



# Advisory report

on the ASSE II mine project

addressed to the  
Parliamentary Budget Committee

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Ref.: II 1 - 2019 - 0847

Potsdam, 12 August 2019

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## 0 Executive summary

Since 2009, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has had overall responsibility for the Asse II mine shaft, a disused salt mine which is home to some 47,000 cubic meters of low and intermediate level radioactive waste. Initially, the Federal Office for Radiation Protection was responsible for operating the facility. Since 25 April 2017, the Federal Company for Radioactive Waste Disposal has been the operator of the Asse II mine shaft. In 2013, parliament decided to decommission the mine shaft once the radioactive waste buried there would have been moved to its final repository.

By 2018, the Ministry had expended €1 billion on various subprojects at Asse II mine. We reviewed expenditure, project organisation and project governance. In the light of the financial impact of this major project, we see the need to report on our audit findings to the parliamentary Budget Committee. We have incorporated the comments furnished by the Ministry on our audit conclusions into our report.

0.1 We see a high risk of total project expenditures significantly exceeding the projected overall amount of €2 billion, that was estimated for the last time in 2011. The Ministry used a major portion of the funds expended so far (€1 billion) for ever more costly refitting and maintenance work including the emergency and security measures needed. Expenditure on actual retrieval was rather low and concerned planning and exploration costs only. Retrieval costs are likely to exceed many times these planning and exploration costs. Another cost risk is posed by the need for further exploring a number of storage rooms.

The Ministry submitted to us a cost estimate of the Federal Company covering the period up to the projected beginning of waste retrieval in 2033. This estimate is subject to major imponderables (€3.35 billion, +/- 30 per cent, see No. 3).

0.2 Controlling done by the Federal Office for Radiation Projection was not appropriate to efficiently steer the Asse II project. There was no coordination between project controlling and financial controlling. As a

result, it was rather difficult to identify causal relationships between services rendered, changing timetables and project costs. We noted with concern that the Office did not closely monitor cost trends. In our view, this is imperative for such a large-scale project that poses extremely high risks to the federal budget.

The Ministry stated that the current operator, the Federal Company, closely aligned its controlling strategy with the Ministry. The Ministry said that the operator's future controlling would therefore fully meet the minimum standards we had demanded.

Representing the federal government as the sole shareholder of the Federal Company, the Ministry has to see to the proper and efficient use of budget funds for the final storage of radioactive waste.

Therefore, the Ministry has the duty to ensure that the Federal Company promptly implements the controlling function we have urged for. We intend to review controlling done by the Federal Company (see No. 4).

- 0.3 The Ministry did not comply with its departmental responsibility for steering the Asse II project. The Ministry stated that it had exercised technical oversight of the former operator, the Federal Office for Radiation Protection, "at a distance". The documents we reviewed did not provide any evidence whatsoever that the Ministry had studied any appropriation requests, organisational management and human resources decisions or reports issued by the Federal Office.

Given the fiscal and political weight of the Asse II project, we consider this inadequate oversight to be intolerable. The fact that the operator function has been transferred from the Federal Office for Radiation Protection to the Federal Company organised under private law does in no way affect overall project responsibilities.

The Ministry promised to use the future meaningful and standardised reports of the Federal Company to gain timely and efficient insight into the current status of mission performance of the operator and into any new and emerging risks.

Given the significant financial magnitude of the project and to ensure that the Ministry complies with its governance tasks, we recommend that the federal government regularly report to the Budget Committee on the progress of the Asse II project. The report should be based on lessons the Ministry has learned from project governance. (see No. 5).

## 1 Subject matter and driver for the report

Between 1967 and 1978, some 47,000 cubic meters of radioactive waste had been stocked in the state-owned Asse II mine shaft ("Asse II"). Asse II contains some 124,500 drums filled with low-level radioactive waste (some 80 per cent of the total activity at Asse II) and some 1,300 drums filled with intermediate-level radioactive waste (some 20 per cent of the total activity at Asse II).<sup>1</sup>

Due to an amendment of the German Atomic Energy Act, since 2009 the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety<sup>2</sup> ("Ministry") has held responsibility for Asse II. It was also in 2009 that the legislator decided to decommission Asse II. In 2013, the legislator adopted a law to speed up radioactive waste retrieval from Asse before closing down the mine shaft. Between 2009 and 2018, the Ministry spent €1 billion on various Asse II subprojects.

The driver for our audit work on the Asse II project were the legislator's decisions on how to handle the mine shaft and the radioactive waste stored there (see No. 2 of the report). Our advisory report serves to provide information to the parliamentary Budget Committee on the use of funds made for the Asse II project and the financial risks posed for future federal budgets (No.3). We also wish to highlight some shortcomings in organisational management and governance of Asse II that we found. These shortcomings need to be addressed in the future (Nos. 4 and 5).

