



2025/2370

16.12.2025

COMMISSION DECISION (EU) 2025/2370

of 21 February 2025

on the State aid measure SA.106107 (2024/N) which Belgium is planning to implement for the lifetime extension of two nuclear reactors (Doel 4 and Tihange 3)

(notified under document C(2025) 1070)

(Only the English text is authentic)

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 108(2), first subparagraph, thereof,

Having regard to the Agreement on the European Economic Area, and in particular Article 62(1), point (a), thereof,

Having called on interested parties to submit their comments pursuant to those provisions ⁽¹⁾ and having regard to their comments,

Whereas:

1. PROCEDURE

- (1) By letter dated 21 June 2024, Belgium notified the Commission of the measure to support the lifetime extension of two nuclear reactors in Belgium (Doel 4 ('D4') and Tihange 3 ('T3'), together the long-term operation ('LTO') Units. It provided the Commission with further information by letters dated 9 and 10 July 2024, following the Commission's request for information of 4 July 2024.
- (2) By letter dated 22 July 2024, the Commission informed Belgium that it had decided to initiate the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union ('TFEU') in respect of the measure (the 'Opening Decision').
- (3) Belgium sent its comments on the Opening Decision on 22 August 2024.
- (4) The Commission decision to initiate the procedure was published in the Official Journal of the European Union ⁽²⁾. The Commission called on interested parties to submit their comments.
- (5) The Commission received comments from interested parties. It forwarded them to Belgium, which was given the opportunity to react; its comments were received by letter dated 30 October 2024.
- (6) Further information by Belgium was provided on 2 September 2024, 23, 27 and 30 October 2024, 8, 14, 18, 22, 25, 27 and 30 November 2024, 2, 4, 5, 12, 13, 17 and 20 December 2024, 7, 9, 17, 18, 20, 27, 29, 30 and 31 January 2025, 1 February 2025 ⁽³⁾.
- (7) By letter dated 24 October 2024, Belgium agreed to exceptionally waive its rights deriving from Article 342 TFEU in conjunction with Article 3 of Regulation 1/1958 ⁽⁴⁾ and to have this Decision adopted and notified in English.

⁽¹⁾ State Aid — Belgium — State aid SA.106107 (2024/N) — Lifetime extension of two nuclear reactors (Doel 4 and Tihange 3) — Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union (OJ C/2024/4921, 8.8.2024, ELI: <http://data.europa.eu/eli/C/2024/4921/oj>).

⁽²⁾ Cf. footnote 1.

⁽³⁾ Certain technical, financial, economic or operational input was prepared based on information supplied by Electrabel.

⁽⁴⁾ Regulation No.1 determining the languages to be used by the European Economic Community (OJ 17, 6.10.1958, p. 385, ELI: [http://data.europa.eu/eli/reg/1958/1\(1\)/o](http://data.europa.eu/eli/reg/1958/1(1)/o)).

2. DETAILED DESCRIPTION OF THE CONTEXT

2.1. Nuclear fleet in Belgium

- (8) Until 2022, Belgium's nuclear fleet consisted of seven nuclear reactors, four located in Flanders (Doel) and three located in Wallonia (Tihange). All reactors came into operation between 1975 and 1985 ⁽⁵⁾ and were built by public utilities (Ebes, Intercom and Unerg) that were eventually merged to become Electrabel SA (majority owned by Tractebel) in 1990 (hereafter referred to as Electrabel). In 1996, the Société Générale de Belgique ('SGB') became the majority shareholder of Tractebel and in 1999, Suez acquired nearly 100 % of SGB. Following the merger between Suez and Gaz de France ('GDF') in 2008, the ultimate owner of Electrabel has been Engie S.A. (hereafter referred to as Engie).
- (9) Electrabel, a fully-owned subsidiary of Engie, has been the nuclear operator and majority owner of the seven Belgian nuclear reactors since the start of their operations. Today, the ownership of the Belgian nuclear reactors is as follows:
- Electrabel owns 100 % of Doel 1 and Doel 2, 89,807 % of Doel 3, Doel 4, Tihange 2 and Tihange 3, and 50 % of Tihange 1;
 - Luminus, a subsidiary of EDF Belgium, owns 10,193 % of Tihange 2, Tihange 3, Doel 3 and Doel 4;
 - EDF Belgium ⁽⁶⁾ owns the remaining 50 % of Tihange 1.
- (10) As for the LTO Units capacities (see Table 2),
- Doel 4 currently has a nominal capacity of 1 038 MW in 2022 (1 026 MW in 2023) and generated 8,940 TWh of electricity in 2022 ⁽⁷⁾, which represents a share of approximately 11 % of the total electricity demand in Belgium in 2022 (82,9 TWh ⁽⁸⁾).
 - Tihange 3 currently has a nominal capacity of 1 038 MW in 2022 (1 030 MW in 2023) and generated 7,366 TWh of electricity in 2022 ⁽⁹⁾, which represents a share of approximately 9 % of the total electricity demand in Belgium in 2022 (82,9 TWh ⁽¹⁰⁾).
- (11) Belgium explains that all Belgian nuclear reactors, including the LTO Units, have been designed and operated as baseload units based on the technology of pressurised water reactors ('PWR'). The design dates from the 1970s and is typical for baseload units, like older nuclear reactors around the world. These units are commonly operated at maximum rated capacity whenever online, contrary to newer technologies (Generation III) which are capable of flexible operation, including changing power output over time ('ramping' or 'load following') and providing frequency regulation and operating reserves ⁽¹¹⁾. In baseload operation, power is usually only reduced or shut down when required for planned refuelling and/or periodic maintenance, unplanned urgent maintenance to correct plant equipment issues, or unexpected design and/or safety constraints. Hence, reduction in power output is rather driven by the needs of the nuclear operator or of the transmission system operator ('TSO'), than by market signals.

⁽⁵⁾ Doel 1, Doel 2 and Tihange 1 in 1975; Doel 3 and Tihange 2 in 1982 and 1983 respectively; Doel 4 and Tihange 3 in 1985.

⁽⁶⁾ EDF Belgium and Luminus are separate legal entities. They are both part of the EDF Group. EDF Belgium is a 68,6 % shareholder of Luminus. The other shareholders of Luminus are Ethias, Publibec, Socofe and Nethys.

⁽⁷⁾ Source: World Nuclear Association (<https://www.world-nuclear.org/country/default.aspx/Belgium>).

⁽⁸⁾ Source Adequacy & flexibility study for Belgium (2024-2034) by Elia Group - Issuu (p. 42).

⁽⁹⁾ Source: World Nuclear Association (<https://www.world-nuclear.org/country/default.aspx/Belgium>).

⁽¹⁰⁾ Source: Adequacy & flexibility study for Belgium (2024-2034) by Elia Group - Issuu (p. 42).

⁽¹¹⁾ Source: J.D. Jenkins, Z. Zhou, R. Ponciroli, R.B. Vilim, F. Ganda, F. de Sisternes, A. Botterud, 'The benefits of nuclear flexibility in power system operations with renewable energy', *Applied Energy*, Volume 222, 2018, pp. 872-884.

- (12) Belgium clarifies that the Belgian nuclear reactors are technically constrained by their design, which strongly restricts the possibilities of output modulation, which was for a long time limited to grid regulation. This is due to the fact that Belgian nuclear reactors are exclusively equipped with black reactor control rods, which strongly restrict the ability to modulate, contrary to grey ones ⁽¹²⁾. By contrast, for example, some of the latest French nuclear reactors are equipped with both black and grey control rods, so that they are designed and built to perform modulations and load following. As a result of the design based on black control rods in the Belgian nuclear reactors, until recently, modulation for economic reasons was forbidden by the Belgian Nuclear Safety Agency ('AFCN/FANC') ⁽¹³⁾. Modulation was only acceptable for technical reasons or upon request from the Belgian TSO (Elia), to avoid a blackout ⁽¹⁴⁾.
- (13) However, Belgium submits that in response to the general evolution of electricity markets and the need to introduce flexibility into its operation, studies were performed concerning allowing some instances of modulation for economic reasons ('economic modulation'). In 2015, Engie, Electrabel and the Belgian regulators launched safety studies ⁽¹⁵⁾ to analyse which conditions would have to be met to allow some modulations for economic reasons, by looking among other things at the impact of such modulation on the nuclear fuel. The study concluded that a maximum of 30 economic modulations per fuel cycle could be acceptable for Tihange 3 and Doel 4, provided that a number of technical conditions - mainly linked to the heating up and cooling down of the fuel element - are respected:
- ramp-down and ramp-up speed limited to 1 %/min;
 - minimum power at 50 % of nominal power ⁽¹⁶⁾;
 - minimum 2 hours (3 hours if modulation is triggered in intraday) and maximum 72 hours for one modulation; and
 - minimum 72 hours between two modulations on the same reactor for stabilisation.
- (14) Furthermore, modulations would not be possible during certain periods ⁽¹⁷⁾, such as:
- (a) at the end of a fuel cycle, during the last two months, when the boron concentration in the primary circuit is low (less than 200 ppm boric acid concentration); and
 - (b) when the reactor operator requests not to modulate to avoid a transient in a specific situation (e.g., monthly neutron flux tests, potential valve leak, reactor building walkdown, etc.) or due to technical issues.

⁽¹²⁾ 'Black' reactor control rods (which are boron carbide made) absorb all incident neutrons. They are designed to shut down the reactor and can therefore create a strong thermal gradient and stress in the fuel elements during a modulation. 'Grey' control rods (which are silver-indium-cadmium made) absorb only part of the incident neutrons and are designed to provide flexible reactor power output, as they cause much smaller depressions in neutron flux and power distribution in the vicinity of the rods, and therefore does not present the same fuel over-heating issues.

⁽¹³⁾ Agence Fédérale de Contrôle Nucléaire (AFCN) / Federaal Agentschap voor Nucleaire Controle (FANC).

⁽¹⁴⁾ Such modulation requests from Elia can be broken down into two categories depending on the criticality of the situation: 'alert phase': modulation requested by Elia with a warning of one week in advance because it expects a critical situation on the grid; 'emergency phase': modulation requested by Elia directly to the control room of the nuclear units in order to immediately relieve the grid.

⁽¹⁵⁾ Source: Femke Flachet, Jinzhao Zhang, Ruben Van Parys, Daniel Vantroyen, Christophe Schneidesch, 'Core and fuel feasibility study for improved flexibility on the Belgian Nuclear Power Plants', in *Proceedings of WRFPM*, 2014, Paper N°100136, Sendai, Japan, September 14-17.

⁽¹⁶⁾ In practice, up to 400 MW capacity is usually offered for economic modulations upon request of plant operators, rather than a 500 MW capacity (50 % of nominal power) which requires more manual operations and thereby increases the risk of automatic shutdown.

⁽¹⁷⁾ See, *Operational procedure, Fleet procedure nuclear modulation*, ZST.10010883175.000_06, Annex Q1, sections 3.1 & 3.2, pp. 4-6.

- (15) Following these studies, the AFNC/FANC authorised the operator to perform up to 30 modulations per cycle ⁽¹⁸⁾, which corresponds to the maximum number of modulations that can be performed within the boundaries of the current operating licence. Given these constraints, Engie pointed out that each decision to modulate is cautiously assessed by the operator as it bears multiple risks (e.g., production of liquid effluents because of modulation, faster ageing of the installations, risk of triggering an automatic shutdown, potential damage that would render it impossible to restart the reactor, etc.) which are widely documented by academic literature ⁽¹⁹⁾.
- (16) According to Belgium (based on input by Electrabel), at the current state of knowledge, there are no technological solutions available to increase flexibility at a reasonable cost and within a reasonable timeframe. The technical upgrade to turn a baseload reactor into a load following plant and to allow more flexibility would require an entire change in design, and particularly the replacement of the reactor pressure vessel head, which is a very lengthy and complex operation. Besides, it would require new Safety Analysis Report (SAR) studies and a significant modification of their operating licence which would have to be issued by the Belgian nuclear safety authorities.
- (17) Furthermore, Belgium (based on input by Electrabel) explains that the reactors' flexibility is also constrained by the specificity of their fuel and the outages management:
- (a) Fuel is tailor made for a specific cycle duration and a certain number of possible modulations. Increasing flexibility of the reactors would require changing the fuel enrichment, which is not possible as the fuel has already been ordered for the whole duration of the project. Should the LTO Units be 'upgraded' to increase the number of available modulations, the fuel would have to be ordered again which would be unreasonably costly.
 - (b) Technically and legally constrained by the AFNC/FANC ⁽²⁰⁾, the nuclear operator has only very limited room for manoeuvre to plan outages for maintenance, works and refuelling. Planned outages are very complex to implement and need to be prepared months or even years in advance. Under REMIT ⁽²¹⁾, the market participant must make public in a timely manner the dates of the outages - for example through the NordPool urgent market message (UMM) Platform ⁽²²⁾ - generally in practice 3 years in advance. Furthermore, outage dates can very hardly be modified once announced (considering the operational constraints such as the availability of parts and contractors), and these changes can be challenged by the TSO which, if the latter considers that the deviation results in a disturbance of the network, can request compensation from the nuclear operator. In any case, outage dates cannot be modified after mid-July of the previous year without the TSO's prior approval.
 - (c) On the operational side, the LTO Units will be operated under 12-month fuel cycles (instead of 18-month fuel cycles currently). This decision is made as a result of an economic balance:
 - First, to maximise the period of production of the LTO Units during the next winters, when the demand for electricity is at its highest - and the prices too - while renewable electricity production is lower. It was therefore agreed that the LTO Units would be operated on a 12-month fuel cycle, so that periodic outages due to refuelling could be synchronised and occur each year during the summer.

⁽¹⁸⁾ Belgium provided the authorisations of the general manager from BelV, a subsidiary organisation of the AFNC/FANC, to economic modulations up to 30 times per cycle:

For Doel 4, see BelV, 3078/2739/POI.851, 'Kerncentrale Doel - Eenheid Doel 4 - Gedeeltelijke keuring voor ontvangst van wijziging aan de vergunde installaties', 26 July 2017.

For Tihange 3, see BelV, 2018-0330, 'Approbation MNI O3/14/03, Modulations de puissance étendues', 28 August 2018.

⁽¹⁹⁾ See, for example, (i) SFEN/RGN, '9. Parc nucléaire : la manoeuvrabilité au détriment de la performance?', 25 juillet 2023; (ii) C. Cany, C. Mansilla, G. Mathonnière, P. da Costa, 'Nuclear power supply: Going against the misconceptions. Evidence of nuclear flexibility from the French experience', *Energy*, Volume 151, 2018, pp. 289-296; (iii) Alexey Likhov, 'Suivi de charge dans les centrales nucléaires', *AEN Infos*, 2011, n°29.2.

⁽²⁰⁾ See footnote 18.

⁽²¹⁾ Regulation (EU) N°1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (OJ L 326, 8.12.2011, p. 1) art. 2(1)(b).

⁽²²⁾ The following link provides all Tihange 3 and Doel 4's UMM in the future: <https://umm.nordpoolgroup.com/#/messages?publicationDate=all&eventDate=custom&eventDateStart=2024-01-01&eventDateStop=2124-08-01&units=22WTIHAN G000242R&units=22WDOELX40000793>.

- Second, to take into account mid- and long-term market signals, it is standard practice in the nuclear industry to schedule the outages during months with lower prices. Therefore, from the outset, the overall planning for outages at Doel 4 and Tihange 3 has been optimised to limit as much as possible the impact on market price, thanks to the switch from a 18-month to a 12-month fuel cycle (as explained in point – above).

2.2. Nuclear phase-out in Belgium

- (18) As described in section 2.1 of the Opening Decision, in 2003, the Belgian federal Parliament adopted a law which prohibited the construction of new nuclear units aimed at the industrial production of electricity by nuclear fission in Belgium and limited the operation of the already existing reactors to 40 years, hereby establishing a nuclear phase-out between 2015 and 2025 ('2003 Law' or 'Nuclear Phase-Out law') ⁽²³⁾. As initially foreseen by the Nuclear Phase-Out law, Doel 3 and Tihange 2 were permanently disconnected from the grid on 23 September 2022 and 31 January 2023 respectively. By the laws of 18 December 2013 and 28 June 2015 ⁽²⁴⁾, the Nuclear Phase-Out law was amended and the lifetime of the three oldest reactors, Tihange 1, Doel 1 and Doel 2, was extended by 10 years, until 30 September 2025, 14 February 2025 and 30 November 2025 respectively (10-year lifetime extension) ⁽²⁵⁾.
- (19) According to the Nuclear Phase-Out law, Doel 4 and Tihange 3 were to close by 2025. As a consequence, since 2020, Engie's strategic objectives concerning nuclear activities were to (i) withdraw from nuclear power generation activities in Belgium to de-risk its exposure as a nuclear operator to market price volatility, and (ii) no longer position nuclear power generation as part of Engie's core business. Since 2020, this withdrawal has resulted in a halt to all studies relating to the extension of its nuclear power plants (all located in Belgium). Engie's financial communication since 2020 is in line with this strategic objective of withdrawal and has been taken into account in the accounting assumptions used to prepare the consolidated financial statements, in particular in impairment tests ⁽²⁶⁾.
- (20) Table 1 provides an overview of the seven Belgian nuclear reactors, including their ownership status, net capacity, and initial deactivation dates according to the Nuclear Phase-Out law and the subsequent revisions.

Table 1

Overview nuclear power plants in Belgium

Nuclear reactor	Ownership	2023 Net capacity (MWe)	Deactivation date (Nuclear Phase-Out Law)	Deactivation date (revised)
Doel 1	Electrabel (100 %)	445	15 February 2015	14 February 2025
Doel 2	Electrabel (100 %)	433	1 December 2015	30 November 2025

⁽²³⁾ See 31 January 2003, Wet houdende de geleidelijke uitstap uit kernenergie voor industriële elektriciteitsproductie/Loi sur la sortie progressive de l'énergie nucléaire à des fins de production industrielle d'électricité. According to the Nuclear Phase-Out law, the closing dates of the nuclear plants in Belgium would have been 15 February 2015 (Doel 1), 1 December 2015 (Doel 2), 1 October 2022 (Doel 3), 1 July 2025 (Doel 4), 1 October 2015 (Tihange 1), 1 February 2023 (Tihange 2) and 1 September 2025 (Tihange 3).

⁽²⁴⁾ On 5 March 2020, the law of 28 June 2015 was annulled by the Constitutional Court (Case 34/2020) - after a preliminary ruling of the Court of Justice of the European Union (Case C 411/17) - because the obligations regarding the environmental impact assessment were not respected, while maintaining the effects of the law until 31 December 2022. On 11 October 2022, after an environmental impact assessment, a 'Repair Law' was passed changing the deactivation dates. The Repair Law postponed the deactivation of Doel 1, Doel 2 and Tihange 1 to 2025.

⁽²⁵⁾ See Commission Decision of 17.3.2017, SA.39487 (2016/NN), Belgium, Lifetime extension of the nuclear power plants Tihange 1, Doel 1 and Doel 2 (OJ C/2017/142, 5.5.2017, p. 1).

⁽²⁶⁾ See evidence in footnotes 7 and 8 of the Opening Decision.

Nuclear reactor	Ownership	2023 Net capacity (MWe)	Deactivation date (Nuclear Phase-Out Law)	Deactivation date (revised)
Doel 3	Electrabel (89,807 %) Luminus (10,193 %)	1 006	1 October 2022	<i>Deactivation on 23 September 2022</i>
Doel 4	Electrabel (89,807 %) Luminus (10,193 %)	1 026	1 July 2025	31 October 2035 (*)
Tihange 1	Electrabel (50 %) EDF Belgium (50 %)	962	1 October 2015	30 September 2025
Tihange 2	Electrabel (89,807 %) Luminus (10,193 %)	1 008	1 February 2023	<i>Deactivation on 31 January 2023</i>
Tihange 3	Electrabel (89,807 %) Luminus (10,193 %)	1 030	1 September 2025	31 October 2035 (*)

Source: Belgian authorities - Reference is made to the website of the Federal Public Service (FPS) Economy on nuclear power production in Belgium, last consulted on 18 June 2024: Parc de production de centrales nucléaires en Belgique | SPF Economie. As indicated, Doel 3 and Tihange 2 have been deactivated. The following report includes their former net capacity: International Atomic Energy Agency, Operating Experience with Nuclear Power Stations in Member States, Operating Experience with Nuclear Power Stations in Member States, IAEA, Vienna (2022) (accessible via the FPS Economy website).

(*) Revised deactivation date when the nuclear reactors are operational on 1 November 2025; last possible date for deactivation is 31 December 2037.

2.3. Belgium's decision to continue nuclear energy

- (21) On 18 March 2022, the Belgian Federal Government (hereafter also referred to as 'Belgian Government') decided to reassess the nuclear phase-out, by allowing the extension of the operating lifetime (Long-Term Operation ('LTO')) of the two youngest nuclear reactors, Doel 4 and Tihange 3, for a period of 10 years ('LTO Project'). The decision by Belgium was made in the context of the European response to the Russian war against Ukraine (including the need for EU Member States to reduce their gas consumption and gas dependency) and the resulting gas crisis, as well as the already existing concerns about security of supply in Belgium (see also section 2.4 below) given the increased electrification needs (to enable the energy transition) and the low availability of the French nuclear fleet in 2021-2022 (due to unforeseen corrosion issues and extensive maintenance to prolong its operation lifetime) ⁽²⁷⁾.
- (22) Subsequently, in 2022, the Belgian Government started negotiations with the Belgian nuclear operator, Electrabel, regarding the implementation of the lifetime extension. The reasons for not having organised a tender, which were provided by Belgium, and on which the Commission did not raise doubts in the Opening Decision, are mentioned in recital 38 of the Opening Decision, and include:
- (a) Possession of the necessary know-how and permits: access to nuclear generation capacity requires special, including country-specific, know-how which is not available to all market players, which the Commission previously acknowledged regarding Electrabel in particular (see footnote 30 in the Opening Decision) and nuclear operators in general (see footnote 31 in the Opening Decision); the know-how, intellectual property, and relevant permits regarding nuclear installations in Belgium is unique and only Electrabel currently possesses them.

⁽²⁷⁾ See Commission Decision of 29.9.2023, SA.104336 (2023/N), Belgium, Amendments to the Capacity Remuneration Mechanism (OJ C/2023/265, 18.10.2023, p. 1).

- (b) Timing: the time between the Belgian Government's decision on the LTO Project and the planned restart date of the LTO Units is very short, and a restart by September (for Tihange 3) and November (for Doel 4) 2025 requires the execution of certain preparatory works and feasibility studies ('Development Activities' (see footnote 32 of the Opening Decision)) before the actual start of the works. Electrabel, in its role as sole nuclear operator in Belgium, was the only undertaking which had the unique knowledge, resources and tools to undertake these activities quickly and effectively. Therefore, no operator other than Electrabel could have been selected through a tender procedure, and the launch of a tender procedure to select the operator of the LTO Units would not have led to a meaningful outcome given the specificities and constraints of the LTO Project.
- (23) Engie, the parent company of Electrabel, was initially hesitant to enter into negotiations with Belgium regarding the LTO Project, claiming that nuclear technology had become too expensive and too risky, and referring to Engie's intention to stop nuclear operations in Belgium after 2025 (see recital 19). Therefore, the Belgian State agreed with Engie to set up a mechanism to share, in a balanced and transparent manner, the risks and rewards in relation to the lifetime extension of the two reactors. According to Belgium, Engie made it clear from the start that without a risk sharing mechanism and an agreement on nuclear waste stemming from the operation of the seven nuclear power plants in Belgium, it would not consider the lifetime extension of the two nuclear reactors, which forces Engie to substantially modify its company strategy and risk exposure ⁽²⁸⁾.
- (24) The negotiation process has been described in detail in section 3.1 of the Opening Decision and led to the conclusion of an Implementation Agreement on 13 December 2023, with a view to restarting operating the LTO Units before the Winter of 2025-2026. As mentioned in recital 36 of the Opening Decision, the Implementation Agreement consists of three main components, which all have the same purpose of supporting the execution of the LTO Project:
- (a) 'Component 1': the set of sub-measures related to the remuneration and financial arrangements allowing stable revenues for the two nuclear reactors, as well as the changes in the shareholder structure through the creation of BE-NUC (see section 3.3.1);
- (b) 'Component 2': the set of sub-measures related to the decommissioning of the nuclear power plants and the long-term storage and final disposal of transferred nuclear waste and spent fuel (including the amendment of the security package to monitor the financial situation of the nuclear operator against the risk profile modified due to the agreed cap) (see section 3.3.2);
- (c) 'Component 3': the agreements on risk-sharing and indemnification in case of certain legislative changes (see section 3.3.3).
- (25) The Implementation Agreement has been amended twice in the course of 2024 ⁽²⁹⁾. Its content is described in more depth in section 3.
- (26) Some important milestones of the LTO Project are the following:
- (a) After closing of the agreement, further preparations will be made to restart production on 1 September (for Tihange 3) and 1 November (for Doel 4) 2025 at the latest.
- (b) The period between the original deactivation date of the reactors (as set out in the Nuclear Phase-Out Law of 2003, i.e. 1 July 2025 for Doel 4 and 1 September 2025 for Tihange 3 – see Table 1) and the production restart date will be used to prepare the LTO Units for restart and is referred to as the 'Shutdown Period'.

⁽²⁸⁾ See evidence in footnote 10 of the Opening Decision.

⁽²⁹⁾ On 10 May 2024, a first amendment agreement concerned the following topics: modification of certain terms of the valuation expert RFP, postponement of the Target Closing Date, certain confirmations, technical modifications, correction of a mistake in SPA ('Share Purchase Agreement') II, additional time for the conclusion of the ASA and EMSA. On 15 July 2024 a second amendment agreement concerned the following topics: postponement of the Longstop Date to 21 February 2025, agreement on the EMSA tender process terms, certain confirmations, technical modification of SPA I.

- (c) The 3-year period from September 2025 until 31 December 2028 ('True-Up Date' ⁽³⁰⁾) is the 'Restart Phase' and will be used to bring the LTO Units into compliance with the requirements of the Belgian Nuclear Safety Authority.
- (d) As of 1 January 2029, the LTO Units are expected to run at full capacity until 1 November 2035 during the 'Running Phase'.
- (27) As a result, the electricity production during the period 2026-2028 will be relatively low due to more than usual scheduled outages of the two reactors during the Restart Phase ('scheduled LTO outages' ⁽³¹⁾). The unavailability of the LTO Units during the scheduled LTO outages is expected to be 24 weeks per year and this during the first 3 years after the LTO restart date.
- (28) On top of the scheduled LTO outages, a yearly normal outage for nuclear power plants ('scheduled non-LTO outages' ⁽³²⁾) is expected for the whole period of the lifetime extension (i.e. during the Restart Phase and the Running Phase), up to 1 year before the end of operations for Doel 4, and until the last year of operations for Tihange 3. Each scheduled non-LTO outage is expected to last 6 weeks. As a result, during the first 3 years after LTO restart, the two nuclear reactors are expected to be shut down for 30 weeks per year.
- (29) On top of the scheduled (LTO and non-LTO) outages, there can be unplanned and unforeseen problems which require additional shutdown of the LTO Units. A forced outage rate ('FOR') of 10 % has been assumed in the Signing Financial Model underlying the Remuneration Agreement ('RA') ⁽³³⁾. This implies that both Doel 4 and Tihange 3 have a target availability rate of 90 % over 10 years, when not considering the scheduled LTO and non-LTO outages.
- (30) When including all scheduled and non-scheduled outages, Doel 4 and Tihange 3 have a target availability rate of approximately 68,4 % and 67,4 % respectively.
- (31) The nominal electricity production capacity, annual electricity production and share in national electricity demand in Belgium for Doel 4 and Tihange 3, before and after the lifetime extension, have been summarised in Table 2. As is clear from Table 2, the estimated annual electricity production of the LTO Units is expected to double after the Restart Phase.

Table 2

Key characteristics of Doel 4 and Tihange 3 (pre- and post-LTO)

	Doel 4	Tihange 3
Before lifetime extension		
Nominal capacity (2022 figures)	1 038 MWe	1 038 MWe
Annual electricity production (2022 figures)	8 940 GWh	7 366 GWh
Share of Belgian electricity demand (2022 figures)	11 %	9 %

⁽³⁰⁾ A 'true-up' is a process used to ensure that all accounts and records are accurate and balanced. It involves comparing the estimated or initial figures with the actual, final figures, and making necessary adjustments.

⁽³¹⁾ 'Scheduled LTO Outages' are the planned outages which are required to bring the LTO Units in compliance with the requirements of the Safety Authority.

⁽³²⁾ 'Scheduled non-LTO Outages' are the yearly normal outages (mainly for refuelling purposes) which are contemplated as early as from Year 1, Year 2 and Year 3 post-LTO Restart Date for Doel 4 and Tihange 3 respectively, up to one year before the end of operations for Doel 4 and until the last year of operations for Tihange 3.

