring documents and updating and sharpening targets and indicators for multi-annual measures that go beyond 2020.