This report gives consideration to the Ministry's comments on our findings.

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<sup>1</sup> Report of the Federal Republic of Germany for the Sixth Review Meeting in May 2018 on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

<sup>2</sup> In 2009, the ministry's name was Federal Ministry for the Environment, Nature Conservation and Reactor Safety. The Ministry's name was as from 2013 to read: Federal Ministry for the Environment, Nature Conservation, Building and Reactor Safety. The Federal Chancellor adopted the organisational management directive effective of 14 March 2018 to change the designation to Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

## 2 Asse II project overview

### 2.1 Legal basis

By amending the Atomic Energy Act, the legislator set the requirements for handling Asse II and the radioactive waste stocked in the mine.

#### **Amendment of the German Atomic Energy Act in 2009**

Since 2009, the Atomic Energy Act sets out that Asse II shall be closed down without delay, be treated as a final repository during operational and decommissioning stages and be subject to the provisions of atomic energy statute law, regulations and rules. The costs incurred for continuing operation and decommissioning Asse II shall be borne by the federal budget.

#### **Law on speedy waste retrieval from Asse before close-down**

After the Ministry had assumed the responsibility for Asse II (cf. No. 1) the Federal Office for Radiation Protection ("Office") commissioned a study on three options for handling the radioactive waste:

- no moving or retrieving of the waste in Asse II and backfilling the remaining volumes of the mine
- relocation of the waste inside the mine
- waste retrieval from the mine shaft

Based on the then-current state of the art, the Office was of the opinion that solely waste retrieval gave rise to reasonable expectations of providing assurance on long-term safety. Therefore, in early 2010, the Office selected this option based on the assumption that it would be possible to retrieve almost all waste from the mine shaft within the time frame available.<sup>3</sup>

In 2013, after reaching a broad consensus across all political parties, the legislator decided to retrieve the waste at a good pace.

#### *Close-down following retrieval*

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<sup>3</sup> The Federal Office for Radiation Protection: Comparison of options for Asse – technical assessment of decommissioning options for the Asse II shaft mine, January 2010, p. 194.

Asse II **shall be** closed after retrieving all radioactive waste (Atomic Energy Act, section 57b para. 2 sent. 3). Discontinuing the retrieval is subject to strict requirements. By setting up a recommendation (instead of an unconditional retrieval mandate) the legislator leaves more headroom to consider future information on the feasibility of the retrieval option weighing the pros and cons of all three options.<sup>4</sup>

#### *Discontinue waste retrieval*

The retrieval shall be discontinued if it is not acceptable for the population and the employees for radiological or other safety-related reasons (Atomic Energy Act section 57b para. 2 sent. 4). Such criteria have been set up to accommodate still existing uncertainties over the technical feasibility of the retrieval option and possible non-compliance with radiation protection policies. In the legislator's view, a justification is needed for ceasing waste retrieval but not for retrieving the waste.<sup>5</sup>

#### *Procedure in case of deviations from statutory requirements*

If the retrieval as well as all options for closure are only possible with deviation of the legal requirements, the Asse II mine shall be closed using the best possible option after having carefully balanced the benefits and drawbacks (Atomic Energy Act section 57b para. 2 sent. 6).

#### *Involving parliament and the public*

Before deciding either

- to discontinue waste retrieval or
- which closure option to select if all options can only be implemented with deviation from legal requirements

the Ministry in charge of nuclear safety and radiation protection needs to inform parliament. The Federal Office for the Safety of Nuclear Waste Management needs to permit the public to express their views on the matter unless immediate action is required (Atomic Energy Act section 57b para. 2 sent. 7).

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<sup>4</sup> Parliamentary paper 17/11822, p. 6 et seq.

<sup>5</sup> Parliamentary paper 17/12537, p. 4.



## 2.2 Project parties

As from 1 January 2009, Asse II was operated by the Office. The Office was subject to the Ministry's legal and technical oversight. The Asse-GmbH, a state-owned corporation for operating and decommissioning Asse II, which was incorporated as an auxiliary body to the Office in 2009, assumed the operating responsibility for Asse II (refitting and maintenance work, emergency and security measures, waste retrieval, decommissioning).

In 2016, parliament redefined the responsibilities for final nuclear waste storage. The government contracted out the performance of its duties to provide for the safe storage of radioactive waste. The contractor is organised under law as a corporation in which the federal government is the sole shareholder (Atomic Energy Act section 9a para. 3 sent. 2). On 25 April 2017, the operational responsibility of Asse II was conferred from the Office to the Federal Company for Radioactive Waste Disposal ("Federal Company"). After supporting the Federal Company in the first few months, the Asse-GmbH merged with the Federal Company in late 2017.