⁽³³⁾ The Signing Financial Model is the financial model underlying the Remuneration Agreement signed on 13 December 2023.

	Doel 4	Tihange 3
After lifetime extension		
Nominal capacity (2023 figures)	1 026 MWe	1 030 MWe
Annual electricity production (estimates)	2026-2028: 3 435 GWh after 2029: 7 158 GWh	2026-2028: 3 435 GWh after 2029: 7 186 GWh
Share of Belgian electricity demand (estimates)	2026-2028: 3 %-4 % after 2029: 6 %-8 %	2026-2028: 3 %-4 % after 2029: 6 %-8 %

Source: IAEA PRIS, World Nuclear Association; Elia's Adequacy and flexibility study for Belgium (2024-2034).

2.4. Resource adequacy concerns in Belgium

- (32) As mentioned in recital 17 of the Opening Decision, since 2019, the Belgian TSO, Elia, conducted three national resource adequacy studies ('2019 NRAA', '2021 NRAA' and '2023 NRAA'), which all identified a need for new capacity by the Winter of 2025-2026, as a consequence of the (partial) nuclear phase-out in Belgium, which started with the decommissioning of Doel 3 and Tihange 2 in 2022 and 2023 (see Table 1), reinforced by the decommissioning of thermal generation capacities in neighbouring countries and problems with the French nuclear assets.
- (33) In order to address these resource adequacy concerns, Belgium set up a capacity mechanism ('CM'), approved by the Commission in 2021, and amended twice since then ⁽³⁴⁾. The CM is a market-wide measure compensating the readiness of plants to supply electricity in pre-defined periods, regardless of whether they produce or not. The CM aims at addressing resource adequacy concerns in electricity, while supporting the energy transition, and will kick in as of Winter 2025, at the time the two LTO Units are also expected to restart (see recital 26).

2.5. Electricity market in Belgium

- (34) Belgium's energy mix is currently dominated by gas and nuclear-based electricity generation, although the share of renewables has been steadily increasing over the past years. In 2023, the share of nuclear, gas and renewables in the generation mix was 39,9 %, 21,4 % and 32,7 % respectively ⁽³⁵⁾.
- (35) According to Belgium, the main players in the electricity generation market, in terms of installed capacity connected at the transmission grid level, are Electrabel (9,3 GW in 2023 – 65 %), Luminus (2,2 GW in 2023 – 15 %), RWE (0,7 GW in 2023 – 5 %), Eneco (0,7 GW in 2023 – 5 %) and TotalEnergies (0,6 GW in 2023 – 4 %). Belgium submits that the HHI ⁽³⁶⁾ indicator for market concentration decreased from 5 510 in 2016 to 4 431 in 2023, partially explained by the increased development of renewable energy sources (solar and wind) by non-incumbent market players ⁽³⁷⁾.

⁽³⁴⁾ See Commission Decision of 27.8.2021, SA.54915 (2020/C) (ex 2019/N), Belgium, Capacity Remuneration Mechanism (OJ L/2022/117, 19.4.2022, p.40). First amendment decision: Commission Decision of 29.9.2023, SA.104336 (2023/N), Belgium, Amendments to the Capacity Remuneration Mechanism (OJ C/2023/265, 18.10.2023, p.1). Second amendment decision: Commission Decision of 17.9.2024, SA.114003 (2024/N), Belgium, Second set of amendments to the Capacity Remuneration Mechanism (OJ C/2024/6138, 14.10.2024, p.1).

⁽³⁵⁾ Belgian Energy Data Overview (SPF Economie 2024). More details on the wholesale and retail electricity market in Belgium and the market position of the main players (based on 2022 data), are provided in sections 2.2.1 and 2.2.2 of the Opening Decision.

⁽³⁶⁾ The Herfindahl-Hirschman Index is a measure for market concentration, calculated by squaring the market share of each competing firm in the market and then summing the resulting numbers. Markets with a HHI above 2 500 are generally seen as highly concentrated markets. The HHI values are taken from the annual CREG reports and are based on installed capacity and generation from installations connected at the transmission grid level.

⁽³⁷⁾ Annual Report CREG (2024).

- (36) According to Belgium, the main players in terms of electricity generation from installations connected to the transmission grid in Belgium are Electrabel (39,1 TWh in 2023 – 70 %), Luminus (6,8 TWh in 2023 – 12 %), Eneco (2,5 TWh in 2023 – 4 %), TotalEnergies (2,4 TWh in 2023 – 4 %) and RWE (2 TWh in 2023 – 4 %). Belgium submits that the HHI indicator for market concentration decreased from 6 372 in 2016 to 5 143 in 2023, thanks to the increased electricity production from renewable energy sources ⁽³⁸⁾.
- (37) According to Belgium, at the retail level, there were in total 16 electricity suppliers present in Belgium in 2023. The main suppliers in terms of supplied electricity are Electrabel (47 % in 2023), Luminus (18,2 % in 2023), TotalEnergies (5,5 % in 2023) and Eneco (5,3 % in 2023), while many players are very small ⁽³⁹⁾.

3. DETAILED DESCRIPTION OF THE MEASURE

3.1. Objectives of the measure and market failures

- (38) The lifetime extension of the two LTO Units will facilitate the development of an economic activity and contribute to addressing the resource adequacy concerns in Belgium (see section 2.4). In addition, Belgium submits that the lifetime extension of the nuclear reactors also aims at reducing the dependency on imports in general and imported fossil fuels (in line with the REPowerEU objectives) in particular, thereby also contributing to decarbonisation of the Belgian electricity system, as well as supplying baseload capacity in the context of the increased electrification needs in the near future in Belgium.
- (39) Belgium submits that the objective of the aid measure is to overcome a number of market failures which prevent Electrabel from continuing operating the nuclear reactors in Belgium without additional input by the Belgian Government ⁽⁴⁰⁾.
- (a) First, Belgium submits that there are a number of well documented electricity market failures which generally prevent markets from providing sufficient investment incentives in generation capacity required to meet resource adequacy standards, as described in more detail in the Commission decisions dealing with the Belgian CM (see footnote 34).
- (b) Second, Belgium submits that electricity and carbon markets exhibit additional market failures affecting particularly incentives to invest in low carbon technologies, such as the lack of long-term hedging opportunities (this affects particularly clean technologies which are capital intensive due to their exposure to volatile streams of revenues), the insufficient coverage of negative externalities from greenhouse gases (e.g., through a carbon price in the European Emissions Trading Scheme ('ETS') below the social cost of carbon, and the lack of a long-term predictable carbon price signal due to the structural volatility of the EU ETS), and the lack of incentives to invest in a diverse energy generation mix given the price setting nature of fossil (gas) power plants in electricity markets providing a natural hedge.
- (c) Third, Belgium submits that nuclear investments face a number of specific risks that are particularly difficult to hedge or manage for merchant investors, such as: (i) technical and project management risks, (ii) risks related to waste management and decommissioning, and (iii) regulatory and political risks.
- (40) Belgium argues that, in the light of these general market failures related to low carbon investments in electricity markets, as well as the additional risks to which a nuclear operator is exposed, a commitment to support the lifetime extension of the LTO Units is needed by the Belgian Government. Therefore, Belgium submits that the objective of the notified measure is to overcome these market failures.

⁽³⁸⁾ Annual Report CREG (2024).

⁽³⁹⁾ Rapport Commun sur l'évolution des marchés de l'électricité et du gaz naturel en Belgique (CREG, CWaPE, Brugel, VREG 2024).

⁽⁴⁰⁾ A more detailed description of the market failures can be found in recitals 23 and 24 of the Opening Decision.

3.2. Modifications of the measure by Belgium following the Opening Decision

- (41) In response to the doubts the Commission raised in its Opening Decision (see section 3.8), Belgium modified certain parts of the measure.
- (42) In particular, those modifications concern:
- (a) The transfer of the decision-making authority regarding economic modulations from the joint venture between the Belgian State and Electrabel, named BE-NUC (the entity which will own 89,807 % of the LTO Units, which initially was contractually bound to perform a modulation each time the conditions set out in the agreements were met), to the Energy Management Services Agreement ('EMSA') partner (selling the nuclear electricity on the market), and the introduction of financial incentives in the remuneration of the EMSA partner, in order to further guarantee an efficient use of the stock of modulations (see section 3.3.1.5). As a consequence, the fixed pre-set modulation threshold of minus 20 EUR/MWh has been removed, since the EMSA partner will have appropriate incentives to decide when modulation of the nuclear reactor is most efficient. The modified remuneration structure has also been taken into account in the revised Bidding and Imbalance Strategy ('BIS').
 - (b) The intensification of the pain/gain sharing mechanism (the 'Market Price Risk Adjustment' or 'MPRA') so that the financial support will more closely follow the changes in market prices (through the adjustment of the *de facto* rate of return of the project) (see 3.3.1.3.2).
 - (c) A cap on the amount of the Minimum OPEX and capital payment ('MOCP') in order to avoid that the cost of the MOCP for the Belgian State would become excessive (see 3.3.1.3.3).
- (43) The above-mentioned modifications are set out in detail in section 3.3 of this Decision.

3.3. Detailed description of the components of the measure

- (44) This subsection describes the different components of the support package for the LTO Project, including the amendments made by Belgium following the Commission's doubts raised in the Opening Decision (see sections 3.3.1, 3.3.2 and 3.3.3), as well as the alternative financing options considered by Belgium (see section 3.3.4).

3.3.1. Component 1: Financial and structural arrangements

- (45) A set of financial support mechanisms has been foreseen to allow for the financing of a timely and safe lifetime extension of the two nuclear reactors. All sub-measures of Component 1 are described in detail in the rest of this section.
- (46) During the formal investigation, Belgium presented the rationale behind all parts of the financial support:
- (a) Belgium recalls that nuclear investments are large infrastructure investments with century-long footprints that are characterised by significant upfront capital costs and construction periods with significant risks and uncertainties, as well as lengthy payback periods ⁽⁴¹⁾. As merchant investments in nuclear assets are exposed to uncontrollable and potentially high-impact risks related to policy, regulation and technology, with a predominantly fixed cost structure, their financial performance is particularly sensitive to realised availability and potential cost overruns. Therefore, historically, nuclear reactors were financed in the context of either public ownership and/or a supportive regulatory framework reducing risks exposure and ensuring long-term governmental commitment.

⁽⁴¹⁾ See World Nuclear Association, 'Financing Nuclear Energy', 2 May 2024, <https://world-nuclear.org/information-library/economic-aspects/financing-nuclear-energy>.

- (b) In most of the recent cases of investment in nuclear assets, the financing was supported through a set of regulatory measures to mitigate the potential effect of market risks and dedicated mechanisms limiting the exposure to nuclear specific technology, policy and regulatory risks. For instance, some projects have been developed under a regulated asset base ('RAB') model ⁽⁴²⁾, which Belgium considers as highly protective. Belgium opted for a two-way Contract for Differences ('CfD') design. To ensure the economic viability of the project, the package of measures of the LTO Project has been tailored to the needs of the nuclear investment at hand.
- (c) Through the measures envisaged in the RA, Belgium explains that it intends to provide additional protections compared to a standalone CfD scheme to provide security against potential insolvency or bankruptcy. However, Belgium specifies that,
 - the RA does not secure the financial performance of the JV, notably in case of extended availability issues or significant costs overruns, e.g., due to certain regulatory risks; and
 - the shareholders remain exposed to significant risks and financial incentives fostering performance and market-conform behaviour, which differs from typical RAB models that usually provide strong guarantees regarding cost recovery and return on investment, in addition to sufficient funding and liquidity.
- (d) Furthermore, Belgium notes that nuclear investments are highly scrutinised by financial institutions, with extensive due diligence requirements to assess the potential impact of different types of risks and uncertainties, as well as a critical focus on overall project structuring. The experience in Europe suggests in particular that obtaining financing for nuclear investments is particularly challenging, absent adequate protection mechanisms ⁽⁴³⁾.

3.3.1.1. Joint Development Agreement ('JDA')

- (47) As mentioned in recital 22, due to the strict timing for the LTO restart, the nuclear operator, Electrabel, identified and agreed with Belgium to undertake certain development activities, which are necessary to enable the LTO restart in time and necessary to meet the Safety Authority's requirements and expectations, prior to entering into the final transaction. These development activities have been laid down in the JDA, which was last amended on 18 July 2024 (JDA++) ⁽⁴⁴⁾.
- (48) The JDA++ lays down the conditions under which Belgium pre-funds Electrabel's costs and expenses for the development activities ⁽⁴⁵⁾ until all required legislative changes have been adopted and have entered into force (the 'Legislative Condition'). Shortly after fulfilling the Legislative Condition (on 15 July 2024), Electrabel started to fund its own costs and expenses for the development activities and will continue to do so until the amount of Electrabel's funding equals the amount pre-funded by the Belgian State (expected by early 2025), after which Electrabel and the Belgian State will fund the costs and expenses for the development activities on a 50/50 basis.

⁽⁴²⁾ RAB models have been extensively described by the literature. See, for instance, Meshkat, Mustafa. 'Building and Upgrading of Nuclear Power Plant Projects: Evaluation of Engineering, Procurement, Construction (EPC) and Regulated Asset Base (RAB) Models', *Comparative Law Review*, 14.2 (2023): pp. 1001-1022; Thomas, Steve, & al. 'The proposed RAB financing method', *Nuclear Consult* (2019).

⁽⁴³⁾ Belgium submits that commercial banks are not willing and investors are often reluctant, even where risk-sharing arrangements are in place with the state, to get exposure to nuclear assets, i.e., taking the risk associated with heavy investments in the nuclear sector in the context of uncertain policy and regulations, and technological risks.

⁽⁴⁴⁾ The development activities, described in Schedule 1 of the JDA++, concern technical studies mainly in relation to the conception and ageing of the installations, design improvements, the competences of the management, test and inspection programs, environmental impact assessment (including the preparation of necessary licensing and permitting documents) and periodic safety reviews of the LTO Units.

⁽⁴⁵⁾ Corresponding to 89,807 % (i.e., the ownership percentage of the LTO Units) of the total cost, and Luminus bears the remaining 10,193 %.

- (49) Belgium submits that the pre-funding by the Belgian State of the costs and expenses for the development activities is limited to any costs and expenses actually (to be) borne by Electrabel, corresponding to 89,807 % of the total costs for the development activities. A control mechanism is set up, as well as a 'True-Up' at the end of the contract period. Belgium also submits that the funding arrangements under the JDA++ are on arm's length and value for money basis.

3.3.1.2. Joint venture ('JV') and shareholder financing

- (50) The Belgian State will invest, together with the nuclear operator Electrabel, in a joint venture ('JV'), named BE-NUC, which will own 89,807 % of the LTO Units (as Electrabel currently does). The remaining 10,193 % of the LTO Units will stay in the hands of Luminus. Electrabel and the Belgian State will each own 50 % of BE-NUC and act as equal shareholders in terms of financial participation (provision of equity and Shareholder Loans) and share of power sales earnings. BE-NUC, as co-owner, will bear 89,807 % of the investments needed to extend the operation and the Belgian State will therefore indirectly bear 44,9035 % of the investment costs related to the LTO Project. The remaining 10,193 % will be borne by Luminus.
- (51) Electrabel is and will remain the sole operator of the two nuclear reactors through an Operations and Maintenance ('O&M') Agreement (see section 3.3.1.4). BE-NUC will not become a nuclear operator but will have control rights over the operating costs through the O&M Agreement.
- (52) Belgium submitted that it expects no possibility of raising external debt to finance the LTO Project. The LTO Project will be fully financed by its shareholders through equity and Shareholder Loans (see section 3.3.1.2.2 below).

3.3.1.2.1. Joint venture

- (53) There will be no purchase by the Belgian State of co-ownership stakes in the LTO Units, but rather a transfer (partial demerger of the relevant assets) from Electrabel to the JV, according to the steps described in recital 49 of the Opening Decision.
- (54) Electrabel will transfer its 89,807 % ownership rights regarding the LTO Units (as well as the related permits and any other assets required) to BE-NUC, in return for the distribution of BE-NUC shares to Engie (being at that time Electrabel's sole shareholder). The contribution of Electrabel to BE-NUC will be valued in consideration of the scrap value of the building, the value of the land and the value of immovable installations, as described in recital 51 of the Opening Decision.
- (55) This valuation of the contribution of Electrabel is reflected in the purchase price of EUR 24,7 million (subject to adjustments) to be paid by the Belgian State to acquire new shares and retain a 50 % stake in BE-NUC. The Board of Directors of BE-NUC will request a (statutory) auditor or a certified accountant to prepare a report regarding the contribution in kind, assessing notably the applied valuation and the valuation methods used for that purpose.
- (56) Belgium submits that the valuation of assets has no impact on the counterfactual scenario analysis and it provided evidence that the transfer of assets (buildings and land) under the LTO Project is neutral. According to Belgium, the use of conservative methods of asset valuation (based on scrap or fair value) ensures that Engie does not derive any advantage from the transfer of assets.
- (57) In addition, the immovable installations correspond to LTO equipment, which are purchased in the context of the LTO Services, the O&M Services and the JDA Services, and which were installed and incorporated in the LTO Units prior to the partial demerger. For reasons linked to Belgian property law and to avoid double counting, these specific pieces of LTO equipment are not paid directly but are considered in the partial demerger, together with the land and buildings. Furthermore, Belgium confirms that the related cash flows for these pieces of LTO equipment are already reflected in the Signing Financial Model.

- (58) A Shareholders' agreement between Electrabel, the Belgian Government and BE-NUC was concluded to set up the corporate governance of BE-NUC and each of its shareholders' rights. According to this agreement, the board of directors of BE-NUC is composed of four directors, two appointed upon nomination of the Belgian Government and two appointed upon nomination of Electrabel. BE-NUC's chairperson and chief financial officer will always be directors appointed by the Belgian Government. The quorum at the board of directors is a simple majority, and its resolutions are voted by simple majority. Conflict of interest provisions have been put in place.
- (59) As mentioned in recital 55 of the Opening Decision, non-European assets currently held by Electrabel will be transferred to Engie. Engie, as mother company of Electrabel, guarantees that assets worth at least EUR 4 billion remain in Electrabel at the time of the closing of the transaction (based on an equity value calculated as of 30 June 2023). In addition, after closing, other safeguards apply such as the continued and enhanced monitoring of the financial position of the nuclear operator by the CPN/CNV, and the uncapped and uncancellable parent company guarantee granted by Engie for certain obligations of the nuclear operator.
- (60) Belgium argues that the JV constitutes a *pari passu* investment, as the two shareholders enter into the JV under equal terms and conditions and, as shareholders, with the same level of risk and rewards.

3.3.1.2.2. Shareholder financing: Equity injection and Shareholder Loans

- (61) The role of the Belgian State as shareholder presupposes, *inter alia*, the financing of BE-NUC's capital costs (CAPEX) and operating costs (OPEX), the management of shares and the exercise of shareholder rights (e.g., voting rights), and the support of the two directors of BE-NUC, appointed upon nomination of the Belgian State (see recital 58).
- (62) The share capital contribution consists of:
- (a) An equity injection: the Belgian Government and Electrabel, as shareholders of BE-NUC, will each provide equity to BE-NUC through a share capital increase in order to finance any expense contemplated by the Shareholders' Agreement; and
 - (b) Shareholder loans: Electrabel and the Belgian Government will both issue to BE-NUC Shareholder Loans (the 'Electrabel Shareholder Loan' and the 'Belgian Government Shareholder Loan' respectively) to finance any expense contemplated by the Shareholders' Agreement.
- (63) Belgium explains that the terms and conditions of the Electrabel Shareholder Loan and the Belgian Government Shareholder Loan are identical. Both Shareholder Loans will be granted on market terms, at interest rates that have not yet been set, but would be, according to the Shareholder Loan Agreements, set by the board of BE-NUC in accordance with the Shareholders' Agreement by reference to prevailing market rates and any comparable third-party debt financing which may be available at the relevant time. Under the procedure agreed between the Belgian Government and Engie, Engie has prepared a term sheet setting the terms and conditions of both Shareholder Loans. The term sheet describes the methodology to set the interest rate. Belgium submits that this methodology is consistent with Engie's transfer pricing loan policies and is in line with the OECD BEPS principle⁽⁴⁶⁾ ensuring that the interest rate it set at an arm's length level. Pursuant to the term sheet, the interest rate is expected to be a floating interest rate, set at the EURIBOR 6-month rate (floored at 0 %) plus an expected margin of approximately [0-3] %.
- (64) Belgium submits that the introduction of a Shareholder Loan in addition to the equity injection follows from financial and transactional considerations. On the one hand, the provision of the Shareholder Loan grants more flexibility in the design of drawdown and repayment schedules. In particular, loan repayment provisions may be agreed upon with less regulatory constraints than dividend payments or equity repayments. On the other hand, the loan might optimise the financial structure with respect to taxable income (up to 30 % of EBITDA is redeemable to deduct interest).

⁽⁴⁶⁾ BEPS stands for Base Erosion (reducing the taxable income (or tax base) in a country) and Profit Shifting (moving profits to countries where taxes are much lower or non-existent). The OECD BEPS principles refer to a set of international guidelines designed to tackle tax avoidance by multinational companies. They ensure that companies pay taxes where they actually make profits and conduct their real business activities, instead of shifting profits to low-tax countries.

- (65) Based on preliminary computations in the Signing Financial Model, the total share capital contribution (equity injection and Shareholder Loans) amounts to EUR [2 000-2 500] million ⁽⁴⁷⁾, to be provided at 89,807 % by both the Belgian Government and Electrabel on *pari passu* terms in [...] instalments from [...] to [...] to finance, amongst others, the CAPEX of the LTO Project (the remaining 10,193 % being funded by Luminus). The share capital contribution is to be paid back to BE-NUC's shareholders through a series of share capital reductions and Shareholders loan repayment and is to be remunerated through the distribution of dividends and Shareholder Loan interest. The split of the share capital contribution (EUR [2 000-2 500] million) into equity injection and shareholder loans has not yet been decided.
- (66) Belgium submits that the shareholder funding obligations and the Shareholder Loan can be considered as *pari passu* financing, and that the Shareholder Loan will be granted on market terms, so that the shareholder funding does not grant a selective advantage to the beneficiaries.

3.3.1.3. Remuneration Agreement

- (67) A Remuneration Agreement (RA) has been concluded between BE-NUC, Luminus and the RA Counterparty, which will be an autonomous service with accounting independence within the Belgian State ('BE-WATT'). The RA aims at addressing market price uncertainty and de-risking the LTO Project revenues for the owners of the LTO Units, BE-NUC and Luminus. Thereby, BE-NUC and Luminus should receive sufficient revenues from the operation of the LTO Units to ensure their safe and reliable operation and economic viability, while allowing shareholders to contemplate the required market-conform financial return.
- (68) In particular, Belgium clarifies that the financing principles of the transaction are as follows:
- (a) The CAPEX requirements of the LTO Project are financed primarily by the shareholders of BE-NUC on *pari passu* basis (and by Luminus in proportion to its co-ownership), either through equity or through Shareholder Loans (see section 3.3.1.2).
 - (b) The operating and maintenance costs of the LTO Project are funded primarily through the LTO operating revenues, whereby a flow of operating revenues is secured through the CfD (to the extent the LTO Units are available) (see section 3.3.1.3.2). The Strike Price of the CfD is estimated at the level that allows the expected Internal Rate of Return ('IRR') of the LTO Project's cash flows to reach the target IRR of 7 % (nominal and post-tax), within the threshold of the 6 %-8 % interval (see section 3.3.1.3.1).
 - (c) The MOCP and the 'Shut-Down period Cost' Loans (or 'SDC Loans') complement the LTO operating revenues and consist of protective measures to ensure that BE-NUC has, at all times, sufficient liquidity to pay its operating, maintenance and fuel costs to allow for a safe and reliable operation of the LTO Units.
 - The SDC Loans are meant to finance the costs prior to the restart of the LTO Units and to ensure sufficient cash during the 3-year start-up period (until 31 December 2028), when significant works still have to be undertaken and the LTO Units cannot run at full capacity.
 - The MOCP is only triggered in the case of (significantly) reduced availability of the LTO Units, thereby ensuring long-term financial stability during the entire period of the lifetime extension. A working capital facility ('WCF') serves as an intra-year bridge to the annual MOCP.
- (69) The financial support mechanisms (CfD, MOCP and SDC Loans) are explained in more detail in sections 3.3.1.3.2, 3.3.1.3.3 and 3.3.1.3.4 below.

⁽⁴⁷⁾ Excluding VAT. The Signing Financial Model figures do not include VAT.

3.3.1.3.1. Rate of return of the LTO Project

- (70) In general terms, the (target) IRR is the minimum level of return that investors accept to be compensated for a certain level of risk in an investment project. The target IRR is often referred to as the 'hurdle rate', which is the threshold that a project's IRR needs to equal or exceed before the project will be undertaken. In theory, the hurdle rate equals the sum of the cost of capital (e.g., weighted average cost of capital or 'WACC') and a hurdle premium. In other words, it is a combination of the rates of return from comparable projects/assets and adjustments to align with a particular risk profile including project-specific premia to cover additional non-diversifiable risks.
- (71) In the present case, the Levelised Cost of Electricity ('LCOE'), corresponds to the minimum level of the average electricity price (or the strike price in the CfD design) to be obtained for the LTO Project to achieve its target IRR. As mentioned in recital 72 of the Opening Decision, the preliminary strike price in the Signing Financial Model, based on the assumption of a cost to modernise the LTO Units of approximately EUR [2-2,5] billion, was set at EUR [80-90] per MWh (in 2022 values). Belgium submits that, when considering the application of the (intensified) pain/gain sharing mechanism (MPRA), the strike price, based on the Signing Financial Model, can vary from EUR [80-90] per MWh to EUR [80-90] per MWh (in 2022 values).
- (72) Belgium argues that the target IRR is a conservative rate of return given the risk exposure of the LTO Project, based on: (i) a benchmarking exercise of the rates of return of other nuclear investments globally and other power sector assets in Belgium (see section 3.3.1.3.1.1), (ii) an assessment of BE-NUC's cost of capital (both WACC and cost of equity ('CoE')) based on the CAPM pricing model (see section 3.3.1.3.1.2), and (iii) a simulation of the expected MPRA-adjusted IRR in view of updated market circumstances that shows that the expected IRR of the LTO Project has decreased compared to the time of the negotiation of the Implementation Agreement (see section 3.3.1.3.1.3).

3.3.1.3.1.1. Benchmarking exercise

- (73) Belgium provided an international benchmark of the target rates of return and cost of capital for companies operating nuclear plants across various geographies, as well as gas-fired power plants remunerated under the Belgian CM and companies operating other types of energy transmission and storage infrastructure in Belgium. The benchmarking exercise was fine-tuned after the adoption of the Opening Decision, notably regarding a further description of the nature of the regulatory frameworks and possible additional schemes affecting the risk allocation for the companies and projects considered. Table 3 provides an overview of the public target rate of return or WACC estimates of the benchmarked projects and companies.

Table 3

Public WACC estimates for benchmarked projects/companies

Considered company/project and ownership	Regulatory framework and relevant period	Post-tax target rate of return / WACC and year of decision ⁽¹⁾	Premium over risk-free rate ⁽²⁾
Vertically integrated American utilities (Georgia Power and Duke Energy), mostly privately owned	RAB model (3-year period 2023-2025 for Georgia Power, from 2023 for Duke Energy in South Carolina, from 2024 for Duke Energy in North Carolina (end year subject to review))	6,36 % - 7,06 % (2022 and 2023)	2,8 % - 4,2 %

Considered company/project and ownership	Regulatory framework and relevant period	Post-tax target rate of return / WACC and year of decision ⁽¹⁾	Premium over risk-free rate ⁽²⁾
State-owned Canadian utility OPG (generation portfolio incl. among others nuclear and hydroelectric power plants)	RAB model (5-year period 2022-2026)	5,6 % (2021)	3,5 % - 4,3 %
Refurbished Canadian nuclear power station Bruce A, privately owned	Two-sided CfD with strike price based on target IRR (25-year contract, from re-commencement of operation)	10,6 % - 13,8 % (2007)	6,0 % - 9,7 %
Hinkley Point C new nuclear power plant (UK), no ownership by UK state	Two-sided CfD with strike price based on target IRR (35-year contract, from commissioning)	9,25 % - 9,75 % (2014)	5,8 % - 7,5 %
Hungarian new nuclear power plant Paks II, construction 100 % funded by the state	Market-based remuneration, State support for 100 % CAPEX funding	7,38 % - 8,4 % (2017)	3,9 % - 5,2 %
Existing French EDF nuclear assets, EDF 100 % state-owned	Partial price regulation (ARENH - under revamping); mostly exposed to market until 2026, unknown thereafter	7,6 % (2022)	4,9 % - 6,2 %
Extension of Belgian Tihange 1 nuclear reactor, no ownership by BE state	Market-based remuneration with windfall profit tax (until 2025)	9,3 % (2013)	5,9 % - 6,9 %
Belgian CM (gas-fired power plants)	Capacity contract (up to 15 years for newly built capacities)	7,6 % - 8,6 % (2023) ⁽³⁾	5,5 % - 6,5 %

Source: Memo Compass Lexecon, 29 November 2024, 'SA.106107 BE - Prolongation of two nuclear reactors - Assessment of Aid Proportionality: Analysis of risk allocation and return on investment'.