## 2.3 Key features of the Asse II project

The Asse II project focuses on

1. refitting and maintenance work, including emergency and security measures;
2. retrieval of radioactive waste; and
3. closure of the mine after retrieval of radioactive waste.

On 1: Refitting and maintenance work, including emergency and security measures

In order to retrieve waste and to decommission Asse II, the bodies responsible need to keep the mine shaft open and to ensure that operation is safe. In doing so, they face two major challenges:

- Saline brines permanently flowing into the mine shaft need to be pumped from the mine shaft. At any time, the brine intrusion may lead to inundation. This would make it impossible to continue operating the mine.

To reduce the likelihood of such a scenario and/or to mitigate the impact of such an incident, cavities in the Asse II mine are backfilled.

- The area's accelerating geomechanical deterioration jeopardises the overall stability of the mine shaft. Therefore, Asse II is under permanent geoscientific supervision and subject to stabilisation measures.

As to the above problems, emergency and disaster prevention measures are to be implemented by **2029**. It is necessary to keep the mine open for operation until mine closure.

On 2: Retrieval

a) *Exploration activities*

In early 2010, the Office chose to select the retrieval option (para. 2.1). In order to gather further information, the Office planned to explore two storage chambers via boreholes and to open these chambers to retrieve waste packages (three-step approach). By 2015, the Office had completed its exploration on only four boreholes of one storage chamber. This was due to lengthy approval procedures and to the need to meet the vast requirements set in approvals granted. As a result, the Office decided to discontinue the three-step ground exploration exercise. In the light of the law on speedy waste retrieval from Asse before close-down, the Office considered the retrieval to be the right approach in line with the spirit of applicable legal provisions governing radiation protection.<sup>6</sup>

Waste retrieval is to start with the two best-explored storage chambers.<sup>7</sup> These chambers contain 5.5 per cent of the waste and 7.8 per cent of all containers deposited in Asse II.<sup>8</sup> The other eleven chambers still need to be

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<sup>6</sup> Working Group Evaluation of the Establishment of Facts at the Office: report on the Evaluation of the Establishment of Facts and the retrieval procedure of 27 April 2016, p. 11 and 15. According to the report, ground exploration and appraisal activities were designed to analyse the feasibility of retrieval activities and the project's justification based on the radiological impact. Speedy waste retrieval before the closure of Asse II, is set forth in legislation adopted in 2013. The report proceeds from the assumption that the remaining challenge will be to select the method appropriate for implementing waste retrieval.

<sup>7</sup> Working Group Evaluation of the Establishment of Facts at the Office: report on the Evaluation of the Establishment of Facts and the retrieval procedure of 27 April 2016, p. 70.

<sup>8</sup> Calculation on the basis of the plans on Asse II mine shaft of the Asse-GmbH, 2017.

thoroughly explored. Initial findings suggest instable ceilings in the other chambers. These eleven chambers are home to 94.5 per cent of the waste and 92.2 per cent of all containers deposited in Asse II.

The Office planned to launch retrieval of the radioactive waste in **2033**.

*b) Mine shaft 5*

Mine shaft 2, which is the only intact shaft, cannot be used for transporting waste as it does not comply with applicable nuclear safety standards. This also limits the number of deployable workforce and machines (longer evacuation times, reduced fresh air supply). Therefore, since 2013 the search has been underway for a suitable location for an alternative new shaft 5.

The Office presumed that the new shaft could be put into operation in **2031**.

*c) Interim and final nuclear waste storage*

The waste retrieved from Asse II needs to be deposited in an interim storage site for a long unspecified period of time. So far, no location has been selected. Even so, the interim repository is to go into service in **2029**.

The final repository site for waste from Asse II has also not been determined yet. However, in the site selection process, the waste retrieved from Asse II is to be prioritised for a final repository for highly radioactive waste.<sup>9</sup>

*d) Retrieval technology*

The Office presumed that the waste packages are for the most part enclosed in gravelled salt material. Still, the technology required to cut such waste packages out of the rock has not been developed.<sup>10</sup>

**On 3: Closure of the mine**

Following waste retrieval, the Asse II mine is to be closed down. The design of decommissioning plans will largely depend on whether and to what extent the mine is contaminated with residual radioactive materials and chemo-toxic

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<sup>9</sup> Federal Office for Radiation Protection: Information booklet on the Asse II mine, status of retrieval.

<sup>10</sup> Federal Office for Radiation Protection: Information booklet on the Asse II mine, status of retrieval.

substances.<sup>11</sup> The Office has not set a deadline for concluding the closure of Asse II.