- ⁽¹⁾ In some cases, the regulatory decision of the concerned company/project refer to the target rate of return (e.g., for the purpose of determining the CfD strike price) or the WACC (e.g., as considered in the RAB model to determine allowed revenues). For each considered company/project, either the rate of return or WACC considered in the respective regulatory regime is presented. The year in brackets refers to the year when the assessment/decision on the target rate of return/WACC was made.
- ⁽²⁾ For the purpose of comparability of the results we focus on the premium over the risk-free rate, i.e. the difference between the assessed post-tax target rate of return/WACC and the contemporaneous risk-free rate (premium over the risk-free rate as of the time of the assessment/regulator's decision related to the considered asset/company).
- ⁽³⁾ The post-tax WACC was calculated based on the technology-specific real pre-tax WACC (proposed by CREG and Elia, set by the energy minister) as applied to determine the auction parameters of the CM.

(74) Table 4 provides an overview of the elements addressing risks in the benchmarked projects or companies.

Table 4

Elements addressing risks for benchmarked projects/companies

	Bruce A	Tihange 1	Hinkley Point-C	Belgian CM	Existing French EDF nuclear assets	Paks II	LTO Units	(*) OPG	(*) Georgia Power, Duke Energy South and North Carolina
Portfolio/risks	4 refurb. nuclear units	1 refurb. nuclear unit	1 new nuclear plant (2 units)	/	Nuclear fleet (57 units)	1 new nuclear plant (2 units)	2 refurb. nuclear units	Refurb. nuclear units and hydro	Vertically integrated, including networks, nuclear and other tech.
Con-struct.	Strike price adjustment	-	-	-	-	100 % State funded + lump-sum EPC	Strike price adjustment	RAB	RAB
Market	2-sided CfD	-	2-sided CfD	Capacity contract	ARENH (partial price reg.)	-	2-sided CfD	RAB	RAB
Operation	Strike price indexing/adjustment; Fuel cost pass-through	-	Strike price indexing/adjustment	-	-	-	Strike price indexing adjustment + MOCP	RAB	RAB
Funding	-	-	Credit guarantee	Capacity contract	State-owned	100 % State funded	MOCP/SDC Loan	RAB	RAB
Policy	-	Legal protect.	Legal protect.	-	State-owned	100 % State funded	Legal protect.	RAB	RAB

Source: Memo Compass Lexecon, 29 November 2024, 'SA.106107 BE - Prolongation of two nuclear reactors - Assessment of Aid Proportionality: Analysis of risk allocation and return on investment'

(*) Compass Lexecon notes that they cannot appreciate the exact risk profile based on the regulatory framework for the US and Canadian utilities as detailed information is not available to them.

(75) According to Belgium, this benchmarking exercise highlights three elements:

- (a) The regulated companies and projects included in this benchmark are not directly comparable to BE-NUC as they differ either in terms of the regulatory framework/funding scheme and of the resulting risk allocation, and/or because they comprise other types of assets (which diversifies and dilutes the nuclear related risks). There is no directly comparable company, but the benchmark consists of a selection of companies and projects with relevant individual characteristics such as geography, asset technology, existing/new assets, market and regulatory/support framework. However, these comparable companies and projects do not resemble BE-NUC in every respect. Despite these limitations, the benchmark still provides relevant information to assess the remuneration parameters (target rate of return/WACC) keeping in mind the specificities of each company or project and associated risk profiles. Hence, the benchmark presented should be understood as relevant to assess and contextualise reasonable market-based ranges of the remuneration parameters.
- (b) The benchmark highlights that the premia over the risk-free rate decrease with portfolio diversification, lower risk exposure (to construction, market, operation, funding and policy risks), and possibly the nature of the owner/operator, with incumbent, state-owned or state-funded utilities potentially benefitting from lower financing costs (see Table 3 and Table 4).
 - On the lower end, North American utilities (OPG, Georgia Power and Duke Energy) that have diversified asset portfolios, and are subject to a RAB model providing comprehensive risk hedging, exhibit relatively low premia over the risk-free rate (around 2,8 %-4,3 %).
 - Paks II nuclear project and EDF existing nuclear fleet exhibit higher premia (around 3,9 %-6,2 %). Their remuneration is at least partly merchant and considered assets are nuclear plants only. However, state-ownership/funding can to some extent reduce funding costs.
 - New gas-fired power plants under the Belgian CM exhibit a relatively high-risk premium (5,5 %-6,5 %). These newly constructed thermal plants are exposed to construction, operational and policy risks, while market risks tend to be reduced due to pluri-annual capacity contracts and payments.
 - On the upper end, the single nuclear unit Tihange 1 exhibits a high premium (5,9 %-6,9 %) since owners bear investment and operating risks, while market revenues are uncertain and market upsides are capped. Hinkley Point C also presents a relatively high premium (5,8 %-7,5 %) which can be explained by the nature of the assets (new single nuclear plant) and the significant construction/operational risks borne by the shareholders, despite the CfD and other protections. Likewise, the risk premium for the nuclear pure player Bruce Power, which is a private company benefitting from a CfD (including other risk-sharing schemes), is relatively high (6,0 %-9,7 %). This said, remuneration for this plant was set in 2007, in a different financing and market context.
- (c) Overall, Belgium points out that the risk exposure of BE-NUC across the different dimensions falls between the risk exposure of assets and utilities benefitting from a RAB model, and those benefitting from a CfD and/or other types of market-based remuneration. BE-NUC's target post-tax nominal IRR ('Project IRR') of 7 % (and its threshold range of 6 % to 8 %) exhibit a premium of 3 %-5 %, considering an average risk-free rate of approximately 3 %. Based on the empirical evidence, the implied premium of the Project IRR in the RA sits at the lower end of the investor's requirements for the benchmarked projects/companies, and close to the premia estimated for the diversified utilities' assets under RAB schemes, that have less exposure to nuclear-specific risks and expectedly lower risks of losing up their investment and return.

- (76) Therefore, Belgium considers the 6 %-8 % target IRR of the Project to be within the likely range of market-based returns that will not result in overcompensation.

3.3.1.3.1.2. Comparison of the target IRR with BE-NUC's cost of capital

- (77) In addition to the benchmarking exercise, in order to confirm whether the target IRR of 7 % lies within the likely range of market-conform returns, Belgium provided an assessment of the cost of capital using two metrics, the WACC and the Unlevered CoE, given that BE-NUC is not debt-financed.
- (78) Belgium obtained estimates for the WACC and unlevered CoE lying in the range of 6,2 % to 7,4 % (which amount to a risk premium for the project of 3,1 % to 4,3 % above the risk-free rate). According to Belgium this demonstrates and further confirms that the target IRR of 7 % is proportionate and does not result in overcompensation. The sections below explain in more detail how the WACC and CoE range were estimated.

3.3.1.3.1.2.1. Estimation of the WACC of the LTO Project

- (79) The first metric to estimating the cost of capital is the WACC, which represents the minimum rate of return that the project must offer to attract capital. This minimum return represents the return that potential investors could earn if they decided to invest in another project with equivalent characteristics in terms of cash flow, timing and risk. The post-tax WACC is computed using the below formula:

$$\text{WACC} = w_E * (\text{Risk-free rate} + \beta_E * \text{Equity Risk Premium}) + (1 - w_E) * \text{Post-Tax Cost of Debt}$$

w_E : share of equity financing

β_E : levered equity beta, i.e. the company's exposure to systematic risks

- (80) The WACC is thus the sum of (i) the CoE weighted in proportion to the market value of equity within the total capital (w_E), and (ii) the cost of debt (post-tax) weighted by the share of the market value of debt in the total capital ($1-w_E$). The CoE is calculated on the basis of the Capital Asset Pricing Model ('CAPM'), a standard model for measuring the return required by an investor to cover the opportunity cost of the value of money over a set investment horizon (the risk-free rate) and for the exposure to market risk⁽⁴⁸⁾. The exposure to market risk is captured by the levered equity beta value (β_E). Due to the volatility of parameters, the inputs to CAPM were computed in ranges.
- (81) Regarding the computation of the levered equity beta, Belgium argues that, as the JV is a new and privately held company holding two existing nuclear LTO Units with expected generation of 10 years, its beta cannot be computed from market or historical data and therefore has to be estimated through a group of comparable listed companies. However, given that there are no comparable utilities that have 100 % exposure to nuclear generation, Belgium considered a sample of five listed European utility companies with the highest exposure to nuclear activities, i.e. comparable projects with 15 %-65 % generation using nuclear power plants, within a diversified portfolio (see Table 5).

⁽⁴⁸⁾ The CAPM model is widely recognised and accepted in academic literature and by industry practitioners as a robust approach for estimating the cost of equity.

Table 5

Asset beta values for comparable utility companies with various nuclear exposure

Company	% Nuclear Mix 2022/23	Asset beta values (unlevered)
CEZ Group	[60-70] %	[0,40-1,00]
Fortum Oyj	[50-60] %	[0,40-1,00]
UPM-Kymmene Oyj	[40-50] %	[0,40-1,00]
Endesa, S.A.	[40-50] %	[0,40-1,00]
Iberdrola, S.A.	[10-20] %	[0,40-1,00]
Simple average	-	[0,40-1,00]
Median	-	[0,40-1,00]

Source: Assessment of Aid Proportionality: Updated analysis of risk allocation and return on investment, Compass Lexecon, 29 November 2024.

- (82) Belgium explained that each of the utilities is a diversified publicly traded utility company with some notable exposure to RAB-regulated network assets and/or supported renewable energy assets, unlike the JV which is a private entity with a 100 % exposure to nuclear generation subject to the RA. Therefore, the systemic risks estimated based on these comparable companies would likely underestimate the systemic risk of BE-NUC.
- (83) Belgium used the parameters of Table 6 to put into the WACC formula and, based on these and additional inputs, observed throughout 2023, obtained a theoretical WACC which lies in the range of 6,2 to 7,4 %, including a premium of 3,1 %- 4,3 % over the risk-free rate.

Table 6

BE-NUC's WACC estimate and key underlying parameters

Parameter	Assumption/approach	Estimate (*)
Risk free rate	2023 range of yields on 10-year Belgian government bonds (OLOs)	2,5 %- 3,6 %
Equity market risk premium	Expert estimates for mature markets	4,6 %- 6,0 %
Beta coefficient (unlevered)	Median and average across comparables	[0,40-1,00]-[0,40-1,00]
Target leverage	Median and average across comparables	53,0 %- 54,4 %
Beta coefficient (levered)	Hamada formula with target leverage	[0,40-1,00]-[1,00-1,60]
Cost of equity (levered)	CAPM	7,4 %-9,3 %
Pre-tax cost of debt	Risk free rate + power sector's corporate risk premium	5,3 %- 5,5 %
Debt share of total capital	Derived from target leverage	34,6 %- 35,2 %

Parameter	Assumption/approach	Estimate (*)
Tax rate	Belgium's corporate tax rate	25 %
Pre-tax WACC	Using levered cost of equity and pre-tax cost of debt	6,7 %-7,9 %
Post-tax WACC	Using levered cost of equity and post-tax cost of debt	6,2 %-7,4 %

Source: Assessment of Aid Proportionality: Updated analysis of risk allocation and return on investment, Compass Lexecon, 29 November 2024.

(*) The range corresponds to historical evolution from early to late 2023.

3.3.1.3.1.2.2. Estimation of the cost of equity of the LTO Project

- (84) The second methodology is based on the CoE, which measures the required shareholder project return, assuming that there is no debt financing, as it is the case for the LTO Project. Although the CoE approach also uses CAPM, it relies on the unlevered (i.e. with no gearing) CoE ⁽⁴⁹⁾. The unlevered CoE is computed as follow:

$$\text{CoE (unlevered)} = \text{Risk-free rate} + \beta_A \times \text{Equity Risk Premium}$$

β_A : unlevered beta, or 'asset beta'

- (85) The following approach was used to estimate each parameter of the CoE equation (see Table 7):

- (a) The risk-free rate is approximated by the yields on the 10-year Belgian government bonds ('OLOs' ⁽⁵⁰⁾) which fluctuated throughout 2023 in the range of 2,5 % and 3,6 %. For the estimation of the equity (market) risk premium, various external sources were considered, from which a range of 4,6 % to 6 % was withheld:

— Damodaran estimates: 5,9 % as of January 2023 and 4,6 % as of January 2024.

— Kroll estimates are in the range of 5,5 % to 6 % over 2023.

- (b) The estimate of the (unlevered) asset beta was based on the same assumptions as for the WACC computation above, leading to a median and average value of [0,40-1,00] and [0,40-1,00] for five traded utility companies with some exposure to nuclear generation (see Table 5).

- (86) Putting the estimates above in the CoE equation provides an estimate for the unlevered CoE in the range of 6,2% to 7,5% (see Table 7), including a premium of 3,1% to 4,3 % above the risk-free rate, which is in line with the results obtained for the WACC.

⁽⁴⁹⁾ Contrary to the 'Levered beta', also referred to as just 'beta', which compares the volatility of returns of a company's debt and equity against those of the broader market (for example, a company with a beta of 1,4 has returns that are 140 % as volatile as the market it is being compared to), the 'Unlevered beta', also referred to as 'asset beta' measures the market risk of the company without the impact of debt to isolate the risk due solely to company assets.

Unlevered CoE is generally used to assess projects or investments that are financed solely with equity. As such, comparing the WACC and the unlevered cost of capital provides insights on the impact of debt on a company's cost of capital.

⁽⁵⁰⁾ OLO stands for 'Obligation Linéaire/Lineaire Obligation'.

Table 7

BE-NUC's unlevered cost of equity estimates and underlying parameters (full range)

Parameter	Assumption/approach	Estimate
Risk free rate	2023 range of yields on 10-year OLOs	2,5 %- 3,6 %
Equity market risk premium	Expert estimates for mature markets	4,6 %- 6,0 %
Beta coefficient (unlevered)	Median and average across comparables	[0,40-1,00]-[0,40-1,00]
Cost of Equity (unlevered)	CAPM	6,2 %- 7,5 %

Source: Assessment of Aid Proportionality: Updated analysis of risk allocation and return on investment, Compass Lexecon, 29 November 2024.

- (87) Taking into account the parameters estimated above (for possible ranges throughout 2023), Belgium estimates three plausible scenarios for the unlevered CoE at the time of the agreement between the parties in 2023, corresponding to a range of 6,8 % to 7,3 % (see Table 8).

Table 8

Three scenarios for BE-NUC's unlevered cost of equity (reduced range)

	Lower bound	Base Case	Upper bound
Risk-free rate (2023 average)	3,11 %		
Equity risk premium (2023 average)	5,27 % (Damodaran 2023 average)	5,51 % (Damodaran and Kroll average)	5,75 % (Kroll 2023 average)
Unlevered Beta (comparable average)	[0,40-1,00] (simple average, excluding Iberdrola)	[0,40-1,00] (median of 5 companies)	[0,40-1,00] (simple average of Fortum and CEZ)
Gearing	0 %		
Cost of Equity (Unlevered)	6,8 %	7,1 %	7,3 %

Source: SA.106107 Supplementary note Additional explanations on the range of cost of capital estimates Compass Lexecon 5 December 2024.

3.3.1.3.1.2.3. Limitations of the CAPM-based estimates of BE-NUC's cost of capital

- (88) Belgium acknowledges the limitations of the CAPM approach to estimate BE-NUC's cost of capital given the lack of directly comparable publicly listed companies and the specificities of the risk profile and financing approach of the project ⁽³¹⁾. In particular, Belgium puts forward the specificity of the nuclear sector and the limited comparability to other groups of assets.

⁽³¹⁾ It is not always feasible to express all possible market risks within one parameter, especially for private investments whose beta can only be estimated from a peer group of assets with limited comparability.

- (89) In addition, Belgium discusses different premia typically required by investors to invest in practice in comparable long-term investment projects over the WACC estimate derived by applying the CAPM approach. Belgium puts forward one possible justification for the need to account for this premium over the WACC estimate in relation to the risk of capital lock-in for long-term investment projects that cannot be diversified away and is not rewarded under CAPM⁽⁵²⁾. Moreover, another argument put forward to justify the need to account for a premium relates to the shortage of capital to achieve energy policy goals in Europe, as there is substantial competition for investments among available projects which increases the required rate of return to attract capital. Belgium argues that it is common practice among utility companies to add a premium in the range of 1,5 % to 4 % and provides some examples to prove this⁽⁵³⁾. Finally, Belgium also submits that another justification for accounting for a financing premium over the WACC estimate is the illiquidity premium⁽⁵⁴⁾ given the nature of this investment, which is backed by both academic studies (which point to a relevant range of 0,7 % to 7,3 %)⁽⁵⁵⁾ and industry practitioners⁽⁵⁶⁾. These premia could be added to the estimates of WACC or CoE derived through the CAPM approach, as explained in previous sections, and justify Belgium's argument that the target IRR is a conservative rate of return given the risk exposure of the project.

3.3.1.3.1.3. Expected MPRA-adjusted IRR based on current market price expectations

- (90) Belgium explains that the MPRA has the effect that the target IRR after MPRA adjustment varies dynamically between a range of 6 % to 8 %. Belgium argues that even if the target IRR is set at 7 % before MPRA-adjustment, under current market circumstances (with lower expected market prices than at the time of the Signing Financial Model) a lower IRR can be expected than what was estimated at the time of the negotiation of the RA.
- (91) To demonstrate this, Belgium provided an analysis of the evolution of market expectations over the period 2025-2035 since the negotiation of the RA based on various sources, and the impact of these revised projections on the expected IRR of the LTO Project (through the application of the MPRA).
- (92) Figure 1 shows the initial price curves at the end of 2023 (i.e. at the time the agreements were signed). Across the various price projections, market prices start - in the central scenario shown in full lines - at a value of EUR 120 per MWh in 2025, declining towards an average value of EUR 87 per MWh in the period until 2033.

⁽⁵²⁾ According to Belgium, the estimated return from the CAPM-based analysis from the given comparator set will not reward the risks for the: (i) private nature of the investment into the JV; (ii) risks specific to nuclear generation; and (iii) risk profile specified by the RA.

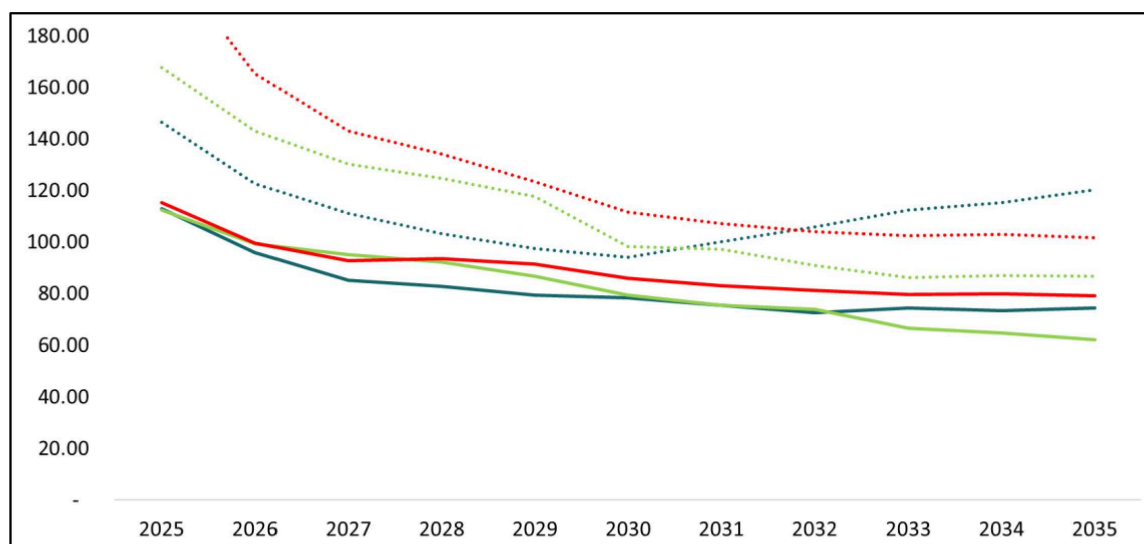
⁽⁵³⁾ See e.g., CEER, 2017: pp. 115-119: *The premia on cost of capital for power networks ranged between 0,6 %– 3,5 % depending on the age of the investment (i.e. new investment) and quality of supply*. Elia, Adequacy and Flexibility Study for Belgium 2024–2034, p. 382: In the adequacy flexibility study for Belgium, investor behaviour was modelled with a risk-averse approach by adding to the WACC a 3,0–8,0 % hurdle premium to make up for additional risks. For nuclear projects in particular, Oxera estimated an additional premium of 2,0-4,0 %, of which half might be attributable to the cost of equity for any generator 'given liberalised electricity markets and the other half to 'technological and construction risks' (Oxera, 2005:4). Engie requires an average realised unlevered IRR of [0-5] % above their WACC. Fortum requires a premium of [0-5]-[0-5] % depending on technology. Iberdrola's target spread to WACC is set at [0-5] %.

⁽⁵⁴⁾ The marketability or liquidity of an asset refers to the degree to which it can be converted into cash quickly without incurring large transaction costs or price concessions. According to Belgium, illiquidity matters to investors, as they demand higher returns from less liquid assets than from otherwise similar more liquid assets. In other words, higher returns are required as compensation for the opportunity cost of not investing in a tradable asset and for bearing the risk of loss on the illiquid investment.

⁽⁵⁵⁾ Evidence from academic studies shows that investors require returns for the level of illiquidity of an investment. The Belgian State provided extensive academic references on this matter, among which Nair and Radcliffe (1998), Damodaran (2005), Ibbotson (2013), Pemberton (2017), Torchio and Surata (2014), Ilmanen, Chandra, and McQuinn (2020), BNP Paribas (2023).

⁽⁵⁶⁾ An illiquidity premium has been added by Belgian regulators in awarding the return for regulated gas assets. More recently, due to illiquidity and the non-listing of the LNG facility operator, CREG applied a factor of 1,2 to the risk-free rate and the risk premium for the regulatory period 2020-2023.

Figure 1

Initial baseload price curves in Signing Financial Model (EUR/MWh) (2022 values)

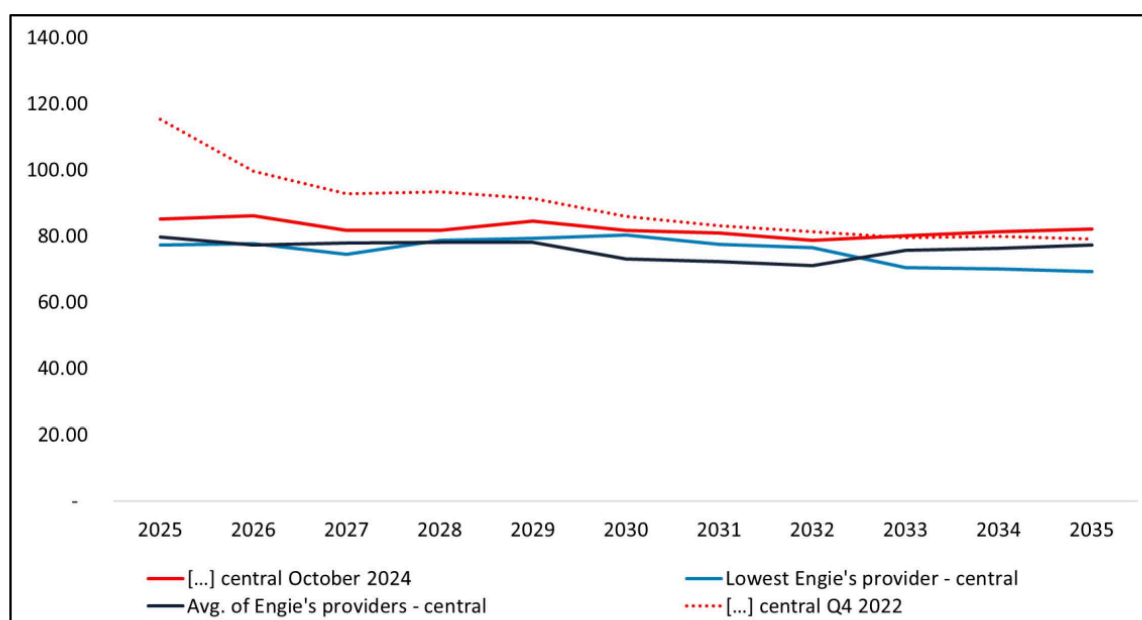
Source: Assessment of Aid Proportionality: Supplementary Note – Updated market price projections and IRR impact through the MPRA, Compass Lexecon, 11 December 2024.

Note: The name of each service provider cannot be displayed for confidentiality reasons. Full lines represent the price projections of various providers in the central scenario and dotted lines corresponds to the upside scenario. The grey area [removed for confidentiality reasons] represents the price corridor for MPRA adjustments of the strike price, i.e. the market price range within which the strike price is adjusted, as initially foreseen in RA, without considering the update mentioned in section 3.3.1.3.2. Above (below) this range, the strike price is adjusted to the upper (lower) bound.

- (93) Figure 2 shows that the current central scenario power price projections⁽⁵⁷⁾, displayed with full lines, have decreased compared to the ones used at the time of the Signing Financial Model. [...] price projection in the central scenario in Q4 2022, used amongst others as a reference curve in the Signing Financial Model, is for instance presented with a red dotted line in this graph. While, at the end of 2022, prices were projected at EUR 120 per MWh in 2025, they are currently projected at EUR 85 per MWh or even lower in 2025. Market developments since 2022 have reduced projected wholesale electricity prices in the next decade, notably due to decreasing commodity price projections (gas and CO₂), among others. Figure 2 also shows that current central scenario projections forecast relatively flat prices between 2025 and 2035, ranging from EUR 69 per MWh to EUR 86 per MWh.

⁽⁵⁷⁾ Dated Q3 and Q4 2022 depending on the provider.

Figure 2

Baseload price curves updated in fall 2024 (EUR/MWh) (2022 values)

Source: Assessment of Aid Proportionality: Supplementary Note – Updated market price projections and IRR impact through the MPRA, Compass Lexecon, 11 December 2024.

Note: Full lines represent the price projections in the central scenario in fall 2024. As a comparison, the dotted line corresponds to the price projection of [...] in Q4 2022, used in the Signing Financial Model. The grey area [removed for confidentiality reasons] represents the price corridor for MPRA adjustments of the strike price, i.e. the market price range within which the strike price is adjusted, as initially foreseen in the remuneration agreement, without considering the update mentioned in section 3.3.1.3.2. Above (below) this range, the strike price is adjusted to the upper (lower) bound.

- (94) Belgium concludes on the basis of the above figures that market price expectations have decreased.
- (95) Belgium submits that the grey area shown in the figures above represents the price corridor (as initially foreseen in the RA) for MPRA adjustments of the target IRR, i.e. the market price range within which the target IRR is adjusted⁽⁵⁸⁾. The lower market price expectations then suggest a decline in the expected IRR adjusted by the MPRA. Under the MPRA parameters initially foreseen in the agreement, the expected IRR of the LTO Project would in Q3 of 2024 be anticipated at 6,7 % (if all the assumptions from the Signing Financial Model are met). With the updated MPRA parameters (see section 3.3.1.3.2), which makes BE-NUC's revenues and IRR more sensitive to market price conditions, the expected IRR would be reduced to 6,5 % (if all the assumptions from the Signing Financial Model are met) considering the same price projections (see Table 9).

⁽⁵⁸⁾ Prices outside the corridor imply the same adjustment as the nearest outer bound of the corridor. This adjustment aligns with a target IRR, with the upper bound of the corridor set at 8 % and the lower bound at 6 %.

Table 9

Expected IRR (with original and updated MPRA) versus target IRR (Q3 2024)

Target IRR before MPRA adjustment	Outlook	Average market price (EUR/MWh) (2022 values)	Preliminary strike price (EUR/MWh) (2022 values)	Expected IRR with original MPRA parameters (+/- 30 %)	Expected IRR with updated MPRA parameters (+/- 20 %)
7 %	Average of providers; central scenario; Q3 2024	[70-80]	[80-90]	6,7 %	6,5 %

Source: Assessment of Aid Proportionality: Supplementary Note – Updated market price projections and IRR impact through the MPRA, Compass Lexecon, 11 December 2024.

3.3.1.3.2. Two-way Contract for Differences ('CfD')

- (96) The CfD will apply between the Belgian State and BE-NUC, as well as between the Belgian State and Luminus, the other co-owner of the two nuclear reactors. This means that a predefined target price (the 'strike price'), that will be indexed throughout the RA period, will be guaranteed by the Belgian State for the aggregate metered electricity output of the LTO Units. If the market reference price ('MRP') is higher than the strike price, the positive difference multiplied by the actual metered output will be paid by BE-NUC and Luminus to the Belgian State. If the MRP is lower, the negative difference multiplied by the actual metered output will be paid by the Belgian State to BE-NUC and Luminus. The difference payments become payable on the first power date (the date on which the relevant LTO Unit injects electricity into the high-voltage grid for the first time after its initial legal end date) and will be made in proportion to BE-NUC's and Luminus' share of the power generated by the LTO Units.
- (97) The main parameters of the CfD are:
- (a) The MRP, referring to the day-ahead market ('DAM') spot price in the Belgian bidding zone.
 - (b) The strike price, defined by BE-NUC based on a financial model to be approved by the RA Counterparty to reflect BE-NUC's actual operating, capital and financing costs in respect of the LTO extension as from 21 July 2022 (therefore estimated as the levelised cost of electricity, 'LCOE'). The strike price will be initially sized to achieve an average target Internal Rate of Return ('IRR') of 7 % (nominal and post-tax) (see section 3.3.1.3.1).
- (98) According to Belgium, based on an independent analysis by Compass Lexecon ⁽⁵⁹⁾, the initial choice of the DAM as MRP in the CfD is suitable in the context of the LTO Project, particularly in the period of LTO works (the Restart Phase until 31 December 2028). Moreover, Belgium argues that flexibility built into in the RA opens the door for alternative MRP choices during the contract duration, depending on the evolution of the Belgian market context and needs, whilst maintaining the risk-return balance of the initial CfD design. Belgium further justifies the use of the DAM based on the following elements:
- (a) The DAM is a suitable reference in Belgium as it is transparent, robust, and as the DAM is relatively liquid compared to other markets in Belgium. Belgium further notes that the DAM confers no discretion on the choice of the purchasers because the volume is offered in an anonymous auction. Besides, the DAM auction concentrates supply and demand over one period which maximises market depth.

⁽⁵⁹⁾ Compass Lexecon, Memo of 28 May 2024, 'Analysis of the market reference price and balancing cost allocation, and comment on CREG's advice'.

- (b) The chosen MRP in combination with some specific CfD arrangements, such as the MPRA and modulation incentives, preserves incentives to operate and participate efficiently in the electricity market by fostering production at times of high market prices and modulation at times of low prices, to the extent possible.
 - (c) The initial choice of the DAM as MRP, together with the marketing arrangements provided in the BIS (see section 3.3.1.5), allows for appropriate market risk management for BE-NUC, because it is granular and allows matching the MRP with the captured DAM prices. In this regard, the DAM price is particularly suited as MRP in the initial period of LTO works, notably compared to long-term products. According to Belgium, selling on the DAM reduces the market risk for BE-NUC compared to using futures as it allows to better match the specific availability pattern during the initial period of the LTO works. Using futures could induce additional market risks for BE-NUC due to the higher risk of unplanned outages in the initial period of the LTO works (i.e. if the electricity sold in advance cannot be delivered and needs to be bought-back, possibly at a higher market price, e.g., on the DAM).
- (99) A study on the market risk management strategy of BE-WATT (the CfD counterparty) has been procured by the Federal Public Service ('FPS') Economy. The ongoing study aims at taking preparatory steps in the operationalisation of BE-WATT, specifically regarding this entity's task on risk management. In particular:
- (a) The study will identify and analyse the key market risks faced by BE-WATT in the context of its upcoming nuclear and offshore wind CfDs, focusing on volume and price risks.
 - (b) The study will identify and analyse a range of potential risk management strategies for BE-WATT (portfolio of hedging instruments/products, share, duration, hedging timing, design options), notably considering (i) their potential role for managing the market risks resulting from BE-WATT's open position due to the CfDs, and (ii) their potential contribution to market liquidity and market development. The study primarily considers two types of hedging products: (i) PPAs, and (ii) forward contracts, the latter being mainly in the form of standardised instruments traded in organised venues usually called 'futures'. In both cases, financial contracts are considered.
 - (c) The hedging strategies relying on futures contracts will contribute to the Belgian forward market liquidity across a range of contract maturities (weeks, months, years) given the significant volumes at stake (several GW of nuclear and offshore wind capacity under CfD). The exact impact on forward market liquidity will depend on the volume of contracts sold by BE-WATT for the various maturities.
- (100) The initial choice of the MRP may be revisited by the Belgian Government, as RA Counterparty, up to three times over the contract duration, subject to BE-NUC's and Luminus' agreement, as from the end of the initial period of the LTO works, e.g., depending on the evolution of the Belgian market context and needs, whilst maintaining the risk-return balance of the initial CfD design.
- (101) The strike price will be indexed annually by reference to a weighted indexation calculation and can be revised at particular times:
- (a) 'Preliminary strike price': In the base case scenario, Belgium assumes that the costs to modernise the LTO Units amount to approximately EUR [2-2,5] billion, which, together with other costs related to the LTO Project (e.g., O&M costs during the LTO period), results in a preliminary strike price of EUR [80-90] per MWh.
 - (b) 'Initial strike price': The actual value of the strike price will be set by BE-NUC on the basis of a financial model approved by the RA Counterparty in the course of 2025, prior to the LTO restart date, based on the cost of extending operation under nuclear safety requirements (the scope of the latter being defined by the Belgian nuclear safety agency), as well as based on non-safety related costs, both estimated on the basis of submitted quotes by contractors or assessed by the technical teams of the nuclear operator.

- (c) 'Revised strike price': The initial strike price will be recalculated as soon as possible after 31 December 2028 ('True-up date') to reflect the actual timing to restart, LTO outages, operating, capital and financing cost up to that date (based on the actual invoices) and revised projections of these costs for the remainder of the 10-year prolongation period), through a written agreement between BE-NUC and the RA Counterparty.
 - (d) 'Reopener events': After the True-up date, the strike price will in principle be fixed and will not be recalculated, except under specific qualifying events, the re-opener events.
- (102) The strike price will be calculated using information from the detailed financial model which will be produced and updated by BE-NUC, within the parameters notified by Belgium. The financial model (and any updates thereto) is subject to the approval of the RA Counterparty. Where such approval is withheld, BE-NUC and the RA Counterparty may refer the determination of such a financial model issue to an independent expert in accordance with a specified expert determination procedure.
- (103) Belgium submits that the CfD reduces BE-NUC's exposure to market risk and market price variations.
- (a) Payments by the RA Counterparty to BE-NUC are made when the MRP is below the strike price, and BE-NUC will be liable for payments to the RA Counterparty when the MRP is higher than the strike price.
 - (b) The RA model provides for a reasonable target rate of return for the LTO Project: the strike price is sized to achieve a target IRR within the range of 6 %-8 %, which is in line with industry benchmarks (see Table 3) as well as in line with estimates for the LTO Project's WACC (see Table 6) and CoE (see Table 7).
- (104) Belgium submits that, while the CfD reduces BE-NUC's exposure to market risk and market price variations, it includes risk-sharing mechanisms which should ensure that BE-NUC is still exposed to some market risk and incentives. In particular, the RA includes a pain/gain sharing mechanism (the MPRA) when market prices turn out to be lower or higher than the strike price.
- (a) When the MRP is between the strike price and a defined floor, the target return (in the form of a lower strike price) decreases from 7 % IRR to a 6 % minimum IRR.
 - (b) When the MRP is between the strike price and a defined ceiling, the target return (in the form of a higher strike price) increases to an 8 % maximum IRR.
- (105) The objective of the MPRA is to incentivise BE-NUC to optimise its cost structure prior to setting and revising the strike price (2025/2029), maximise the output of the reactors when high prices are expected and the electricity system nears scarcity, and mitigate windfall profits.
- (106) The MPRA is derived and calculated as follows:
- (a) First, the strike price is calculated with a target nominal, post-tax internal rate of return (IRR) of 7 %, a hypothetical lower strike price with a target IRR of 6 % (lower threshold) and a hypothetical upper strike price with a target IRR of 8 % (upper threshold).
 - (b) Then, the range between the strike price and upper (respectively lower) threshold is divided into 20 positive (respectively negative) values ('MPRA values'). These values are used to adjust the strike price for settlement of the difference payment under the CfD.
 - (c) The strike price adjustment depends on the ratio between the MRP and the strike price (the MRP ratio):
 - If the ratio is 1,20 or higher, the MPRA strike price is raised to the upper threshold by adding the 20 positive MPRA values to the strike price;
 - If the ratio is 0,80 or lower, it is decreased to the lower threshold;
 - Between these thresholds, the MPRA-adjusted strike price is adjusted within the calculated range. For instance, a ratio of 1,19 leads to an upward adjustment by 19 MPRA values, while a ratio of 1,10 leads to an adjustment by 10 MPRA values.

- (d) As a result, when the MRP is higher than the strike price, the MPRA-adjusted strike price leads to a higher Project IRR up to 8 % given the same base case assumptions.
 - (e) Alternatively, when the MRP is lower than the strike price, the MPRA-adjusted strike price leads to a lower Project IRR down to 6 %.
- (107) In the initial design of the MPRA ('initial MPRA'), the range between the strike price and upper (respectively lower) threshold was divided into 30 positive (respectively negative) 'MPRA values'. Compared to the 'initial MPRA', the 'updated MPRA' is triggered faster, i.e., the pain/gain sharing mechanism corresponds to a market price corridor of intervals of +/-20 % instead of +/-30 %.
- (108) As a result, Belgium submits that the (updated) MPRA provides BE-NUC with strong(er) incentives to:
- (a) Optimise its cost structure prior to setting and revising the strike price. A revision of the strike price will take place respectively before the LTO Restart date (2025) and after the True-Up Date (2028). Belgium submits that a lower cost leads to a lower strike price and a higher probability that the market price will be higher than the strike price, and thus provides a higher IRR (and reduces the amount to be potentially paid by the Belgian State under the difference payments).
 - (b) Schedule maintenance during the lowest expected price periods.
 - (c) Mitigate potential windfall profits. As explained by Belgium, the MPRA is set within a pre-determined range (MRP ratio between 0,80 and 1,20). Any MRP outside this range does not further lead to an adjustment of the strike price and are, hence, fully becoming part of the difference payment. Thereby, windfall profits cannot be realised from high market prices.
- (109) Moreover, Belgium submits that, in the modified CfD design, the decision-making authority on when an economic modulation decision should be taken is transferred to the EMSA partner (see section 3.3.1.5). The EMSA remuneration will not only be fixed as initially planned, but will in addition to a fixed portion be made variable, and thus incentives will be provided for making best use of the limited stock of modulations of 30 per fuel cycle (see recital 13). Compared to the initial CfD design, by which modulation decisions were taken based on fixed modulation threshold, the modified CfD design does not rely upon a fixed modulation threshold anymore but incentivises that modulations are executed at times when they pay off most (i.e., when prices are expected to be deeply negative for a sufficiently long period of time). The EMSA remuneration is detailed in section 3.3.1.5.2.
- (110) Finally, Belgium submits that, for the reasons provided in recital 80 of the Opening Decision, the CfD is an appropriate and proportionate instrument to tackle the identified market failures and specific nuclear risks, hereby achieving the objectives of the measure, while preserving efficient market signals. Belgium clarifies that any proceeds from the CfD will flow into the general State budget but will be subject to separate accounting. They will be used primarily to fund the payments of the RA Counterparty under the CfD. Where the CfD proceeds would exceed the amounts necessary to finance the costs of the CfD, they could then be used to finance the costs of another CfD. Belgium commits that any remaining CfD proceeds would be used for purposes of distributing them to undertakings. Belgium further commits that it will inform the Commission in case CfD proceeds would be distributed to undertakings, and, if need be, notify such a measure. Belgium also confirms to have included penalty clauses in case of undue unilateral early termination of the CfD contract.

3.3.1.3.3. MOCP and WCF

- (111) If BE-NUC's revenues are not sufficient to cover the costs payable in any month under the O&M Agreement, as well as any other operating, fuel and maintenance CAPEX costs required for the operation of the LTO Units, the RA Counterparty has to make a shortfall payment to BE-NUC to ensure sufficient cash flow to meet these costs, in order to ensure the long-term economic viability of the JV ⁽⁶⁰⁾.

⁽⁶⁰⁾ BE-NUC shall, in that regard, submit an annual reconciliation report. If the amount in this report is less than the aggregate minimum operating costs amounts, then the RA Counterparty will pay to BE-NUC an amount equal to the absolute value of the relevant shortfall. An equivalent payment will be made to Luminus.

- (112) The MOCP consists of two components: Minimum OPEX: (i) a revenue shortfall payment to ensure sufficient cash flows to meet costs required for the operation of the LTO Units and safeguard the long-term economic viability of the JV and (ii) a 50 % cost protection on the invested capital in relation to the amortised capital costs of the LTO extension (every three years).
- (113) Belgium argues that any single event that would reduce the availability of the LTO Units for a significant period during the year and/or repeated outages over several years may result in significant losses for BE-NUC.
- (114) Belgium asked Electrabel to evaluate the risk of major unexpected events throughout the lifetime of the LTO Units based on historical data. Electrabel argues that there is a high probability of a significant unplanned event ⁽⁶¹⁾ for the 10-year period of the lifetime extension of the LTO Units. In order to evidence this, Electrabel identified historical instances of unavailability for each of the seven nuclear reactors over the 11-year period between 2012 and 2022 (see Table 10). Electrabel claims that this historical approach provides useful insights for the following reasons:
- (a) There is no unified definition/methodology for estimating or calculating the probability of unplanned unavailability events, nor for estimating the duration of the unavailability period associated with such events;
 - (b) Homogenous data are only available for the period 2012-2022; however, the Belgian nuclear fleet has always faced significant unavailability events/periods since the start of operations;
 - (c) Belgian law stipulates that a safety assessment must be carried out every ten years from the time the nuclear plant receives authorisation to operate at full power. This assessment is known as a 'Periodic Safety Review' ('PSR') or 'Ten-year Review' ⁽⁶²⁾. The latest PSRs at Tihange 3 and Doel 4 were carried out in 2015, during the period considered (2012-2022) for the risk analysis. As the 11-year period 2012-2022, during which a PSR was carried out for each reactor, corresponds more or less to the duration of the lifetime extension of the LTO Units, this period is deemed appropriate as a point of comparison.

Table 10

Unexpected unavailability events in the seven Belgian nuclear units (2012-2022)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
D1	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[10-15] %	[0-5] %	[60-70] %	[0-5] %	[5-10] %	[0-5] %	[0-5] %
D2	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[10-15] %	[0-5] %	[0-5] %
D3	[40-50] %	[40-50] %	[60-70] %	[90-100] %	[0-5] %	[10-20] %	[50-60] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %
D4	[0-5] %	[5-10] %	[30-40] %	[0-5] %	[0-5] %	[0-5] %	[30-40] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %
T1	[10-20] %	[0-5] %	[0-5] %	[5-10] %	[40-50] %	[50-60] %	[0-5] %	[0-5] %	[40-50] %	[0-5] %	[30-40] %
T2	[20-30] %	[40-50] %	[60-70] %	[90-100] %	[0-5] %	[5-10] %	[10-20] %	[60-70] %	[0-5] %	[10-20] %	[0-5] %
T3	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %	[60-70] %	[0-5] %	[0-5] %	[0-5] %	[0-5] %

Source: SA.106107 – Technical meeting with the European Commission Necessity, appropriateness and proportionality of the SDC Loan and MOCP, 8 October 2024.

⁽⁶¹⁾ A 'significant unplanned unavailability event' is defined as any unplanned event resulting in an unavailability of the plant of more than 30 % per year, equivalent to 3,6 months.

⁽⁶²⁾ Detailed information on the comprehensive Periodic Safety Review that is being conducted every 10 years is available on the FANC/AFCN's website: <https://afcn.be/fr/dossiers/centrales-nucleaires-en-belgique/surete/revisions-decennales>.

- (115) The data set out in Table 10 show that there were events of significant unplanned unavailability outside of the nuclear operator's control in all seven nuclear units over the period 2012-2022, which resulted in an average unavailability of 59 % per unit (in addition to planned outages), corresponding to an average unavailability of 7 months/per event. For the seven Belgian nuclear units together, there were 11 events of significant unplanned unavailability over the period 2012-2022. The reasons for unexpected unavailability events included hydrogen flakes in reactor pressure vessel, degradation of concrete (requiring important repairs), equipment failures, leaks and a sabotage. Therefore, Belgium submits that there was an average of around 1,6 (11/7) significant unplanned unavailability events per reactor per decade.
- (116) Belgium submits that, when there are multiple nuclear units (or a nuclear fleet) in operation, the revenue loss during a breakdown period of one or more units can be partially compensated by the revenue generated by the other units. In the case of the LTO Project, however, these systemic risks (of unavailability events affecting most units at the same time) are expected to intensify as Belgium's nuclear fleet shrinks from 2025 onwards and becomes less diversified, even more so as the two LTO units are of the same technology. A major event affecting both LTO Units for a substantial part of the year is therefore not deemed unlikely.
- (117) The 59 % probability of unit unavailability, which is equivalent to approximately 7 months, corresponds to the average duration of one significant unplanned unavailability event. Electrabel considers this duration to be a realistic estimate based on its own experience with the operation of the LTO Units in Belgium, as significant events require important engineering works, the procurement of spare parts, a safety impact analysis, and extended discussions with the nuclear safety authority before the nuclear reactors can start up again.
- (118) Belgium further explains that the regular PSRs, based on IAEA Guideline SSG-25 ⁽⁶³⁾, which have been conducted every 10 years from the start of operation, have resulted in significant design upgrades and investments to cope with the ageing and obsolescence of the nuclear units and help to maintain their safety and reliability. Nevertheless, despite these periodic reviews, the nuclear operator cannot exclude the possibility that new problems will occur which trigger significant unavailability periods for the nuclear units.
- (119) In order to estimate the impact on BE-NUC of the occurrence of a significant unplanned unavailability event during the period of the lifetime extension of the LTO Units, and the effect of the MOCP, Belgium considered plausible scenarios of major unavailability events (see Table 11) based on data from Table 10. As with other assessments, for the illustrative computations, Belgium relied on the Signing Financial Model dated 13 December 2023.
- (a) Scenario 1 assumes the average unavailability of 59 %, in addition to scheduled outages, separately in Doel 4 and Tihange 3 in different years (2030 and 2033). In that scenario, the MOCP would not be triggered. The LTO Project would still generate an annual revenue excess (over costs) of EUR [0-200] million for Doel 4 and EUR [0-200] million for Tihange 3, but the project's IRR would not exceed [0-5] %.
 - (b) Scenario 2 concerns a scenario when both LTO Units are simultaneously unavailable for an entire year during the period 2029-2035 (i.e., full generation post-LTO works). In this case, the MOCP is triggered and would amount to payments to BE-NUC of EUR [700-1 000] million to EUR [1 000-1 300] million annually, depending on the year of unavailability. Belgium provided two concrete examples (more or less negative scenario) to simulate the impact on the LTO Project:
 - In 2029 (more negative scenario), the LTO Project would generate a negative Net Present Value ('NPV') of EUR [0-200] million, resulting in an IRR of [0-5] %.
 - In 2034 (less negative scenario), the impact of a significant unplanned unavailability event on the shareholders of the JV and on BE-NUC would be relatively lower as the LTO Project has reached the end of the 10-year period. The LTO Project would generate a negative NPV of EUR [0-200] million, resulting in an IRR of [5-10] %.

⁽⁶³⁾ IAEA Safety Standards, *Periodic Safety Review for Nuclear Power Plants*, STI/PUB/1588.

- (c) Scenario 3 concerns a scenario when both LTO units are simultaneously unavailable for the entire year during the Restart Phase which is the period 2026-2028, characterised by limited generation during the LTO-related works. In this period, the LTO Units are scheduled to operate at less than 50 % of their capacity and it is more likely (than during the run phase) that any further unplanned unavailability will make the LTO Units unavailable for the entire year, whereby any losses will first be covered by the SDC Loan. In this case, the MOCP is triggered, but neither BE-NUC nor Luminus are expected to generate any profits during the Restart Phase; there would be no additional impact from any unplanned events on its profitability.

Table 11

Illustrative impact of three plausible scenarios of significant unplanned unavailability events on BE-NUC and RA Counterparty based on Signing Financial Model

	Impact BE-NUC		Impact on RA Counterparty' payment of MOCP
	LTO Performance	IRR	
Scenario 1 59 % unavailability for T3 in 2030 and D4 in 2033	2030: Revenue excess over costs of EUR [0-200] million 2033: Revenue excess over costs of EUR [0-200] million (NPV of minus EUR [100-300] million)	[0-5] %	Not triggered
Scenario 2 Contagion affecting both units at once for an entire year during the Run-Phase period	2029		
	No market revenue made in 2029 (NPV of minus EUR [0-200] million)	[0-5] %	Triggered: EUR [700-1 000] million Absent the MOCP: bankruptcy BE-NUC
	2034		
	No market revenue made in 2034 (NPV of minus EUR [0-200] million)	[5-10] %	Triggered: EUR [1 000-1 300] million Absent the MOCP: bankruptcy BE-NUC
Scenario 3 Contagion affecting both units at once for an entire year (2028) during the start-up period	Market revenue made in 2028 (NPV of EUR 0 million)	[5-10] %	Triggered: EUR [600-800] million Absent the MOCP: bankruptcy BE-NUC

Source: SA.106107 – Technical meeting with the European Commission Necessity, appropriateness, and proportionality of the SDC Loan and MOCP, 8 October 2024; SA.106107 – Belgium's Response to RFI of 1 October 2024, 1 November 2024 (updated version).

- (120) Belgium submits the analysis above shows that the MOCP is designed to cover the effects of potential major events threatening the economic viability of the JV, and leaves the JV to bear many risks of unavailability: in Scenario 1, the MOCP is not triggered if an average major event were to take place, and does not guarantee the returns to the shareholders who continue to bear the risk of not recovering their investments.

- (121) The MOCP might in some scenarios potentially lead to a relatively significant cost for the Belgian State, as it will get triggered to address the high-impact unavailability events, as illustrated above. In order to address this concern, Belgium introduced a cap on the MOCP payments. Accordingly, the RA Counterparty (the Belgian State) will exercise its termination right under the RA ⁽⁶⁴⁾ in case the MOCP reaches a paid-out amount of EUR 2 billion ('MOCP Trigger'), provided this appears to be appropriate in light of, among others,
- the causes of the MOCP Trigger;
 - the potential impact thereof on the short term and the long term;
 - the applicable outlook in relation to the MOCP payments in accordance with the RA (absent a termination);
 - the (anticipated) amount of the termination payments due; and
 - the implications on security of supply.
- (122) Belgium submits that there are circumstances in which a termination would not be appropriate:
- when, depending on which termination right would be applicable, the relevant termination payment (if any) is in excess of the expected future MOCP payments;
 - when the burden and costs, among others for the Belgian State, of replacement capacity outweighs the expected MOCP payments; and
 - when replacement capacity is not available.
- (123) In case the RA Counterparty decides not to exercise its termination right(s), Belgium will submit its reasoning to the Commission for evaluation purposes.
- (124) The amount of the MOCP Trigger corresponds to the upper bound of MOCP payments in a scenario when both LTO Units are simultaneously unavailable for two consecutive years. The expected MOCP payments from two-year closures will indeed depend on the year when the said closures take place. Belgium provided yearly computations for annual MOCP payments and totals over two consecutive years (see Table 12) based on preliminary forecasts from the Signing Financial Model dated 13 December 2023.

Table 12

Simulation MOCP payments

100 % unavailability period	Cost MOCP year 1 (EUR million)	Cost MOCP year 2 (EUR million)	Total Cost MOCP (EUR million)
2026-2027	[600-800]	[600-800]	[1 100-1 300]
2027-2028	[600-800]	[600-800]	[1 200-1 400]
2028-2029	[600-800]	[800-1 000]	[1 400-1 600]
2029-2030	[800-1 000]	[800-1 000]	[1 600-1 800]
2030-2031	[800-1 000]	[1 000-1 100]	[1 800-2 000]
2031-2032	[900-1 100]	[800-1 000]	[1 800-2 000]
2032-2033	[800-1 000]	[800-1 000]	[1 800-2 000]
2033-2034	[800-1 000]	[1 000-1 200]	[1 900-2 100]
2034-2035	[1 000-1 200]	[600-800]	[1 700-1 900]

Source: Belgian authorities.

⁽⁶⁴⁾ Belgium provided a detailed overview of the termination rights under the RA, and stated that the RA also includes, in addition to the termination rights, a 'Single LTO Unit Protocol' which reflects the termination rights regime in many ways but applies solely to the removal of a single LTO Unit from the scope of the RA prior to the LTO Restart Date.

- (125) To estimate the two-year reference period used to calculate the proposed EUR 2 billion cap on the MOCP, Belgium provides some examples of nuclear reactors that have been permanently shut down for technical reasons in the United States (since this has never occurred in Europe so far) ⁽⁶⁵⁾. According to Belgium, these examples show that the two-year reference period is in line with industrial reality, as a period of two years after the detection of a problem requiring the shutdown of both LTO Units can usually be considered as a reasonable cut-off point for questioning the continuation of repairs or for considering the final shutdown.
- (126) In order to make the MOCP operational, BE-NUC will procure, either from its shareholders or an external party, a working capital facility (WCF) at the latest on the first LTO restart date to occur. The WCF serves to fund the need in working capital stemming from the operation of the LTO Units. BE-NUC will be allowed to draw down the WCF if the difference between its cash inflows and cash outflows is smaller than the estimated operational expenditures of the upcoming spending period set out in the RA. The amount of the WCF shall be at least the average aggregate estimated operational expenditure for a period of three months. In effect, the WCF serves as an intra-year bridge to the annual MOCP, acting as a revolving credit facility that would be repaid yearly, if drawn down, by the MOCP provided by Belgium.
- (127) The terms of the WCF, which shall be procured on market terms at the latest on the first LTO restart date to occur, are not yet known. However, Belgium further clarified that the interest rate of the WCF will be determined using the same methodology as the one agreed upon for the Shareholder Loans (see recital 63).

3.3.1.3.4. SDC Loans

- (128) In addition to the MOCP which provides for financial stability throughout the entire 10-year period of the lifetime extension, during the first three years of the LTO Project (Restart Phase), the Belgian Government will grant a loan to BE-NUC and Luminus on identical terms. The loans will be sized by reference to their proportionate share in the LTO Units, and consequently their respective share in the shutdown and operating costs as of 1 July 2025. As mentioned by Belgium, the SDC Loans are provided to ensure liquidity through 2028, as operating costs cannot be financed through cash flows due to LTO works.
- (129) The SDC Loans, which are provided at a capped interest rate and repayable according to a specified repayment schedule, are composed of two different facilities (*i.e.*, one per LTO Unit), each formed of two tranches:
- (a) A tranche relating to the shutdown costs of the relevant unit incurred by BE-NUC and Luminus from the legal shutdown date until the restart date of the relevant unit: this tranche shall fund and pay for those costs required to maintain the LTO Units until the restart date. Should the shutdown period costs be greater than anticipated, the RA Counterparty is to ensure that the tranche is resized.
 - (b) A tranche related to the coverage of operating costs and a portion of the CAPEX incurred with respect to the relevant unit until the True-up date of 31 December 2028: this tranche shall be used to cover operating cashflow shortfalls occurring before 31 December 2028. However, any further losses caused by unscheduled outages are to be covered by the MOCP.
- (130) The terms of the SDC Loans are provided in recital 96 of the Opening Decision and have not been amended. The SDC Loans are repayable at an interest of up to 6 % and *pari passu* with shareholders' returns. Regarding the methodology used to determine the interest rate, Belgium explains that this was the result of a negotiation between the parties to the RA, and that the maximum rate of 6 % corresponds to the lower bound of the target IRR range of 6 % to 8 % (considering the MPRA).

⁽⁶⁵⁾ For instance, Crystal River 3 was permanently shut down in 2013, 3,5 years after the detection of a serious issue. Similarly, San Onofre 2 & 3 were shut down in 2013, 1,5 years after the detection of a serious issue.

(131) As stated in recital 97 of the Opening Decision, the SDC Loans are expected to be drawn down for an aggregated amount of EUR [500-700] million in [...] instalments from [...] until [...], repaid in three instalments from [...] until [...] including capitalised interests. These computations and amounts will be updated in the financial model approved by the RA Counterparty in the course of 2025, prior to the LTO restart date, based on the cost of extending operation under nuclear safety requirements set out by the Belgian nuclear safety agency, estimated on the basis of submitted quotes by contractors.

(132) Belgium argues that the SDC Loans do not disproportionately benefit the shareholders: the risks of not realising the expected returns are shared proportionally by the JV shareholders and the RA Counterparty as with lower profits, both the IRR of the LTO Project and the SDC Loans will decrease. In fact, the SDC Loans will not be repaid (at all) only if the LTO Project does not generate sufficient profits to pay any returns on the shareholders' investment ⁽⁶⁶⁾. Consequently, Belgium argues that the SDC Loans bring no additional risks to the RA Provider beyond the risks of the LTO Project's performance and profitability, as the facility is not used to finance the capital expenses (only the amortised capital costs of the LTO extension during the Restart Phase).