### 3 Asse II project expenditure

Between 2009 and 2017, Asse II annual project costs were set out in a separate budget title (heading) of departmental budget No. 16.<sup>12</sup> Since financial year (FY) 2018, in the departmental budget No. 16 the chapter 1603 has been added to set aside funds for interim and final nuclear waste storage. Estimated expenditure on Asse II is set out in budget chapter 1603, title 891 01 "*final storage and site selection procedure*" together with proposed spend on other final disposal and decommissioning projects and related site selection procedures. Estimated expenditures broken down by project are provided in explanatory notes to the budget only.

#### 3.1 Projected overall ASSE II project costs

The Ministry ceased to report on the expected overall project costs (which at that time exceeded €2 billion) following the preparation of the 2011 departmental budget. At the time of our audit work, the Ministry assumed that the costs for retrieving the waste and closing down the mine could not be reliably projected. In the Ministry's view, a reliable estimate would require more specific planning steps broken down by subprojects of retrieval and related operations.

The Ministry mentioned the risks posed by the deteriorating condition of the salt dome due to persisting rock deformation and an uncontrollable intrusion of brine. The Ministry was also concerned that this would inevitably lead to technical redesign needs and eventually to rescheduling of cost and time.

To prepare for parliamentary deliberations on the FY 2018 draft budget, the Ministry specified overall project costs for the last time. In the following FY, the documents did not disclose overall costs any more.

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<sup>11</sup> Federal Office for Radiation Protection: Information booklet on the Asse II mine, status of retrieval.

<sup>12</sup> Previously in chapter 1607 title 712 36; starting 2014, in chapter 1616 title 712 26; in 2017: in chapter 1615 title 712 26.

### 3.2 Analysis of past spend

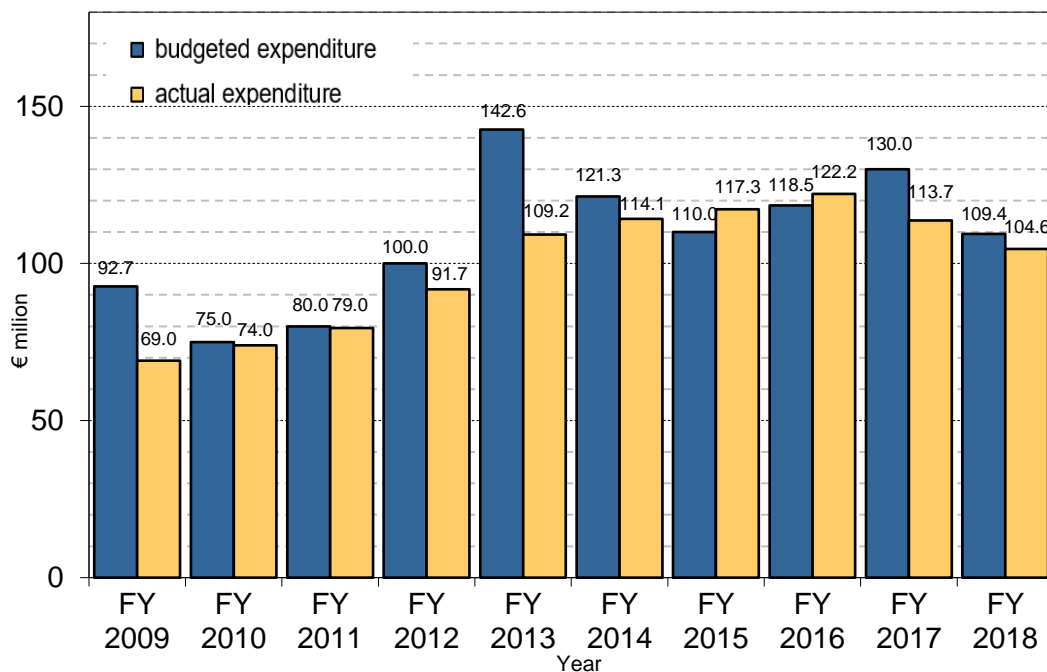
#### Trend in expenditures

Between 2009 and 2018, the government included €1.1 billion in the budget for the Asse II project. Spend amounted to €995.3 million in this period.

Annual expenditures gradually increased from €69 million in 2009 to €122.2 million in 2016 (+77 per cent) before they fell to €113.7 million (in 2017) and €104.6 million (in 2018) respectively (see figure 1).

Figure 1

#### Trend in expenditures between 2009 and 2018



Source: Own figure. Data on FYs 2009 to 2017: federal budget accounts; data on FY 2018: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

#### Breakdown of expenditures

The spend on Asse II serves to cover the various project parties' costs (cf. para. 2.2). In the period prior to the transfer of responsibility for operating Asse II from the Office to the Federal Company, such expenditures were largely attributable to the activities of Asse-GmbH.<sup>13</sup>

<sup>13</sup> Between 2010 and 2016, for example, 86 per cent in average.