3.3.1.4. Operations and Maintenance ('O&M') Agreement

(133) Under the O&M Agreement, Electrabel is to perform for BE-NUC:

- (a) 'LTO Services': from the closing date of the transaction, the works and services required to extend the operational life of each LTO Unit by 10 years; and
- (b) 'O&M Services': from the end of the initial legal lifetime of each LTO Unit, the services to operate and maintain the LTO Units, the common systems and common assets to the extent used in connection with the LTO Units (including waste-handling services).

(134) Certain services are explicitly excluded from the O&M Agreement, including services, works or activities in respect of decommissioning and dismantling of the LTO Units, which remain under the responsibility of Electrabel (see section 3.3.2.4).

(135) Pursuant to Article 12.1 of the O&M Agreement and subject to certain adjustments and exceptions, BE-NUC will pay Electrabel 89,807 % (reflecting Luminus' holding of 10,193 % of the LTO Units) of all costs incurred in the provision of the LTO services and O&M services plus the relevant margin, being:

- [0-5] % for insurance costs and taxes;
- [0-5] % for goods and services supplied by Engie group members; and
- [10-20] % for all other costs.

(136) Belgium submits that the levels of margins are aligned with those applied under the LTO Partnership Agreement with Luminus (which itself covers a wide range of services including but not limited to O&M). The original agreement covering similar services to a third party, Luminus, concluded on 26 June 2003 and re-confirmed on 13 December 2023, is a relevant reference to support the position that the O&M Agreement reflects arm's length costs for nuclear operations. In addition, Belgium argues that the financial risks borne by Electrabel are greater than under the Partnership Agreement with Luminus, since, under the O&M Agreement, the margin of Electrabel will be reduced in case of (non-excusable) cost overruns (i.e., costs not included in the budget as proposed by Electrabel and validated by the parties) and in case of unavailability of the plant beyond a target.

(137) In addition, Belgium submits that the O&M Agreement includes certain cost controls, including rights for BE-NUC to audit Electrabel's calculation of the fees and performance of the services and to request a benchmark review of the prices charged by Electrabel for technical affiliate services.

⁽⁶⁶⁾ This would only be the case if there were several years of substantial unavailability, e.g., less than 60 % in each year from 2029 to 2035.

- (138) Finally, as the (sole) operator of the LTO Units and a service provider to BE-NUC under the O&M Agreement, Electrabel will be incentivised to achieve technical and economic performance of the LTO Units. In particular, under the O&M Agreement:
- (a) Electrabel will be liable to pay liquidated damages if the availability of the LTO Units during a contract year is less than [90-100] % (excluding LTO outages, normal outages and excused events). As a consequence of the payment of these liquidated damages, the margin obtained by Electrabel for that contract year decreases on a sliding scale from [10-20] % to [0-5] %;
 - (b) in case of cost overruns, Electrabel is not to be entitled to receive any Relevant Margin in respect of and to the extent of any Cost Overrun, other than any Excused Cost Overrun; and
 - (c) in case of cost overruns during the Restart Phase only, penalties will be applicable to Electrabel's margin (up to [50-60] % of the margin on the O&M services and up to [70-80] % of the margin on the LTO services).
- (139) As a consequence, Belgium concludes that the O&M Agreement is limited to covering of costs incurred and that the financial conditions of the O&M Agreement are set to reflect market terms.

3.3.1.5. Energy Management Services Agreement ('EMSA')

- (140) Although BE-NUC will be the technical owner of 89,807 % of the electricity produced by the LTO Units (the remaining 10,193 % is owned by Luminus), it transfers the ownership of that electricity to the energy manager, who will sell it ⁽⁶⁷⁾. To this purpose, BE-NUC will enter into an EMSA with a partner purchasing the electricity from BE-NUC and selling it.
- (141) The EMSA will set out key terms, conditions and risk allocations and will, consequently, set out in a detailed manner a BIS and the role of the energy sales manager ('EMSA partner') in relation thereto, within the set parameters. The EMSA partner appointed under the EMSA will be the purchaser and the owner of BE-NUC's share of the electricity produced by the LTO Units and is subject to a pre-defined BIS. The BIS can be reviewed and amended from time to time following a procedure detailed in the RA. The Belgian Government (BE-WATT), in its capacity as RA Counterparty, can impose the BIS to the extent it respects the BIS conditions as laid down in the RA. The EMSA partner has an advisory role in the matter.
- (142) In order to bring the electricity produced to the wholesale electricity market in a competitive and transparent manner, Electrabel and the Belgian State have agreed to run a public tender for these services, ensuring transparency and competition (see section 3.3.1.5.1). Public procurement law and all related necessary safeguards apply to the tender procedure.

3.3.1.5.1. Tender procedure

- (143) Belgium submits that the tender procedure is being voluntarily conducted in accordance with the Belgian law on public procurement of 17 June 2016 and the Royal Decree of 18 June 2017 on public procurement for the utilities sectors ⁽⁶⁸⁾.

⁽⁶⁷⁾ Luminus is the owner of its (10,193 %) share of the electricity produced by the LTO Units. Luminus manages the sale of the electricity independently and is not linked to the EMSA, the purpose of which is to sell BE-NUC's share of the production of the LTO Units.

⁽⁶⁸⁾ Loi relative aux marches publics. Available at: https://etaamb.openjustice.be/fr/loi-du-17-juin-2016_n2016021053.html. The law of 17 June 2016 on public contracts transposes Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC.

- (144) The EMSA contract will be awarded through a negotiated procedure with a prior call for competition ⁽⁶⁹⁾, which is a standard procedure in the utilities sector. The call for tenders has been published on the relevant Belgian ⁽⁷⁰⁾ and EU platforms ⁽⁷¹⁾, allowing all potential candidates to take part in the tender procedure.
- (145) Given the importance of the service tendered and the sensitivity from a competition point of view, Belgium implemented additional provisions and safeguards to ensure that the objectives of the EMSA will be attained and that the expected services will be delivered adequately:
- (a) Prior to the drafting of the tender documents, a Request for Information ('RFI') on the EMSA was launched on 3 September 2024 (until 2 October 2024) to gather views from the market on several subjects related to the EMSA ⁽⁷²⁾. The RFI pursued two main objectives: (i) providing advance notice to the market of the upcoming tender procedure, thereby ensuring sufficient time for interested candidates to prepare their participation ⁽⁷³⁾ and providing additional transparency; (ii) the results of the RFI are, when appropriate, taken into account when drafting the tender documents, hereby helping BE-NUC to propose a refined, market-tested tender, as well as improving the clarity of the criteria and ensuring that any conditions or criteria imposed are non-discriminatory. The RFI revealed for instance that no separate tenders should be organised for each LTO Units, but that they can be tendered as a package.
 - (b) A Request for Expression of Candidacies ('RFC') was issued on 11 December 2024, calling on interested parties to indicate their interest in participating in the tender by 13 January 2025. Upon request by several parties, the submission deadline was postponed to 3 February 2025, to ensure sufficient competition in the tender procedure. Thereafter, interested parties will be invited to submit their offers, based on the future contractual documents (including the modified remuneration structure as explained in Figure 3). Belgium submits that the detailed description of the tendered services allows it to have a single award criterion based on price. As the contract will be awarded through a negotiated procedure, the contracting authority may, once the candidates have submitted their offers in response to the Request for Proposals (including the draft EMSA contract and any ancillary documents), invite the candidates to submit a better offer, which ensures the most competitive outcome.
- (146) In addition, Belgium submits that the tender includes a set of selection criteria to ensure that the conditions for professionalism and required infrastructure for an orderly execution of the EMSA are met by any tender candidate. These qualification criteria are however limited to the minimum extent possible, referring each to a necessary requirement for the services intended, to ensure maximum competition during the tender.
- (147) In comparison to the information at the Commission's disposal at the time of the Opening Decision, Belgium provided more details on the qualification criteria. The tenderer (or, for the first four criteria described below, through reliance on the capacities of another entity) must:
- (a) present at least two references of experience (of at least one year of operation) in the energy management of a thermal or nuclear generation assets portfolio of at least 1 000 MW in the aggregate (i.e., taking all references into account), located in countries of the European Union, the United Kingdom or the countries of the EFTA ⁽⁷⁴⁾;

⁽⁶⁹⁾ In line with article 120 of the Belgian law on public procurement of 17 June 2016.

⁽⁷⁰⁾ Bulletin der Aanbestedingen / Bulletin des Adjudications.

⁽⁷¹⁾ Supplement to the Official Journal of the European Union.

⁽⁷²⁾ These subjects include among others the risk profile, guarantees in relation to the counterparty and counterparty risk, the price mechanism, payment terms, invoicing frequency and late payment interests, the BIS, internal portfolio balancing reserves, the split of the tender in two lots (one per Power Asset), credit and associated warranty structure, and Balance Responsible Party ('BRP') pooling.

⁽⁷³⁾ The Belgian State actively identified relevant market participants that it wishes to contact and encourage to take part in the RFI, as well as the subsequent tender procedure.

⁽⁷⁴⁾ The 1 000 MW criterion ensures that the qualified/selected participants are financially able to handle the requests that will be allocated, which will range between 1 000 and 2 000 MW.

- (b) present at least two references in the energy management (of at least one year of operation) of thermal or nuclear production assets. Each reference relates to one asset of at least 350 MW, located in countries of the European Union, the United Kingdom, or the countries of the EFTA ⁽⁷⁵⁾;
- (c) present at least one reference of energy management (of at least one year of operation) for a third party for a generation capacity of at least 350 MW for one production asset located in countries of the European Union, the United Kingdom or the countries of the EFTA ⁽⁷⁶⁾;
- (d) have an 'investment grade' credit rating, meaning the following credit rating with one of the following rating agencies (or equivalent): (i) Fitch: minimum BBB-, (ii) S&P: minimum BBB-, (iii) Moody's: minimum Baa3 ⁽⁷⁷⁾; and
- (e) have an active membership to at least one Nominated Electricity Market Operator ('Nemo') active in Belgium, for electricity trading ⁽⁷⁸⁾.

(148) During the term of the EMSA contract, the following conditions apply among others to the EMSA partner:

- (a) having a Balance Responsible Party ('BRP') contract in Belgium with Elia;
- (b) having an 'investment grade' credit rating, meaning the following credit rating with one of the following rating agencies (or equivalent): (i) Fitch: minimum BBB-, (ii) S&P: minimum BBB-, (iii) Moody's: minimum Baa3;
- (c) having active membership in at least one Nemo active in Belgium, for electricity trading.

(149) With respect to the timing of the tender, Belgium submits that it aims to conclude the tender in due time, at the latest by 15 May 2025, so that the EMSA partner would have enough time to do the necessary preparations before the restart of the LTO Units.

(150) The tendered services comprise, in relation to the power assets, among others (i) 'Forward and realised Power Assets representation services', (ii) 'Day-ahead ('DA') and intraday ('ID') Optimisation and Operations services', (iii) services related to market regulatory obligations, (iv) Belgian TSO contracting services, and (v) trading, market access and market analysis. Because of the interdependency between the various tasks listed, and the regular market practice to combine these services into a single commercial contract to ensure operational efficiency, these services will be integrated into a single EMSA service definition.

3.3.1.5.2. Sales of the LTO electricity and remuneration of the EMSA partner

(151) Belgium has clarified that the EMSA partner is not trading as an agent or on behalf of BE-NUC but is selling the purchased electricity since it is the owner thereof. In addition, in the modified CfD design, the EMSA partner obtains the decision-making authority regarding economic modulations in order to incentivise an efficient use of the limited stock of modulations, and to better respond to market signals (see recital 153 and following).

⁽⁷⁵⁾ The management of important, single points of failure in the market requires a specific operational setup with dedicated staff training. While in a standard approach for smaller size, decentralised assets, a dispatcher, whenever a problem occurs, simply is ordered to procure the missing volume as soon as possible on the intraday market, such an approach is not adequate for larger size assets.

⁽⁷⁶⁾ This criterion ensures that the counterparty is able to conduct operations for a third party and has a robust contractual framework in place.

⁽⁷⁷⁾ The criterium is introduced to ensure a reasonably strong capacity of the EMSA partner for the payment of its financial commitments.

⁽⁷⁸⁾ Membership of a Nemo (Epexspot and Nord Pool in Belgium), i.e. an organisation mandated to run the day-ahead and intraday integrated electricity markets, ensures market access to electricity markets. This criterion ensures that the candidate can access the trading markets in a timely manner and has sufficient and up-to-date experience with the functioning of the European market.

- (152) Belgium submits that the settlement between the EMSA partner and BE-NUC is based on the DAM, in order to limit the basis risk for BE-NUC, as this implies that, in combination with BE-NUC's difference payment through a CfD where the MRP is the DAM price, BE-NUC receives the strike price (see section 3.3.1.3.2) ⁽⁷⁹⁾. Belgium confirms that the EMSA partner will be free to trade in the market of its choice and is not obliged to bid on the DAM.
- (153) As explained in section 2.1 and recital 109, since the LTO Units are limited to 30 modulations per cycle, and hence do not have the technical and regulatory possibility to modify their output at any point in time, the remuneration of the EMSA partner has been modified in order to provide incentives to make the best use of the limited amount of authorised modulations. Instead of having merely a fixed fee (determined through the tender), the modified remuneration formula also includes a variable fee (based on a predetermined formula and depending on the modulation and correction settlement payment). Such remuneration exposes the EMSA partner to part of the potential revenue upsides from modulation at times of negative prices (as well as part of the potential revenue downsides from modulations at times of positive prices, if any), while exposing the EMSA partner directly to imbalance and intraday costs as set out below. Therefore, the variable fee will consist of a fixed percentage share ('alpha') of the revenue upsides triggering a modulation in DA and a differentiated percentage share ('beta') of intraday and imbalance costs and revenues, *i.e.*, the correction settlement payments (which may comprise revenue upsides from triggering a modulation in ID), whereby:
- (a) Alpha is determined *ex-ante* at 20 %. The alpha is set high enough to provide sufficient incentives for optimal modulation decisions, while not too high as to avoid deterring risk-averse tender participants.
 - (b) The revenue upsides from modulating are calculated *ex-post* as the product of the boughtback volume on the DAM for modulation and the difference between zero and the DAM price.
 - (c) Beta is differentiated but also determined *ex ante* and reflects the EMSA partner's financial liability as BRP in case of imbalances. In this respect, Belgium argues that the reactors are relatively old and the works necessary for the LTO Project as well as the modulations potentially increase the risks of unplanned shutdowns, which generate imbalances. Moreover, the plants are subject to particularly high security requirements, which further increase the risks of shutdowns. At the same time, although the Belgian intraday and balancing markets are increasingly integrated with neighbouring markets, they remain fairly small compared to the size of the two reactors. As a result, any shutdown will decrease the chance of the BRP of finding counterparties to mitigate the impact of the shutdown and will disproportionally increase the risk of price spikes resulting from the shutdown. Therefore, Belgium argues that the beta should have different values depending on the nature and impact of the event that leads to an imbalance, while maintaining appropriate incentives for the EMSA partner (as BRP) to mitigate imbalances ⁽⁸⁰⁾. However, the EMSA partner remains fully financially exposed to all imbalances which result mainly from output deviations compared to the forecasted output, or trading mistakes.
 - (d) The correction settlement is the sum of intraday and imbalance payments, and the beta applies for both. For a specific hour, it may be positive and/or negative.

⁽⁷⁹⁾ Energy managers use deal capture and position management systems to streamline workflows, encompassing forecasting, optimisation, auction bidding, real-time dispatching, and transaction settlement. Specifically, these systems log all transactions between BE-NUC and the EMSA partner, as well as market-related sales and exchanges with the TSO. The recorded data is processed through a settlement module, which converts transaction volumes into financial settlements using predefined contractual formulas. Statements generated by the system are electronically submitted to BE-NUC for review. BE-NUC can cross-check this and, if necessary, request adjustments.

⁽⁸⁰⁾ In particular, the beta will amount to 100 % in 'baseload generation' situations, 20 % in 'economic modulation' situations, *i.e.* up to 30 times per year, and 8 % in unplanned shutdown events, *i.e.* in case of exceptional high-impact events, that typically happen less than once per year and per unit.

Figure 3

Modified EMSA remuneration formula

EMSA partner remuneration = Fixed Fee + Variable Fee

Variable Fee = $\alpha \times \text{revenue upside} + \beta \times \text{correction settlement}$

Revenue upside = $\text{boughtback volume} \times (0 - \text{DA price})$

Correction settlement = intraday and imbalance costs or revenues

- (154) The formula set out in Figure 3 applies to the entire volume during modulations, including if modulation occurs when prices are positive (for instance during the ramping up/down periods) and not only during negative price periods ⁽⁸¹⁾. The variable fee is paid by BE-NUC under the EMSA, but these costs and/or revenues will be passed-on to BE-WATT under the RA.
- (155) According to Belgium, through the modified remuneration formula, the EMSA partner is incentivised, among others, to use economic modulations in an optimal way and throughout the day-ahead and intraday timeframe and to reduce intraday and imbalance costs. Belgium submits that the alpha and beta parameters are chosen to preserve efficient market functioning, while avoiding deterring risk-averse tender participants.
- (156) The modified remuneration formula will affect the bidding behaviour of the tender participants for the fixed fee. The bidders will factor in the expected upsides from modulation (option value) in their bids, as well as the costs and potential revenues related to intraday and imbalance payments. Belgium submits that the tender documents will explain the remuneration (incentive) structure so that the upside/downside potential of the modified remuneration formula is transparent for the bidders. Belgium will evaluate the appropriateness of the EMSA partner's (modified) remuneration formula and the market-conformity and efficiency of the incentives it provides on the different markets. The evaluation will be done at the latest two years after the start of operations, so as to allow a timely revision of the contract or the organisation of a new tender, which is possible after 3,5 years ⁽⁸²⁾. However, in order to keep the appropriate incentives for the EMSA partner, only an upward revision of the parameters alpha and beta is possible ⁽⁸³⁾.
- (157) Belgium argues that the adaptation of the EMSA remuneration aligns the incentives of the EMSA partner, who has the economic modulation decision-making authority (subject to the operator's final decision, e.g., in case of safety or regulatory concerns), to market signals, hereby addressing the Commission's concerns in this regard. At the same time, the EMSA partner has the appropriate incentives to fulfil its task as BRP without being fully exposed to imbalances that are outside its own control. In addition, Belgium submits that there will be continuous accurate information sharing (including regular updates on the availability, technical capabilities, etc. of the LTO Units) between BE-NUC, the nuclear operator and the EMSA partner to allow for informed economic modulation decisions by the EMSA partner, which will be equipped to make efficient decisions.

⁽⁸¹⁾ This is related to the technical constraints in relation to modulations (see recital 13).

⁽⁸²⁾ The EMSA can be unilaterally terminated by BE-NUC after 3,5 years (42 months) following the restart date of the first nuclear unit. BE-NUC can subsequently enter into a new agreement following a new tender under different terms.

⁽⁸³⁾ The evaluation of the parameters alpha and beta will be based on: (i) an assessment of the tender participation and outcome (indicators may be: number and type of bidders, outcome of the tender in terms of price/costs, etc), an assessment of (non-)modulation decisions including the (financial) consequences thereof for the parties involved considering (expected and realised) market conditions and operational/modulation constraints, and (iii) an assessment of trading decisions on the DA and intraday market as well as resulting imbalances at the BRP perimeter. The underlying information for this evaluation will be based on data collected from the EMSA partner during the EMSA contract as well as data from the operator Electrabel through BE-NUC and the O&M Agreement, and any relevant public/market information related to the above.

- (158) Belgium also confirms that the CfD counterparty (BE-WATT) will develop a risk management strategy for its open position, as is legally foreseen, and that its implementation will contribute to liquidity to the forward electricity markets (see recital 99). The adoption of the strategy is subject to an advice of the regulator, which will include an assessment of the impact of the strategy on the relevant electricity markets.

3.3.1.5.3. Additional safeguards concerning the energy manager

- (159) The EMSA partner will be in principle selected through a transparent, open and competitive tender (see section 3.3.1.5.1). Engie's trading entity GEMS (Global Energy Management & Sales), a business unit of the Engie group managerially independent from the business unit Nuclear, can also participate in the tender. Specific provisions and measures have been foreseen in case GEMS participates in the tender procedure in order to ensure a fair process.
- (160) Belgium submits that sufficient measures are and will be taken and implemented to effectively identify and prevent any potential conflicts of interest. These measures can be summarised as follows:
- (a) The RFI allowed for market-testing, and any interested party could propose in this context different terms and proposals, ensuring that the tender does not include barriers to the disadvantage of any interested participant as opposed to GEMS (or any Engie group company). Electrabel (or any Engie group company) are not and will not be involved in the process of drawing up the tender documents ('Tender Long Form Documents') following (the results of) the RFI.
 - (b) During the tender procedure, if GEMS were to participate in it, even as a subcontractor or in any other capacity, Electrabel (or any Engie group company) and its directors or agents are precluded from participating in any BE-NUC decision and or deliberation on the tender (e.g., the selection decision and the award decision).
 - (c) Overall, within Electrabel's organisation, strict information barriers and ethical walls have been and will continue to be established between individuals responsible for submitting bids at GEMS and individuals involved in the management of BE-NUC. The same safeguards will be put in place in case GEMS is ultimately elected as EMSA partner through a successful tender process.
 - (d) If GEMS is selected as EMSA partner, it will be subject to the same obligations as a BRP and EMSA contract partner as well as the same set of market incentives as any other candidate. In particular, as an EMSA partner, it will receive both a fixed and a variable remuneration, which will incentivise the market-conform optimisation of the modulation stock and the revenues from the sale of electricity. In addition, GEMS will act as a party under a precise mandate specified by the BIS from which it shall not derogate. These safeguards ensure that GEMS, in case it wins the EMSA tender, would act as any other participant in the EMSA tender and is - through the set-up of the EMSA agreement and the modified remuneration formula - incentivised to act according to market signals.
- (161) If the tender procedure fails to appoint an appropriate candidate, by way of ultimate fallback, if no EMSA has been concluded in due time, at the latest by 15 May 2025, GEMS will temporarily perform the EMSA services. These services will be rendered in accordance with terms to be agreed between the parties during a limited period, in order for BE-NUC to award the EMSA via another tender procedure. In the case of a successful tender procedure, the successful candidate will take over the performance of the EMSA services from GEMS once the relevant period has lapsed during which GEMS has performed these services. There is no limit to the number of re-tenders.
- (162) Belgium argues that this arrangement is necessary and adequate to ensure the continuity of the public service (i.e., the sale of the electricity generated by the nuclear units), but this solution is strictly limited in time and to the minimum necessary.

- (163) In conclusion, Belgium submits that it will ensure that BE-NUC will follow public procurement legislation and principles rigorously. The extensive consultation process provides additional safeguards ensuring that the purchase of services is carried out through a competitive, transparent, non-discriminatory, and unconditional tender procedure. Belgium therefore considers that any risk of market foreclosure and other potential anticompetitive practices by Engie is avoided and that all measures and safeguards have been adopted to ensure that an independent EMSA partner will be appointed. Only as a fallback, GEMS would temporarily provide these services, which is necessary and adequate to ensure the continuity of the public service.

3.3.1.6. Other sub-measures

- (164) Two other sub-measures that are part of the transaction constitute the Administration Services Agreement ('ASA') between Electrabel and BE-NUC and an agreement stipulating indemnification arrangements for cost coverage losses in the event of no closing of the agreement. These sub-measures have been explained in sections 3.3.10 and 3.3.11 of the Opening Decision.

3.3.2. *Component 2: Cap on the nuclear operator's liability for long-term storage and final disposal of nuclear waste and spent fuel*

3.3.2.1. General principles of nuclear waste management

- (165) As explained in recital 121 of the Opening Decision, the legislative framework applicable to radioactive waste and spent fuel in the EU is grounded on the following two fundamental principles: (i) the 'polluter pays' principle ⁽⁸⁴⁾, and (ii) Member States' ultimate responsibility (including financial responsibility) for the responsible and safe management (including disposal) of spent fuel and radioactive waste ⁽⁸⁵⁾.

- (166) As explained in section 3.4.2 of the Opening Decision, under the current regulations in Belgium, the nuclear operator is financially (through the nuclear provision company, Synatom, and together with EDF Belgium and Luminus (the 'Contributing Companies')) and operationally responsible for the decommissioning of the seven nuclear power plants, as well as for the conditioning and management of the radioactive waste and spent fuel, and its long-term storage after its acceptance by ONDRAF/NIRAS until its final disposal. The nuclear provisions for spent fuel and decommissioning waste are funded by Electrabel and the Contributing Companies, managed by Synatom, and are subject to the prudential control of an independent public authority, the Nuclear Provision Commission ('CPN/CNV'). As noted in recitals 123 to 125 of the Opening Decision, Belgium submits that Electrabel will keep certain responsibilities as sole operator of the LTO Units, resulting from (i) European and Belgian legislation, and (ii) contractual obligations of the Implementation Agreement, hereby respecting the 'polluter pays' principle.

- (167) CPN/CNV and ONDRAF/NIRAS are the supervising authorities in Belgium:

- (a) ONDRAF/NIRAS draws up a comprehensive inventory report for all radioactive waste producers in Belgium (every 5 years) and evaluates the funds for the management of the corresponding nuclear liabilities.
- (b) CPN/CNV reviews (every 3 years) the methods used to calculate the nuclear provisions as well as their adequacy and the NPV of future liabilities in the accounts of Synatom (auditing the methodology, reference scenario, etc.).

⁽⁸⁴⁾ Article 4(3), point (e), of Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L199, 2.8.2011, p. 48), which requires that 'the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials'.

⁽⁸⁵⁾ Article 4(1) and Article 9 of Directive 2011/70/Euratom.

- (168) As mentioned in recital 129 and Table 4 of the Opening Decision, based on the last triennial revision of the CPN/CNV of July 2023, the current total amount of provisions related to nuclear liabilities amounts to EUR 18 225 million, consisting of provisions for dismantling activities (EUR 8 122 million), spent fuel management (EUR 9 070 million) and operational waste (EUR 1 033 million) ⁽⁸⁶⁾.

3.3.2.2. 'Waste Cap' agreement

- (169) As part of the negotiations on the LTO Project, Engie and the Belgian State agreed on a cap on the long-term liability of producers of radioactive waste resulting from the production of electricity through nuclear energy (the 'Waste Cap' agreement), to reduce uncertainty in this respect (see section 3.4.3 of the Opening Decision). The 'Waste Cap' agreement provides for the transfer of financial liabilities in relation to the production, detention or ownership of conditioned radioactive waste and spent fuel of all seven Belgian nuclear units, subject to, and after compliance with, the relevant contractual transfer criteria, from the nuclear operator (Electrabel) to the Belgian State against the payment of a lumpsum amount ⁽⁸⁷⁾.
- (170) This lumpsum amount has been established per category of nuclear waste. As explained in recital 131 of the Opening Decision, radioactive nuclear waste can be divided into three categories, in line with the historical radiological classification by ONDRAF/NIRAS and consistent with the International Atomic Energy Agency ('IAEA') classification: category A-waste (short-lived waste with a low or intermediate level of radio activity); category B-waste (long-lived waste with a low or intermediate level of radio activity); and category C-waste (short- and long-lived waste with a high level of radio activity) and spent fuel.
- (171) Table 13 below shows the allocation of the existing provisions of EUR 18 225 million between Electrabel (EUR 8 410 million) and the Belgian Government (EUR 9 815 million), according to the Waste Cap agreement, and includes the allocation per category of waste.

Table 13

Breakdown of the Waste Cap agreement

Amount (million EUR)	Liability Belgian State (post-transfer)				Liability Engie	Provisions (YE 2022)
	Cat A	Cat B	Cat C	Total		
Base cost estimate (<i>without contingencies</i>)	1 465	496	4 797	6 758	7 171	13 929
Contingencies	145	179	2 732	3 056	1 240	4 296
Base amount	1 611	675	7 528	9 815	8 410	18 225
Risk premium	1 889	325	2 972	5 185		5 185
Capped Amount	3 500	1 000	10 500	15 000	8 410	23 411

Source: Reply of the Belgian authorities to the Commission's request for information of 1 October 2024.

⁽⁸⁶⁾ The provisions for operational waste are audited by Engie's external auditors (Deloitte) as part of their yearly audit review.

⁽⁸⁷⁾ In this Decision, 'Waste Cap agreement' refers to the cap on the long-term liability of producers of radioactive waste resulting from the production of electricity through nuclear energy, while 'waste deal' refers to the combination of all sub-measures under Component 2, i.e., also including the agreement on dismantling and decommissioning, etc.

(172) The principles of the Waste Cap agreement have not been amended and are described in recital 133 of the Opening Decision. They can be summarised as follows:

- (a) 'Capped Amounts': A lumpsum payment, including a risk premium and indexed at 3 % per year as of 31 December 2022, has been set for each category of radioactive waste meeting the contractual transfer criteria, amounting to a total amount of EUR 15 billion (EUR 3,5 billion for category A, EUR 1 billion for category B and EUR 10,5 billion for category C – see Table 13). As mentioned in recitals 134 and 135 of the Opening Decision and as shown in Table 13, Belgium submits that:
 - the volumes underlying the Capped Amounts are based on the waste inventory used for the 2022 CPN/CNV revision of the nuclear provisions and the industrial reference scenario of ONDRAF/NIRAS and the nuclear operator (which are the current best estimate of the volume of conditioned nuclear waste and spent fuel produced (and to be produced) by the seven nuclear power plants in a no-LTO scenario), and
 - the value of the Capped Amounts is the result of applying a risk premium to the existing nuclear provisions.
- (b) 'Volume credits': The capped (lumpsum) amount per waste category corresponds to a volume credit for predetermined volumes, providing an incentive for the nuclear operator to minimise the production of nuclear waste.;
- (c) 'Volume adjustments fees': When the volume credit of a waste category has been fully used, an additional amount must be paid for each additional volume credit needed. The amounts are established as the arithmetic average between (i) the 'capped amount' of the waste category divided by the number of 'volume credits' of that category and (ii) the marginal cost of one additional volume credit;
- (d) 'Contractual Transfer Criteria' ('CTC'): For each type of nuclear waste package, contractual transfer criteria have been established, which define the criteria that each waste package and spent fuel must meet for the financial responsibility to be transferred to the public entity Hedera (see recital 178 below). The responsibility (and associated costs) for bringing radioactive waste in line with the CTC remains with the nuclear operator.

(173) As mentioned in recital 107(a) and explained in detail in sections 3.4.5.1 and 3.4.5.2 of the Opening Decision, the establishment of the EUR 15 billion of Capped Amounts is based on the current amount of nuclear provisions of the nuclear operator (the base amount) and a risk premium. Belgium has clarified that the base amount includes already margins for contingencies, uncertainties and other risks that may arise in relation to dismantling, radioactive waste management, and spent fuel management. The provisions regarding the payment of the Capped Amounts are explained in section 3.4.5.3 of the Opening Decision and have not been amended.

(174) Belgium has clarified that the Capped Amounts to be transferred to the Belgian State already include all the historical and estimated future nuclear waste liabilities (until the original legal end date of all the Belgian nuclear power plants in 2025). Therefore, all nuclear waste and spent fuel produced, or to be produced, by the Belgian power plants during their legal operating life are already taken into account in the Capped Amounts.

(175) Belgium also clarifies that the actual volume of waste will only be known once the waste is conditioned and physically transferred to the Belgian State. The lumpsum of EUR 15 billion therefore only covers the predetermined volumes of the concerned waste (the volume credits) agreed in the Implementation Agreement. If the actual volume of the concerned waste produced is larger than the volume credits, Engie will pay a volume adjustment fee for each additional volume credit (see recital 133 of the Opening Decision).

(176) Similarly, all operational waste ('LTO Waste') and spent fuel ('LTO Spent Fuel') resulting from the lifetime extension of the LTO Units, will be financed by BE-NUC and Luminus for each incremental waste amount. For each incremental amount of LTO waste and LTO spent fuel, two sets of payments will be required:

- (a) LTO Waste: the LTO operational waste costs as defined in the O&M Agreement cover two types of costs:
 - the payment of the LTO Waste Handling Costs payable to Electrabel for the LTO Waste handling, treatment, and conditioning of the operational waste ('LTO Waste Handling Services') to prepare a LTO Waste Package; and
 - the LTO Waste Volume Adjustment Fees, which cover the payment of the costs incurred after transfer of the nuclear waste liabilities to Hedera ⁽⁸⁸⁾.
- (b) LTO Spent Fuel management services: back-end costs for spent fuel will be paid based on an indexed fee for any incremental spent fuel resulting from the LTO Project ⁽⁸⁹⁾.

(177) Belgium further clarifies that the Signing Financial Model considers the LTO Waste and the LTO Spent Fuel management or back-end costs, estimated at approximately EUR 0,9 million per assembly (in 2022 values), of which approximately EUR 0,3 million per assembly for the on-site storage and approximately EUR 0,6 million per assembly for the LTO Waste Volume Adjustment Fee for Spent Fuel.

(178) As explained in section 3.4.4 of the Opening Decision, Belgium created a new sui generis public institution, Hedera, whose role is twofold:

- (a) Managing and securing the assets dedicated to the financing of the Belgian State's long-term commitments regarding nuclear waste and spent fuel; and
- (b) Following up and controlling the costs of managing the transferred nuclear waste and spent fuel liabilities, under the control of an independent public authority (CPN/CNV).

(179) The amounts of the Waste Cap received by Hedera must be secured and invested, to generate the necessary return to pay the costs for the management of the transferred waste when they are due. Hedera is a segregated fund under the supervisory control of CPN/CNV, the dedicated national body playing a key role in ensuring and securing the proper management, control and use of the funds ⁽⁹⁰⁾. This is reflected in the double role of Hedera, by ensuring that: (i) the amounts received are secured and generate the necessary returns ⁽⁹¹⁾, and (ii) the costs of the management of the

⁽⁸⁸⁾ Such indexed LTO Waste Volume Adjustment Fees shall be payable to Electrabel as soon as a LTO Waste Package is produced or when its production has become certain. Such fee will cover the storage of the LTO Waste. The LTO Waste Adjustment Fee for each category of waste is already foreseen in Articles 16 to 18 of the Phoenix Law.

⁽⁸⁹⁾ This fee comprises: (i) all on-site storage costs incurred by Electrabel until 2050 before the site is transferred to the Belgian State and (ii) all costs related to ONDRAF/NIRAS after the transfer payable to Hedera. The costs for on-site storage have already been estimated per assembly and the Volume Adjustment Fee for the Spent Fuel has been set and are provided for in Articles 16 to 18 of the Phoenix Law.

⁽⁹⁰⁾ Application of Commission Recommendation 2006/851/Euratom of 24 October 2006 on the management of financial resources for the decommissioning of nuclear installations, spent fuel and radioactive waste and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

⁽⁹¹⁾ To ensure that the lump sum grows sufficiently over time, an investment committee (with three independent financial experts, the chair of the management committee of the SPF Economy, the investment officer of Hedera, a representative of the Belgian Debt Agency, and a representative of SPFIM) is established within Hedera to advise Hedera's management committee on among others the investment strategy, risk management.

waste and spent fuel and of the transferred liabilities are sufficiently controlled ⁽⁹²⁾. In addition, the financial resources will have to be sufficiently ringfenced from the general budget of the Belgian State (as provided for in the Hedera Law), so that they are only used to pay for the costs for the long-term storage and final storage and cannot be used for other purposes or to absorb any future budget deficits.

(180) Belgium submits that the Waste Cap agreement includes and is accompanied by other risk mitigating measures, including:

- (a) The inclusion of strict Contractual Transfer Criteria ('CTC'): The transfer of nuclear waste liabilities is conditional upon the compliance with the CTCs. The lumpsum payment of the Waste Cap occurs before the effective transfer of future nuclear waste packages to the Belgian State and is conditional upon respecting the CTCs by the nuclear operator. This implies that the nuclear operator remains liable for all nuclear waste costs related to non-compliance with the CTCs.
- (b) The CTCs are laid down at waste stream level for category A, category B and category C waste: Although the volume credits are laid down per waste category, compliance with the CTCs is provided for at waste stream level. This limits the Belgian State's risk of having to manage unforeseen waste streams in the future, while at the same time providing certainty to the nuclear operator in the next decades.
- (c) Category X waste: As mentioned in footnote 69 of the Opening Decision, to further protect the Belgian State against unforeseen waste streams that can arise during the decommissioning of the nuclear reactors, the waste deal also provides for a mechanism to deal with all nuclear waste that was not identified on 31 December 2022. This waste is referred to as 'category X waste'. A mechanism is provided for to make a transfer of category X waste possible after agreeing on the financial and technical conditions of the transfer.
- (d) Knowledge preservation and capacity building of national actors: the knowledge transfer from the nuclear operator to the Belgian nuclear waste management agency (ONDRAF/NIRAS) has been an important subject as part of the waste deal. Capturing and preserving the nuclear operator's knowledge before the definitive shutdown of its power production in 2035 and SF2 operations in 2050 has been a priority for the Belgian State ⁽⁹³⁾. The transfer of historical waste goes with the transfer of all available information on the already produced waste packages and all the information related to their production, including but not limited to technical reports, technical drawings and model used for computer calculations. It is agreed that a framework for such transfer will already have to be agreed between ONDRAF/NIRAS and the operator at closing. The sharing of know-how and training of ONDRAF/NIRAS staff is seen as a common objective for the safe long-term management of nuclear waste and spent fuel by the nuclear operator and the Belgian State. Long-term nuclear knowledge preservation and capacity building of national actors will be instrumental in keeping the costs of the long-term management of nuclear waste and spent fuel in line with the assumptions made in the waste deal.

⁽⁹²⁾ Every five years ONDRAF/NIRAS must submit a plan for approval to Hedera, setting out the services for which Hedera has assumed financial responsibility, the resources, and investments they need to be able to implement this plan, together with the accompanying cost calculations. Hedera analyses the plan, asks for advice from the CPN/CNV and approves (or not) the 5-year plan. Each year (for the duration of such five year-plan) ONDRAF/NIRAS submits a detailed annual plan for the following calendar year to Hedera for approval. Hedera approves the plan, again after receiving advice from the CPN/CNV. In addition, Hedera will only pay the invoices addressed to it by ONDRAF/NIRAS under the following conditions: (i) the amounts claimed are in accordance with the applicable five-year plan and the detailed annual plan, (ii) the amounts claimed are justified by actual performance, and (iii) the amounts claimed relate to the actual costs of the activities performed.

⁽⁹³⁾ As required by Directive 2011/70/Euratom. This Directive requires Member States to plan for education and training, as well as research and development activities, to cover the needs of the national programme for spent fuel and radioactive waste management to obtain, maintain and further develop necessary expertise and skills and thereby allow for a safe and secure long-term management of the nuclear waste and spent fuel.

- (e) Prudential control of the transferred funds: The payment of the Capped Amounts is a one-shot payment that is supposed to cover all transferred nuclear liabilities until the closing of the final nuclear waste repository in Belgium beyond 2100. Controlling the expenditures and the investment returns of the transferred amount is therefore important to guarantee the existence, availability and sufficiency of the financial resources needed to cover all the financial obligations concerned. The Belgian State followed in this respect the opinion of the CPN/CNV based on Commission Recommendation 2006/851/Euratom (see footnote 93):
- The public fund managing the nuclear waste provisions, Hedera, is an independent public body directly reporting to the Belgian Parliament, ensuring transparency and independence;
 - Hedera's financial resources are ring-fenced: they can only be used for the purpose for which they were created and managed (see recital 179);
 - Hedera's budgetary planning is subject to the control and supervision of the CPN/CNV;
 - Hedera has a diversified and risk-averse investment policy that ensures a positive return over a long period of time; and
 - Hedera submits its costings to the CPN/CNV to ensure that adequate financial resources can be made available to ONDRAF/NIRAS in a timely manner.
- (f) Security package for uncapped nuclear liabilities: see section 3.3.2.4.

(181) As noted in recital 172 of the Opening Decision, Belgium acknowledges that the agreement regarding the nuclear waste has a positive impact on the risk profile of the nuclear operator, since a significant part of its nuclear liabilities will be covered by the Capped Amounts, and that this different risk profile justifies and requires a revision of the package of measures to ensure the safety and supervision of the nuclear operator's financial situation: the lumpsum payment of EUR 15 billion to Hedera justifies the release of Electrabel's non-European assets from Electrabel's perimeter (and the accompanying monitoring of the CPN/CNV). Engie, as the French parent company of Electrabel, will ensure that, at the time of closing the agreement between the Belgian State and Electrabel, at least EUR 4 billion of assets (equity value as of 30 June 2023) will remain in Electrabel. In addition, Engie grants an unlimited and non-cancellable parent company guarantee at first request for (i) Electrabel's decommissioning obligations (which also includes the risk that the value of the provisions is insufficient), (ii) volume risk under the cap and (iii) the repayment of (current or future) loans with Synatom.

(182) Belgium considers that the transferred liabilities regarding nuclear waste and the additional decommissioning liabilities resulting from the LTO Project do not provide an economic advantage to Electrabel and the Contributing Companies, considering that they adequately reflect the risk of subsequent cost fluctuations taken over by the State, and that the set-up of the risk transfer is such that a private investor would have accepted to bear it.

3.3.2.3. Additional justifications regarding the discount factor and the risk premium

3.3.2.3.1. Discount factor

(183) Belgium submits that the nuclear provisions that have been collected by the nuclear operator/Synatom before the Waste Cap agreement, were calculated by using a discount factor of 2,5 % for dismantling activities (including dismantling waste) and a discount factor of 3 % for all activities concerning spent fuel (as decided by the CPN/CNV during the triennial review of end 2022).

(184) Belgium clarifies that the use of two different discount rates to compute the provisions (dismantling versus spent fuel liabilities) is justified by the difference in duration and reflects the time value of money ⁽⁹⁴⁾.

⁽⁹⁴⁾ Provisions for dismantling are discounted at a 2,5 % discount rate due to their shorter time horizon (duration of 11,4 years). Conversely, provisions for spent fuel are subject to a higher discount rate of 3 % to account for a longer time horizon (duration of 30 years).

- (185) As noted in recital 198, the Waste Cap agreement only entails a transfer to the Belgian State of transferred nuclear waste and spent fuel liabilities, while decommissioning and dismantling liabilities remain with the nuclear operator (except for the dyssynergies caused by the LTO Project, see recital 199). Therefore, Belgium argues that for the computation of the present value of the transferred nuclear waste and spent fuel liabilities a unique discount factor of 3 % (1 % real rate + 2 % inflation) was retained to account for the fact that the nuclear waste and spent fuel liabilities have a longer duration than the decommissioning liabilities (see recital 148 of the Opening Decision).
- (186) Belgium asked the CPN/CNV's advice regarding the most appropriate discount factor to be used for the calculation of the Waste Cap ⁽⁹⁵⁾. As mentioned in recital 149 of the Opening Decision, the CPN/CNV proposed to adjust the discount factor for nuclear waste/decommissioning and spent fuel liabilities, applying a two-step approach, consisting in applying a discount factor based on the actual 30-year OLO rate of 3,17 % for the first 30 years, and applying a discount factor of 2,17 % based on an estimation based on OLO rate of the risk-free rate for the 30 years thereafter.
- (187) Belgium recalls that the negotiation period was long (1,5 years) and that the choice for a single discount factor of 3 % was motivated by the need to have a certain degree of predictability with respect to the discount factor used in the negotiations with Engie. This is because the discount factor has a direct impact on the calculation of the lumpsum to be transferred. Belgium explains that the methodology used by the CPN/CNV in its advice of 2023 was later used, together with the Ultimate Forward Rate ('UFR') from the European Insurance and Occupational Pensions Authority ('EIOPA') ⁽⁹⁶⁾ as an *ex-post* confirmation that the discount factor of 3 % was a prudent long-term rate.
- (188) First, Belgium requested an independent consultant to calculate the 'single' discount factor equivalent to the two-stage approach of the CPN/CNV, using the risk-free rates suggested by the CPN/CNV, as well as using different other OLO-rate data ⁽⁹⁷⁾. The analysis shows that the approach suggested by the CPN/CNV is particularly sensitive to the period retained for the calculation. For instance, the two-stage approach results in an equivalent discount factor of 2,8 % using the risk-free rates suggested by the CPN/CNV, an equivalent rate of 3,1 % when applying the CPN/CNV methodology with the OLO-rate data available at the time of the Opening Decision, and an equivalent rate of 3,2 % at the time of the signature of the Implementation agreement. As shown in Table 14, the two-stage approach suggested by the CPN/CNV yields two equivalent discount rates with a 40 base points difference when considering two different time periods that are only 9 months apart.
- (189) Second, Table 14 also shows the comparison with the UFR from the EIOPA, since the EIOPA reference was also used in the German precedent case (SA.45296 ⁽⁹⁸⁾), where a discount factor of 4,58 % was found proportionate.

⁽⁹⁵⁾ Advice by the CPN/CNV to the Minister of Energy of 7 March 2023, pp. 4-6 ('*Advies van de Commissie voor Nucleaire Voorzieningen aan de Minister van Energie betreffende de overdracht van de financiële verantwoordelijkheid van ENGIE aan de Belgische staat van het beheer van het radioactief afval en de verbruikte splijstof van de zeven Belgische kerncentrales*').

⁽⁹⁶⁾ EIOPA publishes the risk-free interest rate term structure every month. It is used by insurance companies within the EEA to value their liabilities under the Solvency II regulatory framework. The EIOPA curve is the yield curve of risk-free interest rate for maturities up to 150 years for the countries of the EEA. The rates for the maturities up to 20 years are calculated based on swap rates (i.e., the fixed rates at which market players are willing to exchange floating interest rate obligations). The rates for longer maturity are extrapolated and converge toward the Ultimate Forward Rate (UFR) in the very long-term.

⁽⁹⁷⁾ See the note prepared by Compass Lexecon of 28 November 2024 – '*Response to the EC concerns on discount rate - 281124*'.

⁽⁹⁸⁾ Commission decision of 16.6.2017, SA.45296 (2017/N), Germany, Transfer of Radioactive Waste and Spent Nuclear Fuel Liabilities in Germany (OJ C/2017/254, 4.8.2017, p. 1).

Table 14

CPN equivalent rate and EIOPA rate evolution since the CPN Advice of March 2023

	CPN/CNV Advice 7 March 2023	Signature 13 December 2023	Notification 21 June 2024	Opening Decision 22 July 2024
CPN/CNV equivalent rate	2,82 %	3,23 %	3,04 %	3,08 %
UFR	3,45 %	3,45 %	3,30 %	3,30 %

Source: Compass Lexecon analysis based on data from investing.com.

- (190) As is clear from Table 14, the retained discount factor of 3 % falls between the
- (a) CPN/CNV suggestion at the time of the CPN Advice to the Minister of Energy (7 March 2023), considered as lower bound; and
 - (b) the UFR, considered as a more optimistic reference ⁽⁹⁹⁾.
- (191) In addition, the 3 % rate appears more conservative than the CPN/CNV suggestion and the UFR at the time of signature of the agreement and thereafter.
- (192) Belgium further submits that a discount factor of 1 % in real terms appears conservative in comparison with the rate of return that can be expected by Hedera using an appropriate prudent asset-liability management approach. As a comparative example, Belgium refers to the dedicated asset portfolio of EDF to ensure secure financing of its long-term nuclear liabilities, described in the Universal registration document 2023 of EDF ⁽¹⁰⁰⁾. This portfolio is managed based on an asset-liability approach and consists of a portfolio of diversified assets comparable to the description of the hypothetical portfolio managed by Hedera, for which a comparable return can therefore reasonably be assumed.
- (193) Finally, Belgium assumes in the calculation of the Waste Cap a constant inflation rate of 2 %, which is the explicit long-term inflation target of the European Central bank ('ECB'). The ECB considers that the Consumer Price Index ('CPI') is the appropriate measure of inflation. As mentioned in recital 150(b) of the Opening Decision, the CPN/CNV expressed concerns that the actual inflation of nuclear construction costs (based on the ABEX index) might be higher than the CPI inflation. Belgium argues that the 2 % ECB inflation target is the correct proxy of inflation for the Waste Cap calculation, for the following reasons:
- (a) First, Belgium submits that the ABEX index covers the cost of house and residential building construction in Belgium, and therefore is only a weak proxy for nuclear construction costs, given the material differences between the construction of a nuclear project and houses. Moreover, Belgium adds that the cost-escalation risks of future nuclear installations for the management of nuclear waste are included in the contingencies of the industrial scenario of ONDRAF/NIRAS and are therefore included in the base amount.
 - (b) Second, Belgium submits that the historical evolution of the ABEX index does not materially differ from the inflation measured by the CPI index, and that differences between the two rates are driven by a number of factors, such as the cost of energy and raw materials, labour cost and demand for construction. Belgium submits that these differences are situational and not structural.
- (194) For the reasons noted above, Belgium considers that the 3 % discount factor is an appropriate and conservative rate for the discounting of long-term liabilities.

⁽⁹⁹⁾ The EIOPA approach provides market conditions only for short maturities (up to 20 years). After this maturity, the methodology is not based on swap rates, but on historical averages that do not necessarily reflect current economic reality, which may lead to a significant underestimation of longer-term liabilities. The UFR is therefore a proxy of the very long-term risk-free rate in nominal terms suitable for pensions funds. However, in view of the duration of the nuclear liabilities and the fact that an initial premium is paid to cover these liabilities without any expectation of additional contributions (unlike pension funds), it is not necessarily relevant for the case at hand.

⁽¹⁰⁰⁾ In the Universal registration document 2023 (p. 354), EDF notes that the expected rate of return of this portfolio for the next 20 years is higher than the rate of 4,5 % used by EDF for the discount of their nuclear liabilities, which is 1,5 percentage points higher than the discount rate retained by Belgium.

3.3.2.3.2. Risk premium

- (195) As noted in recital 153 of the Opening Decision, Belgium submits that to the base amount of EUR 9 815 million a significant additional risk premium of EUR 5 185 million has been added to cover remaining uncertainties. As stated in recital 154 of the Opening Decision, the risk premium is based on a technical note by ONDRAF/NIRAS⁽¹⁰¹⁾, analysing the uncertainties and risks associated with the transfer of financial responsibility for the management of radioactive waste and spent fuel from the seven Belgian nuclear power plants to the Belgian State (see footnote 80 of the Opening Decision). As stated in recital 156 of the Opening Decision, Belgium argues that the risk premium of 52,83 % is an adequate one and exceeds the risk premium of 35,47 % applied in the German case (SA.45296 (see footnote 101)).
- (196) In addition to the clarifications regarding the risk premium set out in recital 154 of the Opening Decision, Belgium has clarified in more detail during the formal investigation how the risk premium was computed based on the technical note by ONDRAF/NIRAS. Table 15 provides the detailed clarifications and composition of the risk premium, which led to amounts of EUR 5 033 million and EUR 5 133 million as lower and upper bound respectively. As part of the negotiations on the Waste Cap agreement, the risk premium has been set at a slightly higher amount of EUR 5 185 million, so as to arrive at a lumpsum payment of EUR 15 billion (see Table 13).

Table 15

Detailed risk premium composition and computation

Components risk premium (amounts in million EUR)	Cat A	Cat B	Cat C	Description
Cat A Waste acceptability	900			All waste that conforms with the cat. A CTC can be transferred as cat. A waste to the Belgian State, and will likely be stored in the cat. A storage facility. However, to cover the risk that part of this waste could not be made compliant with the cat. A acceptance criteria, the Begian State followed the recommendandation of ONDRAF/NIRAS to properly account for this risk, initially not included in the 2022 nuclear provisions, which entails a number of steps such as post-treat the waste, additional R&D, modification of the engineered barriers for surface storage to adapt storage to the specific characteristics of problematic waste and modification of waste to adapt it to storage. This part of the risk premium goes together with the amount for the 'Regulatory risk transfer Cat. A -> cat. B' component of the risk premium.
Storage facilities risks	500			Difference between the reference scenario and the amount that accounts for residual risks and uncertainties.
Regulatory risk - transfer Cat A -> Cat B	500	-500		Waste conform with the cat. A CTC can be transferred as cat. A waste to the Belgian StateBeGoV, to be disposed of in the cat. A storage facility. However, to cover the risk that a part of this waste is not compliant with the cat. A acceptance criteria and will have to be disposed of in the geological disposal, the cat. A risk premium contains a component to cover for this risk. It goes together with the risk premium amount for the 'Cat A waste acceptability'.
Spent fuel storage facility (Dry scenario instead of DE building)			-367	To reduce the risk of transferring spent fuel to the Belgian State in end-of-life facilities Electrabel has to replace the 'DE building' (i.e. the spent fuel storage facility in Tihange) and to transfer the waste in a stable form. The corresponding provision for the replacement of the DE building, including the provisions for operating it until 2050 and decommissioning it afterwards, can therefore be excluded from the transfer to the Belgian State.
Storage building B Waste		-100		The TSC storage building has been excluded from the Waste Cap due to uncertainties with its design requirements. The costs for this building were not yet included in the 2022 nuclear provisions.
Combined cost overruns and the alternative scenario at 600 m (Cat. B and Cat. C waste)				The estimation by ONDRAF/NIRAS of the risks associated with an alternative scenario at 600m was based on expert judgment [x1.21] and was not based on a probabilistic model. The Belgian State therefore used the expert judgement to take into account both the 70 percentile probability ('P70') and the cost overruns associated with the alternative 600m scenario for which no P70 calculation was available, to determine a P70 cost scenario and discounted it at 3% (recognizing that the scenario at 400m was approved by ONDRAF/NIRAS and the CPN/CNV, and recognizing that the cost probability distributions of the alternative 600m scenario are unknown and that this scenario was deemed to be 'less-likely-than not' by both institutions. This led to an upper bound and lower bound estimate of the risk premium. This amount includes a 10% provision for R&D.
lower bound		4100		
upper bound		4200		
Total risk premium				
lower bound		5033		
upper bound		5133		

Source: Response Belgian authorities to the Commission's request for information of 1 October 2024.

⁽¹⁰¹⁾NIRAS/ONDRAF, Technical Note (confidential) of March 2023, 'Note technique documentant une analyse des incertitudes et des risques associés au transfert de la responsabilité financière de la gestion des déchets radioactifs et du combustible usé des sept centrales nucléaires belges d'Engie à l'État belge'.

- (197) Belgium submits that the ONDRAF/NIRAS opinion in its technical note provides a catalogue of risks associated with the transfer of nuclear liabilities to the Belgian State, which were added, with the assistance of ONDRAF/NIRAS experts, to the 2022 provision file to estimate what is the minimum risk premium required to cover all known risks. Therefore, Belgium argues that the risk premium in the Waste Cap agreement is meant to cover all the 'less-likely-than-not' risks identified in the ONDRAF/NIRAS note and additional risks identified during the negotiation that were derived from interactions with Electrabel and experts' opinions. Finally, Belgium recalls that that experts from ONDRAF/NIRAS were involved in the negotiations of the Waste Cap agreement to assist the Belgian Government with regard to how to take into consideration their recommendations in their technical note of March 2023.

3.3.2.4. Decommissioning and dismantling liabilities

- (198) As mentioned in recital 163 of the Opening Decision, in contrast to the transferred nuclear waste and spent nuclear fuel liabilities, the nuclear operator remains solely responsible for the decommissioning and dismantling of the whole nuclear park (whereby the Contributing Companies contribute financially to the decommissioning and dismantling costs). The decommissioning and dismantling liabilities are thus 'uncapped'.
- (199) However, as part of the transaction, the Belgian State took financial responsibility for the 'additional decommissioning liabilities resulting from the LTO Project' or 'decommissioning dyssynergies'. The two main categories considered are the increases in post operational phase costs (operational and project ('POP') costs) and in decommissioning and dismantling ('D&D') costs caused by the LTO Project (operational, project and investments costs). Examples of what these decommissioning dyssynergies concretely consist of have been provided in footnotes 85 and 86 of the Opening Decision. The final amount of the 'decommissioning dyssynergies' is the result of the evaluation of the impact of the LTO Project and does not cover any operating costs relating to day-to-day management or usual activities. The final amount of the 'decommissioning dyssynergies' is the result of the evaluation of the impact of the LTO Project on different cost subcategories, since the shift of the decommissioning of two reactors impacts the planning, organisation, timing and need for certain investments at a given time ⁽¹⁰²⁾. Neither BE-NUC nor the Belgian State bear any other liability for decommissioning liabilities.
- (200) As explained in recital 168 of the Opening Decision, since there was a disagreement between Electrabel and the Belgian State regarding the extent of the amount of decommissioning dyssynergies, the CPN/CNV was tasked to take the decision, and the final amount was not yet known at the time of the Opening Decision. On 24 June 2024, the CPN/CNV approved the amount of EUR [100-500] million (in nominal terms), and, on 16 October 2024, the CPN/CNV notified Belgium and Engie that the final amount to be paid amounts to EUR [100-500] million at the end of 2024 ⁽¹⁰³⁾. The amount of decommissioning dyssynergies to be paid by the Belgian Government is a fixed lump sum that cannot be increased in case the additional costs are higher than foreseen; however, if the LTO Project does not proceed as expected, the Belgian State will be reimbursed.
- (201) Belgium submits that the waste deal also foresees an extensive security package to guarantee that 'uncapped nuclear liabilities' are borne by an economically viable nuclear operator:
- (a) The increase in decommissioning liabilities (for the LTO Units as well as the non-LTO Units) resulting from the LTO Project, for which the Belgian State remains responsible, is a lumpsum final payment, which guarantees that all decommissioning and dismantling risks remain with the nuclear operator (see recital 200).
 - (b) The uncapped nuclear liabilities remain subject to prudential control by the CPN/CNV, similarly as before the waste deal (i.e., triennial revision of the decommissioning costs, investments, etc.).