Looking at the period from 2010 to 2016, we benchmarked the costs incurred by Asse-GmbH for refitting and maintenance, emergency, safety and special activities<sup>14</sup> against the costs for waste retrieval.<sup>15</sup> In this period, the costs incurred for refitting and maintenance, emergency, safety and special activities increased from €50 million to €83 million (see figure 2). In this period, an average of 92 per cent of the aggregated annual costs incurred by Asse-GmbH were spent on these expenditure items. Retrieval costs climbed from €1 million to €10 million in the same period. Those costs amount in average to only 8 per cent of the aggregated annual costs incurred by Asse-GmbH. Regarding retrieval work between 2019 and 2023, the Ministry expects funding needs only for planning and exploration activities since no construction works have been scheduled for this period.

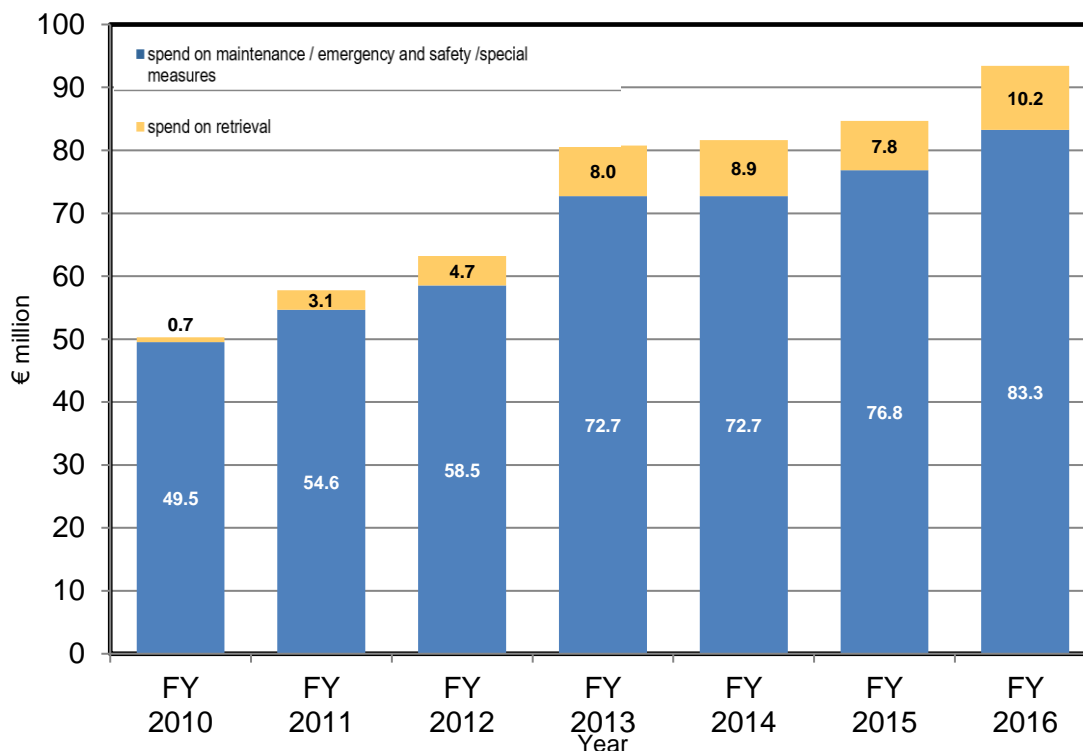
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<sup>14</sup> Term for comprehensive measures: facilities for special concrete, extracting and loading of salt, plant safety, etc.

<sup>15</sup> The Office has not supplied a cost breakdown. We abstained from collecting from Asse-GmbH a cost breakdown for 2017 as operational responsibility was transferred from the Office to the Federal Company.

Figure 2

**Allocation of costs incurred by the Asse-GmbH (ex VAT)  
to the various Asse II subprojects**



Source: Asse-GmbH. According to the Asse-GmbH, it is impossible to allocate any costs to the year 2009 as the organisational structures needed were not in place shortly after the transfer of project responsibility to the Office.