⁽¹⁰²⁾ Belgium submits that the impact of the LTO Project on the existing decommissioning programme can be negative (dyssynergy) or positive (synergy). The overall amount has been calculated as negative (dyssynergies) although positive impacts were also considered.

⁽¹⁰³⁾ If the closing of the transaction takes place at a later date than 31 December 2024, the amount will be increased by EUR [0-0,500] million per month to account for the corresponding [0-5] % increase on yearly basis.

- (c) Among others, the following measures are taken to ensure the economic viability of the nuclear operator:
- A secured perimeter of the assets remaining within Electrabel (see recital 181);
 - Reduced thresholds of the capitalistic decisions that are subject to CPN/CNV's approval (see recital 175 of the Opening Decision);
 - Conditions for intragroup loans;
 - Parent company guarantee ('PCG') (see recitals 57 and 174 of the Opening Decision); and
 - Extended information obligations.

3.3.2.5. Impact of the waste deal on the financial measures of Component 1

- (202) Belgium submits that the waste deal can be assessed separately from the other parts of the measure.
- (203) First, Belgium submits that the waste deal concerns not only the LTO Units, but all seven nuclear reactors in Belgium. The nuclear provisions on which the Capped Amounts are based take into account all nuclear provisions to be made until the original legal end dates of the seven nuclear reactors (see Table 1).
- (204) Second, as mentioned in recital 170 of the Opening Decision, costs related to the operational waste and spent fuel produced by the LTO Units during the LTO Period will be paid by the co-owners of the LTO Units (BE-NUC and Luminus), which includes the costs for making the operational waste compliant with the CTC and a volume adjustment fee for these additional volumes. Electrabel and the Contributing Companies will establish provisions for radioactive operational waste in accordance with the applicable accounting rules. These additional costs are reflected in the Signing Financial Model on which the financial support measures of Component 1 of the LTO Project are based and are therefore taken into consideration regarding the calibration of the sub-measures in Component 1.
- (205) Third, the nuclear operator remains responsible for the decommissioning and dismantling of all the seven nuclear reactors in Belgium. These costs are neither reflected in the waste deal, nor in the Signing Financial Model. There is one exception related to the increase in decommissioning liabilities (for the LTO Units as well as the non-LTO Units) resulting from the LTO Project, for which a fixed lumpsum amount was established and approved by the CPN/CNV and that will be paid as a one-off by the Belgian authorities. The amount of these dyssynergies has been taken into account in the Signing Financial Model.

3.3.3. *Component 3: Legal protections*

- (206) As noted in section 3.5 of the Opening Decision, the agreement between the Belgian State and Engie also includes provisions on legal protections, defining the risk-sharing in the event of certain future legislative changes. Chapter 4 of the Phoenix Law provides the legal basis to protect Engie against certain changes in the law. However, the relationship between the parties regarding indemnifications in case of the concerned changes in law will solely be governed by the provisions of the Implementation Agreement.
- (207) These provisions concluded with Engie and Electrabel provide that if the Belgian Federal Government or the Belgian Federal Parliament adopts new regulations specifically concerning nuclear operators in Belgium or Electrabel's nuclear activities, which have a negative impact on the material terms of the transaction, the Belgian State will indemnify Engie (or one of the affected Engie group companies) for the direct losses it actually incurs as a consequence thereof. This also includes the payments Engie has to make to Luminus in the context of this indemnification. In accordance with Belgian law, the claimant must prove its claim and the amount of indemnification will be determined by a court or an arbitration procedure. Belgian courts are competent, but there is a reciprocal arbitration option for UNCITRAL arbitration.

- (208) This provision does not apply if the legal amendment results from the transposition of European or international law, unless the Belgian Federal Government or the Belgian Federal Parliament has induced or actively promoted the existence and the content of such legislation at another level (international, supranational, European regional, municipal, etc.) or has induced or actively promoted a judicial decision.
- (209) As stated in recital 180 of the Opening Decision, Belgium submits that the Commission's decisional practice suggests that protections against change in law can constitute State aid. Belgium refers, in this respect, to the Commission decision regarding the lifetime extension of three other nuclear reactors in Belgium, in which the Commission examined the indemnification clauses contained in the agreements concluded between the Belgian State and the owners of nuclear power plants. As a consequence, Belgium concludes that the legal protections agreement between the Belgian State and Engie could imply the granting of a selective economic advantage to Engie.

3.3.4. *Alternative financing options*

- (210) Belgium submits that the lifetime extension of the two nuclear reactors requires a specific support package, because of the specific economic situation and the specific risk profile of nuclear energy.
- (211) As noted in recital 22 of the Opening Decision, no provisions for the LTO were made by Electrabel since, until March 2022, all the Belgian nuclear assets were planned to shut down by - at the latest - 2025, following the Nuclear Phase-Out law. Following the decision on the lifetime extension of Doel 4 and Tihange 3, there was an urgent need to refurbish the LTO Units. Given the tight time schedule and the increased costs of fuel and other necessary parts in recent years, the uncertainties regarding the investment costs of the LTO Project are considerable.
- (212) The Belgian authorities examined alternative support mechanisms, such as participation of nuclear technology in the Belgian capacity mechanism, a fixed feed-in premium, a one-way CfD, or a RAB model.
- (213) According to the Belgian authorities, given the market failures mentioned in section 3.1, those alternatives were considered as less appropriate to support the LTO Project, for the following reasons:
- (a) The potential funding gap and specific risk profile of the LTO Units cannot be adequately addressed through participation in the CM, since: (i) the CM consists of a competitive process with annual auctions, which have by definition an uncertain outcome for the participants, which is incompatible with Belgium's choice to have nuclear power as part of its energy mix, (ii) the remuneration through the CM auctions is incompatible with the timing of the lifetime extension, where investments need to start as soon as possible in order for the LTO Units to be available again by November 2025, and (iii) the CM only resolves the funding gap of the investment project, without addressing the specific risks to which the nuclear operator is exposed.
 - (b) A fixed feed-in premium would pay the same amount for each unit of electricity (regardless of the wholesale price level), leading to potential over- or under-compensation, and imposing an excessive residual market risk on the operator.
 - (c) A one-way CfD would not require generators to pay back market revenues beyond the strike price, thus allowing for potential over-compensation.
 - (d) A RAB model for nuclear units is better fit for new investments in nuclear capacity to de-risk the construction period and large capital expenditures.
- (214) Belgium submits that the two-way CfD, in combination with the other sub-measures of the support package, provides the required support at a lower cost to consumers compared to alternative remuneration support mechanisms.

3.4. Beneficiaries

- (215) As noted in recital 181 of the Opening Decision, the ultimate beneficiaries of the notified measure are (i) Engie, as parent company of Electrabel, which is the sole operator and co-owner of the LTO Units (89,807 %) and as direct party to the Implementation Agreement concluded with the Belgian Government, and (ii) EDF S.A. ('EDF'), as ultimate parent company of Luminus, which is co-owner of the LTO Units (10,193 %) and part of the Contributing Companies and, as the parent company of EDF Belgium, as part of the Contributing Companies. The Commission has not identified any reasons to change its assessment of the main beneficiaries during the formal investigation.
- (216) However, the Commission agrees with Belgium's point of view regarding the identification of the beneficiaries of Component 1 of the measure. In particular, Belgium argued in its comments to the Opening Decision that BE-NUC (the JV between the Belgian State and Electrabel) and Luminus, rather than Electrabel and Luminus, are the direct beneficiaries of the CfD, SDC Loans, MOCP and WCF. Electrabel, as shareholder of BE-NUC and current co-owner of the LTO Units, can nevertheless be considered as an important beneficiary of these sub-measures of Component 1 as well. Regarding the other sub-measures under Component 1, which provide support for the operation and maintenance of the LTO Units, Electrabel, is a direct beneficiary as nuclear operator and shareholder in BE-NUC with the Belgian State, while Luminus is an indirect beneficiary as co-owner of the LTO Units. Under points 115 and 116 of the Commission's Notice on the Notion of Aid, an advantage can also be conferred on undertakings other than those to which State resources are directly transferred (indirect advantage). Luminus benefits from the combination of sub-measures under Component 1 through the reduction of operational and insolvency risks they provide to the LTO Project, without itself being directly involved in these sub-measures. Luminus can therefore be considered to obtain an indirect advantage from these sub-measures. This indirect advantage does not apply to the EMSA, since Luminus is the owner of its share of the electricity produced by the LTO Units and will manage the sale of the electricity independently, nor to the ASA to be concluded between Electrabel and BE-NUC.
- (217) Regarding Component 2 of the notified measure, the transfer of nuclear waste and spent fuel liabilities and the agreement on decommissioning liabilities benefit the nuclear operator, Electrabel, as well as Luminus and EDF Belgium in their role as Contributing Companies, which are, together with the nuclear operator, financially responsible for the nuclear waste and decommissioning liabilities.
- (218) Regarding Component 3 of the notified measure, the legal protections provide that unilateral measures adopted by the Belgian State specifically affecting or applying to the operators of the nuclear units in Belgium and adversely modifying the material terms of the transaction would give rise to a right to indemnification. Therefore, the direct beneficiaries are Engie as mother company of Electrabel, the operator (and co-owner) of the nuclear reactors in Belgium, and BE-NUC. Similar as for some of the sub-measures under Component 1, although Luminus is not directly involved in the legal protections measures of Component 3, an indirect advantage is conferred on Luminus, who will also be indemnified in case of legal changes affecting the LTO Project (see section 3.3.3). Therefore, Luminus is an indirect beneficiary of Component 3 of the measure.

3.5. Legal basis and transparency

- (219) As explained in section 3.7 of the Opening Decision, the LTO Project requires a number of legislative changes, summarised in the present section.

3.5.1. Amendment of the Nuclear Phase-Out law

- (220) The Nuclear Phase-Out law organises, since 2003, the gradual phase-out of electricity production through nuclear power in Belgium and has been amended already three times to allow for the lifetime extension of Tihange 1, Doel 1 and Doel 2.
- (221) The 10-year lifetime extension of Doel 4 and Tihange 3 requires another amendment of the Nuclear Phase-Out law. The modifications have been implemented by the 'Law amending the Nuclear Phase-Out Law', approved by the Parliament in plenary session on 18 April 2024, signed by the King on 26 April 2024, and published in the Belgian Official Gazette on 5 June 2024.

- (222) In accordance with Directive 2011/92/EU of the European Parliament and of the Council⁽¹⁰⁴⁾, Council Directive 92/43/EEC⁽¹⁰⁵⁾ and Directive 2009/147/EC of the European Parliament and of the Council⁽¹⁰⁶⁾, Belgium submits that an environmental impact assessment with cross-border consultations⁽¹⁰⁷⁾ is required and has been made.

3.5.2. *'Phoenix Law'*

- (223) The different elements of the LTO Project are implemented through a separate 'Law to guarantee security of supply in the energy sector and reforming the nuclear energy sector', also referred to as the 'Phoenix Law'. The detailed description of the different chapters of the Phoenix Law has been provided in recital 191 of the Opening Decision. The Phoenix Law has been approved by the Parliament in plenary session on 18 April 2024 and signed by the King on 26 April 2024. It has been published in the Belgian Official Gazette on 5 June 2024.

3.5.3. *Laws on Belgian government structure*

- (224) As noted in recital 193 of the Opening Decision, the Belgian State established two new public entities that will take up certain responsibilities in relation to the LTO Project:
- (a) 'BE-WATT': an autonomous service with accounting independence, incorporated by the 'BE-WATT Law', that will become the Belgian Government's shareholder in BE-NUC and the counterparty of the RA; and
 - (b) 'Hedera': a new sui generis public institution with legal personality, incorporated by the 'Hedera Law', taking over the financial responsibility for the transferred nuclear waste and spent fuel liabilities and managing the Capped Amounts.
- (225) The BE-WATT Law and the Hedera Law have been approved by the Parliament in plenary session on 18 April 2024 and signed by the King on 26 April 2024. They have been published in the Belgian Official Gazette on 5 June 2024.

3.5.4. *Royal Decrees*

- (226) First, the Royal Decree Authorisations regulates the authorisation of installations that condition nuclear waste. This Royal Decree has been modified to allow the authorisation of conditioning installations that condition nuclear waste in accordance with the contractual transfer criteria. A separate category will be introduced for authorisations for conditioning installations that condition in accordance with contractual transfer criteria. It has been adopted on 11 July 2024 and published in the Belgian Official Gazette on 15 July 2024.
- (227) Second, the Royal Decree on Contractual Transfer Criteria determines the contractual transfer criteria and the categorisation of the waste package, as well as the way they consume the volume credit. It has been adopted on 11 July 2024 and published in the Belgian Official Gazette on 15 July 2024.

3.6. **Budget and financing**

- (228) Belgium will finance the total funding requirement of the LTO Project via the general State budget, including the potential paybacks from the two-sided CfD.

⁽¹⁰⁴⁾ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (OJ L 26, 28.1.2012, pp. 1, ELI: <http://data.europa.eu/eli/dir/2011/92/oj>).

⁽¹⁰⁵⁾ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, pp. 7, ELI: <http://data.europa.eu/eli/dir/1992/43/oj>).

⁽¹⁰⁶⁾ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20, 26.1.2010, pp. 7, ELI: <http://data.europa.eu/eli/dir/2009/147/oj>).

⁽¹⁰⁷⁾ Further information on these transboundary notifications addressed to other EU Member States in compliance with Article 7 of the EIA Directive (including all reactions received) can be found on the dedicated page of the FPS Economy.

- (229) As noted in recital 200 of the Opening Decision, Belgium estimates that the CAPEX costs of the LTO Project amount to EUR [2-2,5] billion, and the total operating costs over the lifetime to be EUR [7 000-8 000] million.
- (230) The net impact on the Belgian State budget is twofold: first, through the capital contribution of EUR 24,7 million to the JV, and second, through the net cost of measures payable by the RA Counterparty. Belgium submits that the expected budget spending depends not only on costs projections, but also on energy market price/revenues projections, because the LTO Project will be funded by a combination of market revenues, CfD difference payments, minimum OPEX and capital payments, and SDC Loans.
- (231) Under the base case projection of the Signing Financial Model, over the lifetime of the project, the RA Counterparty will receive a total net nominal amount of EUR [0-500] million.
- (232) However, if electricity prices were to evolve according to a lower projection, the cost of the measure to the Belgian Government would increase by EUR [4 000-4 500] million due to higher CfD payments. In case of an unexpected event whereby both nuclear plants would be unavailable, the RA Counterparty would also be exposed to providing additional support of EUR [500-1 000] million per year of unavailability. In a negative scenario of low electricity prices and a 12-month unavailability event, the RA Counterparty would have to provide a total net (nominal) amount of EUR [4 000-4 500] million over the project lifetime, i.e., the budget of the measure would be close to [40-50] % of total capital and operating costs.

3.7. Cumulation

- (233) Belgium confirms that the measure cannot be cumulated with other aid received to cover the same costs to be incurred under the LTO Project. Belgium submits that no other funds than the State budget are foreseen to be involved in the financing of the LTO Project and confirms that no Union funds will be involved.

3.8. Grounds for initiating the formal investigation procedure

- (234) The Commission adopted the Opening Decision on 22 July 2024. The Commission came to the preliminary view that the measure constitutes State aid and raised doubts regarding its compatibility with the internal market under Article 107(3), point (c), TFEU. In the Opening Decision, the Commission raised doubts regarding the necessity, appropriateness and proportionality of the aid, regarding the non-violation of Union law and regarding potential undue distortions of competition and trade.
- (235) First, regarding the necessity of the aid, the Commission raised doubts as to the financial support measures of Component 1. Although the Commission recognises that there might be a need for the nuclear operator and the owners of the nuclear reactors to have a stable source of revenues given the uncertainties related to the future electricity market price, the Commission questioned whether the additional financial support measures on top of the two-way CfD are all necessary. In particular, the Commission had doubts as to the creation of a JV to which the Belgian Government will be a shareholder, the minimum OPEX and capital payment and the SDC Loans.
- (236) Second, regarding the appropriateness of the aid, the Commission raised again doubts as to the financial support measures of Component 1. The Commission wanted to further inquire the design of the two-way CfD proposed by Belgium, since it seemed to lack appropriate incentives to react to market circumstances and to schedule maintenance in the most efficient way (including the use of the DAM price used as reference market price in the CfD design). In addition, the Commission questioned whether the combination of remuneration measures does not relieve the beneficiaries from too big a share of the market and operational risks.

- (237) Third, regarding the proportionality of the aid, the Commission raised doubts as to the proportionality of several of the financial remuneration measures (including the SDC Loans and the MOCP). The Commission considered that those measures are combined with a CfD and they are set to reach, by design, the target rate of return of 7 %, which can only be assessed with respect to the measures themselves and the risk-reduction they provide. Therefore, the Commission considered that it could not assess - at the time of the Opening Decision - the proportionality of this target rate of return *in abstracto* and concluded that the proportionality assessment can only follow the assessment of the appropriateness of the measures. In addition, the Commission had doubts as to the establishment of the amount of the lumpsum payment of EUR 15 billion for the transfer of the nuclear waste and spent fuel liabilities (in particular on the used discount rate and the height of the risk premium), as well as on the amount of the additional decommissioning liabilities resulting from the LTO Project (which was not yet known at the time of the Opening Decision).
- (238) Finally, the Commission questioned whether an inappropriate design of the CfD and the cumulation of all financial support measures could not lead to undue market distortions. In addition, the Commission needed further reassurance regarding the identity and independence of the entity selling the LTO Units' output in the market under the EMSA.

4. THE POSITION OF BELGIUM

- (239) Belgium sent its response to the Opening Decision on 22 August 2024. Belgium's submission provided additional independent analyses prepared by Compass Lexecon on the CfD design, the SDC Loans and the MOCP (provided on 22 August), as well as on the Waste Cap (provided on 30 August 2024) in response to the Commission's doubts raised in the Opening Decision regarding the necessity, appropriateness and proportionality of the package of financial support measures (Component 1 of the aid measure), regarding the proportionality of the waste deal (Component 2 of the aid measure), regarding the compliance of the CfD design with Union law and regarding potential undue distortions of competition and trade.
- (240) Belgium's response to the Opening Decision discusses the initial measure (LTO Project) as described in the Opening Decision. The current measure includes changes (introduced to address the doubts raised by the Commission in its Opening Decision) compared to the initial measure and is set out in detail in section 3 of this Decision.
- (241) The arguments put forward by Belgium are outlined in more detail below.

4.1. **Belgium's position on the package of financial measures (Component 1)**

4.1.1. *Appropriateness of the CfD design*

- (242) Belgium agreed with the Commission that fostering market-conform incentives and minimising potential undue distortions are fundamental to the design of support mechanisms.
- (243) According to Belgium, supported by an independent additional economic analysis prepared by Compass Lexecon⁽¹⁰⁸⁾, the LTO Units' technical, regulatory, and economic constraints (see also section 2.1) shape the feasibility and appropriateness of the CfD design. Belgium notably argued that providing economic incentives for the nuclear operator to react to market circumstances in situations where the ability to respond is restricted may allocate risks in a suboptimal way and increase the uncertainty of future revenues without any mitigation possibility. Hence, higher risks for the beneficiary that cannot be acted upon through operational levies may translate into a degraded risk-return profile for the investment and economic imbalance of the scheme (e.g. requiring a higher target IRR). The resulting expected impact on support costs needs therefore to be balanced with the costs for the RA counterparty of directly bearing that risk.

⁽¹⁰⁸⁾ Compass Lexecon, Memo CfD Design, 22 August 2024.

- (244) Belgium further argues that the merchant operation of the LTO Units and the corresponding bidding decisions are the economic benchmark for a CfD design that upholds market-conform behaviour.
- (245) In the case at hand, Belgium recalls that various technical and operating constraints strongly limit the leeway to modify the maintenance schedule and to modulate, and thereby the potential for value creation associated with increased economic incentives:
- (a) The LTO Units face operational constraints to ensure security of supply in the winter periods, as well as technical and legal requirements to (re)schedule outages.
 - (b) The technical design of the LTO Units is optimised for operation as baseload plants, which carries significant implications for safety regulation and limits modulation capabilities (e.g. max 30 modulations per fuel cycle, with potential risk of automatic shutdown).
 - (c) The operating and modulation constraints and associated risks translate into opportunity costs for the nuclear operator (e.g. risk of foregone revenues in case of automatic shutdown, missed modulation opportunities due to reaching the modulation cap before the end of the cycle).
- (246) Belgium argued that, given the LTO Units' operating and safety constraints, some alternative CfD designs features detailed below would not allocate risks and incentivise market-conform behaviour more efficiently than the proposed design. In particular, Belgium submitted that, in some cases, using long-term reference prices and reference quantity may foster efficient dispatch/operational decisions, as it decorrelates the CfD payments from the captured market price. However, this may not be appropriate in the case at hand given the LTO Units' operational constraints and the unique availability pattern in the period of the LTO works, as explained below:
- (a) First, using the price of long-term products as the alternative MRP (e.g. futures, yearly DA averages) instead of the DAM price fails to account for the unique availability pattern in the period of the LTO works, as it may imply a significant risk of mismatch between the reference price and captured prices that would not be efficiently hedged or managed by BE-NUC through operational levies (see recital 98). However, different contexts and operating constraints may justify alternative MRP.
 - (b) Second, calculating the remuneration amount based on a reference quantity rather than on the actual output may introduce additional market risks that would not be efficiently hedged or managed by BE-NUC. Again, using reference quantities may be appropriate in different contexts and technology and operating constraints.
 - (c) At the same time, as previously explained in recitals 11 and 12, due to the stringent operational and modulation constraints that apply to the LTO Units, the incremental value creation potential associated with increased market incentives from alternative CfD design features would be limited compared to the chosen CfD design (see below).
- (247) According to Belgium, the chosen CfD design in combination with its specific arrangements (the MPRA and the modulation arrangement), aimed to balance the market-risk exposure with operating incentives to support both investment and short-term market efficiency. It encourages timely responses to market signals without causing unnecessary complexity and is consistent with the technical and regulatory constraints of the LTO Units. Belgium referred in this respect to:
- (a) the MPRA that provides an appropriate incentive for production at times of high market prices given the (limited) available leeway to adjust maintenance schedules; and
 - (b) the modulation arrangement that has been designed to practically accord to the LTO Units' technical and regulatory constraints and market-based operations. The fixed modulation threshold was intended to balance potential benefits from modulation with the associated opportunity costs based on a simple mechanism.
- (248) For the reasons outlined above, Belgium concluded that the Commission's concerns regarding the appropriateness of the CfD design in the Opening Decision were unfounded.

- (249) However, during the formal investigation, Belgium decided to amend the CfD design and the MPRA mechanism with a view to reinforcing market-conform incentives and account for market evolutions.
- (a) First, Belgium decided to modify the CfD design by granting the decision-making authority regarding economic modulations to the EMSA partner (thereby removing the modulation arrangement in the original design) and by replacing the EMSA partner's fixed remuneration by a combination of a fixed and a variable fee, hereby providing incentives to modulate in a dynamic way accounting for market evolutions, while taking into account the technical constraints (and potential automatic shutdown risks) of the LTO Units. For a detailed description of the modified remuneration formula, see section 3.3.1.5.2.
 - (b) Second, Belgium intensified the MPRA mechanism, so that the expected and realised IRR follows more closely changing market conditions. For a detailed description of this modification, see section 3.3.1.3.2.

4.1.2. *JV structure*

- (250) Electrabel and the Belgian State envisage the creation of a 50/50 joint venture, which will hold the relevant assets enabling the continued operation of the LTO Units.
- (251) Belgium submitted that this approach enables the Belgian State to co-control the project company, as the two shareholders enter into the JV under equal terms and conditions and, as shareholders, with the same level of risk (corresponding to regular shareholder risk and funding) and rewards (in particular, dividends). It also enables the Belgian State to retain some degree of ownership over critical infrastructure.

4.1.3. *MOCP and SDC Loans*

- (252) Belgium explained that, if BE-NUC's revenues are not sufficient to cover the costs required for the operation of the LTO Units (the O&M Agreement costs and other operating, fuel and maintenance CAPEX costs), then the Belgian State, as RA Counterparty, is required to make a shortfall payment to BE-NUC (and Luminus). BE-NUC has to, in that regard, submit an annual reconciliation report. This Minimum Opex payment is to ensure sufficient cash to meet these costs, in order to safeguard the long-term viability and solvency of BE-NUC. In addition, the RA Counterparty will provide a Capital Payment, which consists of a 50 % cost protection on the invested capital in relation to the amortised capital costs of the lifetime extension of the LTO Units. Both Minimum Opex and Capital Payment are referred to as MOCP and apply from the LTO Restart Date onwards.
- (253) Belgium explained that it will also make drawdown facilities available to both BE-NUC and Luminus with effect from 1 July 2025 in order to fund the operation and maintenance costs incurred during certain shutdown periods under clause 3.2(A) ('Procurement of SDC Loans') of the RA. Specifically, the Belgian State will provide SDC Loans at a capped interest rate and repayable according to a specified repayment schedule, rather than additional capital to BE-NUC and Luminus, to fund in two tranches:
- (a) the costs during the nuclear plants' shutdown (1 July 2025 for Doel 4 and 1 September 2025 for Tihange 3) and until the LTO Restart Date; and
 - (b) the costs during the scheduled LTO works in the period from the LTO Restart Date to 31 December 2028 (for the avoidance of doubt, any further losses caused by unscheduled outages are to be covered by the MOCP).
- (254) Belgium explained that the MOCP addresses high impact risks resulting in losses during the operating phase. Along with the SDC Loans during the pre-Restart Phase, these measures are essential to ensure that the project generates sufficient cash flows to pay the nuclear operator and to maintain the long-term operational viability. Belgium argues that, without these measures, the nuclear power plant could face bankruptcy in the event of prolonged outages or regulatory (policy) changes that cause unavailability.

(255) In order to further substantiate these claims, Belgium submitted the following observations, supported by an independent analysis prepared by Compass Lexecon⁽¹⁰⁹⁾:

- (a) Merchant investments in nuclear assets are exposed to uncontrollable and high-impact risks related to regulation/policy and technology, which can affect the availability of power plants. Nuclear projects have a predominantly fixed cost structure, making their financial performance particularly sensitive to periods of unavailability. Unlike the RAB model, a CfD scheme alone is insufficient to address these high-impact unavailability risks, necessitating an additional risk management mechanism.
- (b) The MOCP is necessary to partially hedge against scenarios involving substantial losses that could jeopardise the economic and financial viability (and solvency) of the LTO Units. The SDC Loans are necessary to finance the fixed operating costs required to maintain the LTO Units before their restart and during the scheduled LTO extension works.
- (c) Considering the historical performance of Belgian and foreign nuclear power plants, a significant unavailability event affecting both nuclear units for a substantial part of the year is not unlikely. Looking ahead, these systemic risks are expected to intensify as Belgium's nuclear fleet shrinks from 2025 onwards. Additionally, there could be more frequent, less severe events that would still lead to losses for the LTO Project, further justifying the need for the MOCP mechanism.

(256) Belgium concluded therefore that the MOCP and SDC Loans are appropriate and proportionate:

- (a) The MOCP does not protect the LTO Project from all operating risks, making it appropriate as the measure is merely required to address significant unavailability events and prevent bankruptcy of BE-NUC. Other operational risks remain with the shareholders, leading to numerous scenarios where profitability is reduced, and the Project IRR of 7 % is not achieved, even with the aid measure in place.
- (b) The MOCP is proportionate as it is limited to shortfall payments needed to avoid losses (Minimal OPEX component) and, in the case of investment losses (i.e., negative Project IRR), it covers only 50 % of the equity contributions (Capital Payment component). In other words, even with the MOCP, shareholders may lose up to 50 % of their investment.
- (c) The SDC Loan provides liquidity in a form of funding that is limited to the revenue shortfall, so that the aid is appropriate.
- (d) The SDC Loan is proportionate as it is minimised to mitigate losses and comes at a cost, being repayable with interest.

(257) Following the formal investigation procedure, Belgium decided to introduce a cap on the potential MOCP payments equal to a maximum of EUR 2 billion by exercising its termination right(s) under the RA, except if an analysis by the Belgian State demonstrates that such termination could adversely affect Belgium's security of supply and/or that a termination would not be appropriate from a financial perspective. See more details in section 3.3.1.3.3.

4.1.4. *Shareholders Loans and WCF*

(258) According to Belgium, the Belgian State and Electrabel, as shareholders, agree to fund their *pro rata* share of BE-NUC's funding requirements or unexpected funding shortfalls (to the extent these concern costs and expenses that are not funded by the other mechanisms such as BE-NUC revenues, difference payments to BE-NUC under the RA, the SDC Loan, etc. ensuring that costs are not covered twice).