### 3.3 Audit conclusions

Once the Ministry had assumed departmental responsibility for this matter in 2009, the government has spent approximately €1 billion on Asse II which is almost half of the overall cost of €2 billion projected last in 2011. Annual expenditures almost doubled in the period under review, most recently amounting to some hundred millions. This was particularly due to a surge in the costs caused by refitting and maintenance activities, including emergency and safety measures needed to brace for a potential water inrush and the deteriorating condition of the salt dome. Waste retrieval work is contingent on keeping the mine accessible. Our findings suggest that the share of costs linked to refitting and maintenance work in the overall costs will remain very high in the years ahead. Retrieval costs, by contrast, have remained steady at a low level since 2013. Such expenditure almost exclusively concerned planning and exploration costs (e.g. for the new mine shaft 5). Future

construction costs are set to exceed planning and exploration costs by far. It is therefore safe to assume that in the future the Asse II project will require a significantly larger budget. The fact that even five years after launching explorations no information is available on the conditions of the storage chambers containing 94.5 per cent of all nuclear waste poses a high federal budget risk (see No. 2.3). We expect the assessment of the chambers not yet explored to take a number of years. Our conclusion relies on the lessons learned from the three-step exploration. It took the Office five years alone to drill four boreholes to investigate one storage chamber. Delays and a hence longer than expected refitting and maintenance period would also lead to a higher burden on the federal budget.

As a result, we consider it highly likely that the federal budget expenditures on the Asse II project will by far exceed the initial estimate of €2 billion.

#### 3.4 Comments made by the Ministry

The Ministry submitted to us the Federal Company's cost estimate covering the period until 2033 (start of retrieval) (see table). In the Ministry's opinion, the Federal Company is not yet in the position to furnish a reliable estimate of retrieval preparation costs on the basis of current planning data. The Ministry stated that overall project costs including all retrieval and closure work could not be projected at this point of time because the time needed to accomplish retrieval could not yet be specified.



Table

**The Federal Company's cost estimate for the  
Asse II project – 2019-2033**

cost item / subproject	costs (gross)	inaccuracy <sup>b)</sup> : ±/- 30 per cent
	in million euros	
refitting and maintenance work (by 2033)	900	± 270
emergency planning and special measures (by 2029)	450	± 135
solution storage for cross-flooding	150	± 45
construction of the new shaft No. 5	200	± 60
heading work of the new mine shaft for retrieval	500	± 150
construction of buffer store, conditioning plant and interim storage site	450	± 135
development/testing of techniques, assets and equipment	75	± 23
preparation work for retrieval (511 meter-floor and 725 meter-floor)	200	± 60
preparation work for retrieval (750 meter-floor)	175	± 53
surface infrastructure	200	± 60
estate for construction, levelling and replacement measures <sup>a)</sup>	50	± 15
<b>Total:</b>	<b>3 350</b>	<b>± 1 005</b>

Notes: <sup>a)</sup> Assumptions: estate: 500 000 sqm, costs: €100/sqm.

<sup>b)</sup> Differences due to rounding.

Source: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

### 3.5 Final audit conclusions and recommendations

In its comments, the Ministry did not fully address our findings on the federal budget risks entailed by Asse II. The cost estimate submitted by the Federal Company merely covers the period up to the launch of waste retrieval. This estimate, however, may serve as a basis to roughly assess the possible budget burden until the start of the retrieval in 2033.

The Ministry did not make any statements on the possible cost risks arising from waste retrieval (such as for the chambers not yet explored).

The Ministry needs to ensure that the Federal Company updates and refines the existing estimate at regular intervals and expands the estimate to include new information (if any) on the costs of further subprojects in the period starting 2033. We consider this crucial for assessing the overall project status

and making decisions on future project implementation. We expect the Ministry to keep abreast of any cost trends and changes.

## 4 Project controlling and financial controlling by the operator

### 4.1 Project controlling and financial controlling by the Office

In accordance with the Office requirements, the Asse-GmbH had to allocate its performance duties to 36 planning segments. Such planning segments were allocated to four cost types for the purpose of financial controlling. On this basis, the Office identified the expected funding needed for the next FY and reported the data to the Ministry.

As from 2013, the Office introduced a new type of project controlling:

- The Office allocated the planning segments to nine freshly defined subprojects. The four existing cost types were not aligned to fit in the subprojects of the new project structure. To justify this approach, the Office made reference to the time and effort needed to revise the cost types. In addition, the Office stated that otherwise it would have been impossible to benchmark current cost figures against those of previous FYs. However, the Office acknowledged that it could have allocated cost data more precisely and broken down by cost driver if the cost types had been adapted beforehand. In this case, financial controlling would have been more transparent.
- The Office also developed quarterly project progress reports. These set out the key milestones of the nine subprojects relying on data taken from the time schedules. The reports showed each milestone and listed actual and anticipated delays, (proposed) mitigation and upcoming risks. The progress reports also included a section on *cost reporting* that set out data on planned versus actual spend for the respective FY. Such expenses were only broken down by project parties (the Office, Asse-GmbH). The reports also benchmarked planned against actual spend of Asse-GmbH on the various planning segments. The costs of the planning segments were grouped into the four cost types.

## 4.2 Audit conclusions

Asse II is a huge long-term project. It is a technically challenging and unique engineering project. The project presents a high level of risk and puts an unprecedented burden on the federal budget. We consider it essential for the respective operator to have in place a comprehensive project controlling system that is synchronised with financial controlling. Such a system needs to continuously track project progress (compliance with deadlines etc.) and associated costs.

In its capacity as the former operator, the Office could have made more efforts to operate a workable controlling system. In particular, the operator should have implemented a better cost controlling system.

Following the introduction of a new project controlling system in 2013, the Office was no longer in the position to directly allocate the (planned) costs of each cost type to the related subprojects. This would, however, have been critical to operating an efficient controlling function. While the new system did not provide for benchmarking current costs against cost dating from periods before 2013, this would have been acceptable in the light of the long-term nature of the project.

In its project progress reports, the Office demonstrated a consistent track record on whether subproject deadlines had been met. On the other hand, the reports lacked benchmarks on cost changes (rise or fall) of the various subprojects. The benchmarking of planned against actual spend was not fit for this purpose. As to the supplementary progress report information on costs incurred by Asse-GmbH, it was possible to allocate such data to the respective planning segments and cost types, but not to the individual subprojects.

We urge the Office to make sure that the Federal Company acts on our findings regarding the controlling practices of the Office when the Federal Company designs its own controlling function. Meaningful and coupled project controlling and financial controlling systems are key to

- calculating proposed costs and deadlines on a uniform basis of subprojects;
- monitoring compliance with given deadlines and cost budgets; and
- determining the budget funds needed for Asse II in the next FY.

The Federal Company should meet the following minimum controlling standards:

- Record (planned) tasks in detail, update recorded tasks (as needed) and document any updates made;
- Disclose the (planned) start and the (planned) termination of the tasks and substantiate and record the shifting of deadlines;
- Allocate projected and actual costs to the (planned) tasks and justify changes in cost planning and cost overruns;
- Outline interdependencies between the various tasks (e.g. task y can only be started after terminating task x);
- Describe any risks to schedule and cost compliance; and
- Summarise the (planned) tasks together with the above information at a higher controlling level while ensuring a sufficient level of detail.

On the basis of these controlling steps, the Federal Company should report to the Ministry at regular intervals. This would enable the Ministry to provide effective governance (cf. para. 5).

#### 4.3 Comments made by the Ministry

The Ministry pointed out that in July 2018 it had put into force financial statutes for the Federal Company. According to these statutes, the Federal Company's Management is required to put into place an "*appropriate and consistent controlling function for the entity*" and couple it with standardised reporting to the Ministry. The Ministry stated that for this purpose, the Federal Company had submitted a draft framework for financial and project planning and reporting. The Ministry confirmed having reviewed the draft and called for modifications. The Ministry pointed out that the review of the draft had been guided by our audit recommendations and the financial statutes provisions. The Ministry stated that the Federal Company was revising the draft in close cooperation with the Ministry. The framework would reflect the minimum controlling standards we had urged for. The Ministry intended to evaluate the controlling structures, instruments etc. at regular intervals.

#### 4.4 Final audit conclusions and recommendations

The manifold difficulties in implementing the Asse II project give rise to enormous project and cost risks to be borne by the federal budget (see Nos 2 and 3). The Ministry represents the federal government in its sole shareholder role in the Federal Company bodies. The Ministry is responsible for the proper and efficient use of the funds set aside in departmental budget 16 for final nuclear waste storage. Therefore, the Ministry has the duty to ensure that the Federal Company promptly implements a controlling system which is not only *appropriate*, but which also complies with the minimum standards outlined in No. 4.2. Such a controlling function needs to have a consistent structure used for recording and tracking the various project tasks, deadlines and costs.

We are planning an audit mission on the Federal Company's controlling of disposal and decommissioning projects.

## 5 Asse II project governance conducted by the Ministry

### 5.1 Governance of the Office

Before operating responsibility was transferred to the Federal Company, the key features of the Ministry's Asse II project governance were the following:

- The Ministry exercised the shareholder functions of the federal government which is the sole owner of Asse-GmbH.
- In addition to that, the Ministry had technical oversight over the Office. In March 2018, the Ministry communicated to the German SAI that such oversight over its subordinate bodies was generally guided by the model of "*oversight at a distance*". The Ministry stated to rely on directives that were provided for important cases (having a major political and technical dimension). The Ministry stated to have been kept abreast on the Asse II project progress by the Office in reports and technical meetings. Furthermore, we learned that the Office had informed the Ministry on reportable incidents.

The Ministry stated that it had limited its oversight over the Office to changes in organisational set up, human resources decision-making and budget preparation. The Ministry almost never documented that it had analysed, evaluated or questioned budget requests or the Office's reports on project progress, organisational management or human resources matters.

## 5.2 Governance of the Federal Company

As from 25 April 2017, the Federal Company succeeded the Office in the operator function of Asse II (see No. 2.2). As a result, the governance instrument of technical oversight has no longer been available to the Ministry.

The Ministry stated to make use of company law instruments to steer the Federal Company's mission performance. The Ministry stated that it had set up a new unit responsible for shareholding management. The Ministry added that a supervisory board supported the Ministry in overseeing the Federal Company. The Ministry stated that it discussed planning issues and the progress of the various projects with the Federal Company's Management at shareholders' meetings and in advance of supervisory board meetings. The Ministry made the point that since early 2018, the Federal Company's Management had provided information to the Ministry on a regular basis at shareholding management discussions and telephone conferences. Also, the Company's Management and the Ministry continuously shared information on emerging concerns.

Financial statutes for the Federal Company have also become available (see No. 4.3). These stipulate that the Federal Company was to put into place a reporting function by 31 December 2018.

## 5.3 Audit conclusions

Asse II is a large project of extraordinary political and financial significance which is closely scrutinised by the public. The Ministry in charge has a public accountability role for such a project towards parliament and the general public. The Ministry failed to fully comply with this duty during the operation of Asse II by the Office. We note with concern that the Ministry again stated – as it did in the contradictory procedure on our annual audit reporting item on the Konrad<sup>16</sup> final repository – that it exercised technical oversight over the Office “*at a distance*”, which is intolerable in our view. Parliament endorsed our view on this annual reporting item stating that a such a poor oversight practice was not adequate for steering sensitive and complex federal projects.

The transfer of the operational function from the Office to the private-sector Federal Company does not release the Ministry from its duty to steer the

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<sup>16</sup> Parliamentary paper 18/11990 No. 5.

federal government's disposal and decommissioning projects. The Ministry should urge the Federal Company to submit standardised reports on cost trends and project progress. Such reports should summarise the Federal Company's controlling results in a meaningful way (e.g. at the subproject level). The reports must be so designed as to enable an informed assessment of the Ministry. This is the only way for the Ministry to promptly respond to undesirable developments.

#### 5.4 Comments made by the Ministry

The Ministry pledged to take into account our concerns regarding project governance.

The Ministry went on to state that the Federal Company was supposed to perform its tasks in accordance with the goals and provisions of the law on the organisational restructuring of final nuclear waste storage. The Ministry is, however, responsible for controlling the Federal Company's performance of tasks on behalf of the federal government as shareholder. The Ministry again referred to the cooperation and control mechanisms mentioned under No. 5.2.

The reports required by the financial statutes serve to enable the government to obtain information on the progress of mission performance and related risks efficiently and at an early stage ("early-warning system"). The Ministry uses a multi-stage review process to evaluate the reports. The Ministry documents the potential need for action and steps that need to be taken. The Ministry plans to revise and, where appropriate, to adapt this process on a regular basis. The Ministry pledged to ensure that the Federal Company presents a consistent picture of project structures across all projects in order for the Federal Company's reports to be informative to the Ministry.

#### 5.5 Final audit conclusions and recommendations

Regarding the high current and future expenditures charged to the federal budget for the Asse II project, the Ministry has to ensure that the Federal Company implements the Asse II project in an efficient and timely manner. This duty is to be met irrespective of which entity is responsible for operating Asse II (federal body, state-owned corporation). The Ministry is required to implement optimised project controlling practices and, if applicable, to urge

the Federal Company to modify its set of controlling instruments (e.g. changes in reporting practices).

In the light of the financial magnitude and the need to ensure that the Ministry complies with its governance duties, we recommend to the government providing information to the parliamentary Budget Committee on a regular basis by means of a project progress report (e.g. at the beginning and at the end of a legislative period). Such report should be based on the Ministry's findings gained in steering the project. The report is to show trends in major expenditure items and activities and benchmark them against figures budgeted (presented in the previous report) and whether activities have been on schedule. Schedule variances need to be justified accordingly. In addition, the report should present work proposed for the inter-reporting period, including planned deadlines and expenditures.

The report should also include a current estimate of expenditures pending the launch of retrieval. The purpose is to ensure that the Ministry provides at least rough information to the budgetary legislator on the financial risks posed to future federal budgets. Regarding the level of detail, the estimate should be in line with the present estimate of the Federal Company. The estimate should be based on the consistent project structure for recording and tracking of tasks, deadlines and costs that we urged for (see No. 4.4). The cost estimate is to be rolled forward and supplemented as appropriate to reflect new cost information on further subprojects in the period starting with retrieval work (see No. 3.5).

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