⁽¹⁰⁹⁾ Compass Lexecon, Memo - Supplemental note on SDC Loan and MOCP, 22 August 2024.

- (259) Belgium explained that Electrabel and the Belgian State entered into individual and identical agreements regarding the Shareholder Loans with BE-NUC. The interest rates have not been fixed but the Shareholder Loan Agreements provides that the interest rate of each Shareholder Loan will be an arm's length rate determined by the board of BE-NUC in accordance with the Shareholders' Agreement, by reference to prevailing market rates and any comparable third-party debt financing which may be available at the relevant time. The repayment terms of the amounts and interest rates are identical.
- (260) Belgium explained that the WCF serves to fund the need in working capital stemming from the operation of the LTO Units. BE-NUC will be allowed to draw down the WCF if the difference between its cash inflows and cash outflows is smaller than the estimated operational expenditures of the upcoming spending period set out in the RA. The amount of the WCF is to be at least the average aggregate estimated operational expenditure for a period of three months. Belgium clarified that, in effect, the WCF serves as an intra-year bridge to the annual MOCP, acting as a revolving credit facility that would be repaid yearly, if drawn down, by the MOCP provided by the Belgian State.
- (261) Belgium clarified that Electrabel will propose a methodology for the Electrabel Shareholder Loan, described in a term sheet, to be communicated to the board of BE-NUC and then replicated for the Belgian State loan, as well as for the WCF. The repayment terms of the amounts and interest rates are identical. Belgium submitted that the methodology was still under discussion and would be communicated at a later stage.

4.2. **Belgium's position on the EMSA**

4.2.1. *Award of the EMSA through a competitive tender procedure*

- (262) Regarding the purchase of energy manager services under the EMSA, Belgium submitted that the purchase of these services is carried out through a competitive, transparent, non-discriminatory, and unconditional tender procedure. In particular, the EMSA contract will be awarded through a negotiated procedure with a prior call for competition (Article 120 of the Belgian law on public procurement of 17 June 2016), which is a standard procedure in the utilities sector. Belgium therefore concludes that the EMSA does not cause an advantage for the energy manager (EMSA partner) and that the EMSA partner does not benefit from State aid.
- (263) Belgium submitted that, while the application of the public procurement directives already provides a number of guarantees, given the importance of the services tendered and the sensitivity from a competition perspective, additional provisions and safeguards have been implemented, to ensure that there will be sufficient competition in the tender.
- (264) More specifically, Belgium has explained that, prior to the drafting of the tender documents, an RFI on the EMSA was launched to gather views from the market, including a large number of subjects related to the content of the EMSA contract. In addition, the tender imposes specific selection criteria ensuring that the qualified/selected participants are fit for purpose in view of the importance and sensitiveness of the service tendered. More information on the tender procedure and the selection criteria is provided in section 3.3.1.5.1.
- (265) As noted in section 3.3.1.5.2, following the formal investigation procedure, Belgium decided to grant the decision-making authority regarding economic modulations to the EMSA partner and by replacing the EMSA partner's fixed remuneration by a combination of a fixed and a variable fee, thereby providing stronger incentives to modulate according to market signals, while taking into account the technical constraints (and potential automatic shutdown risks) of the LTO Units.

4.2.2. *Additional safeguards concerning the energy manager*

- (266) Belgium submitted that specific measures are foreseen concerning the potential participation of GEMS, Engie's trading entity (a business unit of the Engie group managerially independent from the business unit Nuclear), in the tender procedure.
- (267) Belgium further clarified that sufficient measures are, and will be taken, and implemented to effectively identify and prevent any potential conflicts of interest. These measures can be summarised as follows:
- (a) The RFI allows for market-testing, and any interested party could propose in this context different terms and proposals to be reflected in the RFI, ensuring that the tender does not include barriers to the disadvantage of any interested participant as opposed to GEMS (or any Engie group company). Electrabel (or any Engie group company) will not be involved in the process of drawing up the tender documents following the (results of the) RFI.
 - (b) During the tender procedure, if GEMS were to participate in it, even as a subcontractor or in any other capacity, Electrabel (or any Engie group company) and its directors or agents are precluded from participating in any BE-NUC decision and/or deliberation on the tender (e.g., the selection decision and the award decision).
 - (c) Within Electrabel's organisation, strict information barriers and ethical walls have been, and will continue to be, established between individuals responsible for submitting bids at GEMS and individuals involved in the management of BE-NUC. The same safeguards will be put in place in case GEMS is ultimately elected as energy manager through a successful tender process.
- (268) Belgium also clarified that, by way of ultimate fallback, if no EMSA has been concluded in due time, GEMS will temporarily perform the EMSA services in order to ensure continuity. Belgium argued that this arrangement is necessary and adequate to ensure the continuity of the public service (the sale of the electricity generated by the LTO Units), but this solution is strictly limited in time and to the minimum necessary.

4.2.3. *Belgium's conclusion regarding the EMSA*

- (269) Belgium concluded that the EMSA tender procedure excludes any potential State aid, since: (i) the Belgian State will ensure that BE-NUC will follow the public procurement legislation and principles rigorously, and (ii) the extensive consultation process before the actual launch of the tender provides additional safeguards ensuring that the purchase of services is carried out through a competitive, transparent, non-discriminatory, and unconditional tender procedure.
- (270) In addition, Belgium concluded that any risk for market foreclosure and other potential anticompetitive practices by Engie is avoided and that all measures and safeguards have been adopted to ensure that an independent EMSA partner will be appointed. Only as a fallback, GEMS would temporarily provide these services, which is necessary and adequate to ensure the continuity of the public service.

4.3. **Belgium's position on the waste deal**

4.3.1. *Decommissioning liabilities*

- (271) Belgium clarified that the LTO decommissioning and dismantling liabilities resulting from the LTO Project ('dyssynergies'), if proven by Electrabel, will be borne by the Belgian State by the means of a one-shot (full and final) lumpsum payment on the closing date of the transaction. Belgium explained that the Implementation Agreement provides that the Belgian State and Electrabel should agree on the amount within a set timeframe, and if they fail to do so, the matter will be submitted to the CPN/CNV for decision.

- (272) Belgium recalled that, since the issue was pending at the level of the CPN/CNV at the time of the Opening Decision, its proportionality was not assessed in the Opening Decision.
- (273) Belgium explained that the Belgian State and Electrabel failed to agree on the amount within the set timeframe, so that the matter was submitted to the CPN/CNV for decision. More precisely, Belgium clarified that:
- (a) On 12 December 2023 Electrabel sent its Proposed Revision to the Belgian State: Electrabel argued that the LTO Decommissioning and Dismantling Liabilities would amount to EUR 689,9 million (2021 values) and EUR 580 million (2023 values).
 - (b) On 25 January 2024, the Belgian State responded to the Proposed Revision. In its response, the Belgian State considered that Electrabel had not provided sufficient evidence on each of these impacts and that the costs put forward by Electrabel had not been calculated with sufficient precision and that therefore the LTO Decommissioning and Dismantling Liabilities equal zero.
 - (c) Since further discussions between Electrabel and the Belgian State did not result in a mutual agreement on the amount of the LTO Decommissioning and Dismantling Liabilities, the matter was submitted to CNV/CPN.
 - (d) The CNV/CPN sought the advice of ONDRAF/NIRAS and FANC/AFCN, which submitted their advice on 25 March 2024 and 27 March 2024 respectively. ONDRAF/NIRAS submitted additional written comments on 6 June 2024.
 - (e) On 24 June 2024, the CPN/CNV issued its advice on the LTO Decommissioning and Dismantling Liabilities and concluded that the impact of the LTO Project on decommissioning costs is an increase in decommissioning costs (overnight costs) of EUR [100-500] million (2021 values). The overnight costs calculated must be discounted using the discount and inflation rate determined at the time of the triennial review in 2022. On this basis, the increase in decommissioning and dismantling costs is EUR [100-500] million (2023 values).
- (274) Belgium therefore concluded that the amount for the transfer of additional decommissioning liabilities resulting from the LTO Project as set out in the CPN/CNV in its Advice of 24 June 2024 is proportionate.

4.3.2. *Belgium's position on the proportionality of the Waste Cap*

- (275) In addition, Belgium submitted, on 30 August 2024, an additional independent analysis by Compass Lexecon, presenting an economic analysis of the Waste Cap design, including an analysis of the 3 % discount rate and including further explanations on how the additional risks identified by the CPN/CNV are either already covered by the risk premium calculated by the Belgian State or of limited likelihood/impact.

4.3.2.1. *Concerns related to the discount factor*

- (276) Belgium submitted that the Commission's concerns related to the discount rate originate from an analysis of the CPN/CNV in its advice of 7 March 2023 to the Minister of Energy ⁽¹¹⁰⁾, in which the CPN/CNV considers that the discount rate that should be used for spent fuel expenses has to gradually approach the long-term risk-free rate of return (calculated as 2,17 %), and suggests the use of a two-stage discount rate (3,17 % for the first 30 years, and 2,17 % after the first period of 30 years).

⁽¹¹⁰⁾ CPN/CNV, 'Advice to the Minister of Energy concerning the transfer of financial responsibility from ENGIE to the Belgian State of the management of radioactive waste and spent fuel from Belgium's seven nuclear power plants', 7 March 2023.

(277) Belgium referred to an independent analysis prepared by Compass Lexecon⁽¹¹¹⁾, which demonstrated that the 3 % discount rate retained by the Belgian State is proportionate, based on: (i) an economic analysis of the CPN/CNV recommended approach, (ii) other relevant approaches, and (iii) the German precedent in case SA.45296.

- (a) First, the independent analysis of the discount rate demonstrated that the two-stage approach suggested by the CPN/CNV for setting the discount rate is equivalent to discounting the streams of payments with a unique 2,9 %⁽¹¹²⁾ discount rate. In addition, the analysis showed that the rates suggested by the CPN/CNV have been calculated over a specific period of sustained low interest rates, and that, when updating the calculation on the basis of the OLO rate data available at the time of the Opening Decision of 22 July 2024, the two-stage approach leads to an equivalent discount rate of 3,2 %⁽¹¹³⁾, that is 24 base points higher than the discount rate retained by the Belgian State.
- (b) Second, the independent analysis suggested that the two-stage approach proposed by the CPN/CNV is not the only solution for setting a discount rate that would gradually approach the long-term risk-free rate of return. The discount rate should indeed represent the return that Hedera can achieve in investing the lump sum today in risk-free assets. This analysis confirms that, by investing in a portfolio of certain fixed income securities, including Belgium government bonds with different maturities, the Belgian State could secure a rate above 3 %⁽¹¹⁴⁾.
- (c) Finally, the independent analysis showed that, in the German precedent related to the transfer of nuclear waste liabilities to the German State (case SA.45296), the discount rate was 4,58 %, based on an expected 30-year rate of return by the European Insurance and Occupational Pensions Authority (EIOPA), which was 1,994 % at the time of the Commission decision in June 2017. The 4,58 % discount factor was considered acceptable by the Commission for German radioactive waste and spent fuel liabilities. Against the background of the significantly risen EIOPA rate, the much lower discount rate of 3 % suggested by the Belgian State appears consistent with the current interest rate level.

4.3.2.2. Concerns related to the risks considered in the Waste Cap agreement

(278) Belgium submitted that the Commission's concerns related to the risks considered in the Waste Cap agreement also originate from the CPN/CNV's Advice to the Minister of Energy (see footnote 113), in which three risks should be considered:

- (a) Cost overrun: The risk that the anticipated overnight costs could be underestimated and, therefore, contingencies might be insufficient.
- (b) Construction inflation underestimation: The risk that the actual construction inflation is higher than the 2 % inflation target of the European Central Bank assumed in the CPN/CNV discount rate.
- (c) Investment risk: The risk that Hedera cannot achieve the expected rate of return following changes in the interest rates. This is a low-probability scenario according to the CPN/CNV.

⁽¹¹¹⁾ Compass Lexecon, Memo - Analysis of the concerns of the EU Commission relating to the nuclear waste cap design, 30 August 2024.

⁽¹¹²⁾ This value has been superseded by the Compass Lexecon analysis carried out on more detailed data in the document 'CL – Response to the EC concerns on discount rate – 291124', submitted on the 30 November 2024, that yields a 2,8 % equivalent rate.

⁽¹¹³⁾ This value has been superseded by the Compass Lexecon analysis carried out on more detailed data in the document 'CL – Response to the EC concerns on discount rate – 291124', submitted on the 30 November 2024, that yields a 3,1 % equivalent rate.

⁽¹¹⁴⁾ This has been completed by the response to question 5.4 of the RFI of 1 October. In practice, to hedge against the inflation risk, Hedera will focus on a dynamic asset-liabilities management, based on a diversified portfolio which includes assets that allow the fund to hedge against inflation. For example, Hedera could design a portfolio based on (but not limited to) bonds and debt instruments, equity, real estate, and derivatives, with the long-term goal of achieving a 1 % return in real term, while minimising the volatility risk.

(279) The independent analysis by Compass Lexecon showed that these risks have been considered, and demonstrated that the approach taken by the Belgian State is prudent and includes sufficient contingencies to cover these risks.

- (a) With respect to the risk of cost overrun, the analysis noted that the costs of nuclear waste management are frequently audited and updated in Belgium, and that the Waste Cap has been based on the most recent data available. In addition, the Waste Cap in itself comprises a base amount, and a risk premium. The base amount is based on a waste inventory and on an industrial reference scenario by ONDRAF/NIRAS, representing the 'more likely than not' situation (i.e., a 50th percentile risk scenario), meaning that the contingencies retained will be sufficient to cover cost overruns with a 50 % likelihood. The risk premium, added on top of the base amount is based on a note from ONDRAF/NIRAS which takes a bottom-up approach to identify and quantify some additional risks, covering: (i) the risk of additional cost overrun for the geological disposal installation not already covered by the contingencies of the base amount, (ii) the risk that another technical solution than the geological disposal installation at a depth of 400 m would be retained, (iii) the risk of additional cost overrun for the operation and maintenance of the storage facilities at the Belgoprocess site, for the operation of the Spent Fuel Storage Facilities after 2050 and for building of additional facilities not already covered by the contingencies of the base amount, and (iv) the regulatory risk that some waste might not be eligible for surface storage. Moreover, the analysis noted that the risk premium represents EUR 5 185 million, that is 53 % of the base amount (EUR 9 815 million), which is substantially more than the 35 % risk premium included in the methodology developed for the transfer of nuclear waste liabilities to the German State in the similar case SA.45296. The methodology used in the German precedent was similar, but the Belgian case reference scenario benefits from more recent data, including feedback from projects in Switzerland and Finland, and is therefore based on a more updated dataset.

- (b) With respect to the risk of underestimating the construction cost inflation, the analysis showed that the evolution of the construction costs measured by the Association Belge des Experts ('ABEX') does not materially differ from the inflation measured by the CPI. According to the analysis the concern of the CPN/CNV was motivated by the higher-than-normal inflation of construction costs in 2022 and this inflation spike is considered in the risk premium. The analysis also noted that the long-term inflation retained in Germany in the similar case SA.45296 was 1,60 %, while the long-term inflation is set to 2 %, which is the ECB's target, in the case at hand.

- (c) With respect to the investment risk and the CPN/CNV's concern that the Hedera fund in charge of the provisions might be exposed to the risk of a return that is not sufficient to cover the expenses, the analysis showed that, by investing today in a portfolio of bonds with different maturities and holding them to maturity, the fund will receive coupons at an interest rate that does not vary, so that the fund would not be exposed to a change of interest rate (using asset and liability management ('ALM') techniques to match the assets with the liabilities when they are due). The analysis mentioned however two residual risks to which the fund would be exposed with that approach:
 - First, in order to compound the interests received at the payment of the coupons, the fund will need to frequently reinvest in newly issued bonds. This risk can be hedged, given that the fund has a relatively certain stream of payments for the management of waste, so that it is possible to design a portfolio of fixed income securities that matches the terms of the expenses.

 - Second, the longest maturity for Belgian bonds is 50 years, while expenses for spent fuel extend to the year 2135. However, the expenses that occur after 50 years are limited, as these represent only 13 % of the total undiscounted expenses, and some fixed income securities with longer maturity are available, such as 100-year Austria bonds.

- (280) This analysis has been completed by the response to question 5.4 of the RFI of 1 October 2024. Belgium submitted that, in practice, the portfolio of Hedera should be designed in order to face all the economic scenarios plausible for the period, notably in terms of the inflation level. Hedera's target is to achieve a 1 % return in real term (i.e., 1 % above the inflation level). To this end, Hedera will develop a strategy that takes into account the risk that such return may not be achieved under certain economic regimes (for example, in case of an extended period of high inflation) with a portfolio composed only of bonds. Hedera will therefore focus on a dynamic asset-liabilities management, based on a diversified portfolio which includes assets that allow the fund to hedge against inflation. For example, Hedera could design a portfolio based on (but not limited to) bonds and debt instruments, equity, real estate, and derivatives, with the long-term goal of achieving a 1 % return in real term, while minimising the volatility risk. Finally, it should be noted that Hedera will limit its exposition to Belgian equity, bonds, and real estate. This is to ensure diversification and that the fund is sufficiently decoupled from the Belgium economy.

4.4. **Belgium's position on the cumulative effects of the sub-measures**

- (281) Belgium submitted that the different components and sub-measures of the LTO Project were part of the requests by Engie to agree on the lifetime extension and were all included in the global transaction documents signed on 13 December 2023. However, Belgium also observed that the components of the LTO Project differ in a number of elements and are complementary to each other, which limits any potential cumulative effects to arise.
- (282) Belgium referred to the case-law, which considers the following topics for the assessment of consecutive measures, including:
- the subject matter, nature and context of the interventions in question;
 - their chronology;
 - their purpose;
 - the circumstances of the undertaking at the time of those interventions;
 - the identity of the grantors or beneficiaries thereof (including their legal nature and financial/economic situation); and
 - the question whether the various interventions at issue were planned or foreseeable at the time of the first intervention.

4.4.1. *Subject matter and nature of Components 1, 2 and 3*

- (283) Belgium submitted that the subject matter and nature of the three components of the LTO Project are inherently different and noted that the Commission, in its Opening Decision, did not specifically consider the differences or similarities of the subject matter and nature of Components 1, 2 and 3. In this regard, Belgium submitted the following:
- (a) Component 1 consists of financial and structural measures to support the long-term viable operation of BE-NUC, including via a CfD providing revenue support and reducing the exposure to market price risk, and a number of remuneration mechanisms covering other financial shortfalls to safeguard the long-term economic viability due to exposure to some volume/operational performance risk.
 - (b) Component 2 consists of the transfer of liabilities for nuclear waste, spent fuel for the entire nuclear park in Belgium, and therefore covers a very long time period, largely exceeding the application of Components 1 and 3.
 - (c) Component 3 consists of legal safeguards to protect against future legislative changes, and therefore has a very different subject matter compared to Components 1 and 2.

4.4.2. *Purpose of Components 1, 2 and 3*

- (284) Belgium noted that the overall purpose of the three components is related to the lifetime extension of the LTO Units. However, Belgium submitted that the specific purpose of each component individually is a relevant element in the assessment:
- (a) The main goal of Component 1 is to reduce the revenue uncertainty and ensure the long-term viability of the LTO Project by preventing BE-NUC's insolvency and bankruptcy. At the same time, it also aims to avoid excessive remuneration to the shareholders and limit the support from the Belgian State as an RA Counterparty. In particular, the underlying financial measures of Component 1 each address different risks in a proportionate manner: the CfD reduces the risk related to wholesale market prices, the MOCP manages the high impact risks of sudden unavailability resulting in losses during the operating phase, and the SDC Loans ensure sufficient cash flows during the shutdown and scheduled LTO works. Belgium submitted that this was also recognised by the Commission in recital 208 of the Opening Decision.
 - (b) Component 2 deals with the management of long-term environmental and decommissioning liabilities of the Belgian nuclear park, which are separate from the operational and financial concerns of BE-NUC addressed in Component 1. This component primarily aims to transfer the concerned future liabilities related to nuclear waste, which is a different objective than securing operational finances. Belgium submitted that the Commission seemed to confirm this separate purpose of Component 2 in recital 208 of the Opening Decision.
 - (c) Component 3 provides legal safeguards to protect against some future legislative changes. This component addresses regulatory risk due to a potential change in certain Belgian State's policies and regulations, and is not directly tied to the financial, operational or liability aspects covered in the other components.

4.4.3. *Direct beneficiaries of Components 1, 2 and 3*

- (285) Belgium also submitted that Components 1, 2 and 3 have different direct beneficiaries. Belgium acknowledged that the identification of beneficiaries of each measure is an important point in the assessment of the existence of cumulative effects. In this respect, the Belgian State submitted the following observations:
- (a) Component 1 refers to a set of funding mechanisms with specific beneficiaries per measure. Belgium noted that, contrary to what is indicated in recital 182 of the Opening Decision, BE-NUC and Luminus, rather than Electrabel and Luminus, are the direct beneficiaries of the CfD, SDC Loans, MOCP and WCF (benefits for Electrabel would result indirectly from its capacity as a shareholder).
 - (b) Regarding Component 2, the transfer of nuclear waste liabilities and the agreement on additional decommissioning liabilities due to the LTO benefits Electrabel as the nuclear operator, as well as Luminus and EDF Belgium in their role as Contributing Companies. Belgium therefore concluded that Component 2 does not benefit BE-NUC.
 - (c) Component 3 provides that certain unilateral measures adopted by the Belgian (federal) State would trigger a right to indemnification for Electrabel, and indirectly, for Luminus as well.

4.4.4. *Cumulative effects of Component 1, 2 and 3*

- (286) Components 1, 2 and 3 differ significantly in terms of subject matter and nature, purpose and beneficiaries, which have been entered into at the same time and serving the overall purpose of the lifetime extension of the LTO Units. As demonstrated above, each Component corresponds to a specific purpose rendering them complementary to one another, which limits any potential cumulative effects arising.
- (287) With respect to a potentially changed risk profile of Electrabel thanks to Components 2 and 3, these measures may indeed benefit Electrabel as a nuclear operator and consequently improve Electrabel's risk profile overall. Components 2 and 3 do not alter the risk profile of BE-NUC, the main beneficiary of Component 1. As assessed in an independent analysis conducted by Compass Lexecon, the risk profile of BE-NUC given the specific risks affecting the project, and the risk allocation between BEGOV and BE-NUC, constitute the relevant factor to assess the proportionality of Component 1.

5. THE POSITION OF ENGIE

- (288) Engie submitted its comments to the Opening Decision on 9 September 2024. In its submission, Engie provides evidence and analysis in support of their argument that the doubts raised by the Commission in its Opening Decision would not be founded. Engie's response to the Opening Decision discusses the initial measure as described in the Opening Decision. The current measure includes changes (introduced to address the doubts raised by the Commission in its Opening Decision) compared to the initial measure, and is set out in detail in section 3 of this Decision. The position of Engie is aligned with the position of the Belgian authorities.
- (289) Engie argued that the LTO Project is an overall agreement and the result of extensive and sustained negotiations with the Belgian Government, with as a guiding principle to remain committed to Belgium and to contributing to the country's security of supply by accepting Belgium's request to extend the lifetime of two nuclear reactors, thus overturning its public strategy to stop nuclear operations in Belgium after 2025 (see recital 23). In addition, Engie submitted that the LTO Project has positive effects on the internal market, for the following reasons:
- (a) First, the LTO Project is essential to ensuring Belgium's security of electricity supply in the coming years, while potentially reducing the financing cost of the Belgian capacity mechanism. This positive effect will also, indirectly, benefit to neighbouring Member States interconnected with Belgium which can import electricity (being noted that these exports do not correspond to direct sales but to balancing operations managed by the TSOs).
 - (b) Second, the LTO Project contributes to achieving the decarbonation objectives of the Green Deal.
- (290) Engie also argued that there are several differences between the LTO Project (lifetime extension of Doel 4 and Tihange 3) and the lifetime extension of Doel 1, Doel 2 and Tihange 1 in 2015 ('existing LTO'):
- (a) First, the LTO Project was initiated by the Belgian State in 2022, after Engie took the decision (as from 2020) to withdraw from nuclear activities and reorient its activities to focus on renewable energies and energy infrastructures. Hence, it required Engie to completely overturn its strategy, which in itself increased the costs of the LTO Project, in particular since no preliminary safety studies and no provisions were made by Electrabel in view of a potential new lifetime extension or an extension of the lifetime of the existing LTO. By contrast, at the time of the existing LTO, Electrabel was still carrying out preliminary studies for the extension of the operations of the Belgian nuclear reactors, since such a scenario was considered likely at the time.
 - (b) Second, several costs resulted from the tight schedule of the LTO Project. At the request of the Belgian Government, the restart of the LTO Units was advanced to 1 November 2025 (instead of the initially foreseen date of 1 November 2026).
 - (c) Third, on top of the regulatory uncertainty, it is expected that BE-NUC will be exposed to an increased market price volatility (compared to the situation in 2015) with the growing share of the renewables in the energy mix. In addition, the market conditions were also substantially different in 2015, when fossil fuel-based and more stable energy sources represented a greater part of the energy mix, and low/negative prices occurred rarely.
 - (d) Fourth, the financial results of the existing LTO have been negatively affected by higher than anticipated unavailability events, CAPEX and lower captured power price. Since 2016, several impairments were recorded in Engie's accounts in relation to its nuclear activities, resulting in significant financial losses for the Engie Group (hence the conclusion that these activities cannot be borne by a private market player alone and without a balanced risk-sharing mechanism).

- (e) Finally, the AFCN/FANC itself clearly highlighted the many differences between the existing LTO and the present LTO Project in a position paper in 2021 ⁽¹¹⁵⁾. To allow a restart by 1 November 2025, one year earlier than initially planned, the AFCN/FANC authorised the necessary security improvements to be completed over a period of three years post-restart (by 31 December 2028), while for the existing LTO the AFCN/FANC had authorised a period of five years post-restart to undertake the necessary works.

(291) Engie submitted that all these factors led Engie and the Belgian State to conclude a comprehensive agreement providing both for the requested lifetime extension (subject to a mitigation of Engie's risk exposure) and the management of transferred spent fuel and nuclear waste and considered that the existing LTO is not a relevant reference to assess the necessity and appropriateness of the various measures of the present LTO Project.

(292) The main arguments of Engie regarding the Commission's doubts raised in the Opening Decision, are outlined in more detail below.

5.1. **Engie's position on the State aid qualification of the LTO Project as 'one single intervention' and on its incentive effect**

5.1.1. *Single intervention*

(293) The Commission considers that the three components of the measure can be assessed as part of one single intervention from the Belgian State, insofar as they are all related to the same event, i.e., the lifetime extension of the LTO Units.

(294) Engie submitted that it has no objection to the qualification as single intervention, insofar as it corresponds to the criteria laid down by the Court of Justice of the European Union's case law ⁽¹¹⁶⁾. In particular, Engie agreed with the Commission's view, in recital 208 of the Opening Decision, that the three components of the measure are interdependent and contribute altogether to the performance of the agreement on the lifetime extension, which allows them to be considered as one single intervention. Engie acknowledged that it had prerequisites regarding its risk exposure and the management of spent fuel and nuclear waste, which led to an overall and comprehensive agreement going beyond simply putting in place a remuneration mechanism for the extended operation of the nuclear units. However, without questioning this proposed qualification of single intervention, Engie pointed out that some of the sub-measures of the LTO Project do not constitute State aid since they do not confer a selective advantage on Electrabel, in particular:

- (a) the Administration Service Agreement ('ASA'), under which Electrabel may provide back-office services (including secretarial, accounting and tax services) to BE-NUC, which is a market-standard agreement that will be concluded on arm's length terms;

⁽¹¹⁵⁾ AFCN/FANC, 28 November 2021, 'Position de l'AFCN sur le projet LTO pour Doel 4 et Tihange 3', p. 5, (convenience translation), available at : <https://afcn.fgov.be/fr/system/files?file=2021-11-28-afcn-position-lto-final-fr.pdf>. 'The situation of Doel 4 and Tihange 3 cannot be compared with that of the Doel 1&2 units (for which, in 2014, the decision to grant them an LTO was taken only at the last minute). The Doel 1&2 units were able to be restarted relatively quickly during the winter of 2015, since: (i) the LTO file for these reactors had been drawn up and approved as early as 2012, so that the modifications required for restart (relating to equipment qualification and ageing management) were perfectly well known, and (ii) Article 30 of the PSIN Royal Decree had not yet come into force and, as a result, the modifications to the safety design could be spread over the various shutdowns scheduled between 2015 and 2020. [...] Extending the safe operation of the Doel 4 and Tihange 3 nuclear reactors requires an extended action plan, which mainly deals with the elements responsible for guaranteeing nuclear safety. This action plan covers the design, control and construction/fabrication/installation of a potentially large number of components. The preparation and implementation of the modifications needed to meet the new safety requirements will therefore take years.'

⁽¹¹⁶⁾ Engie referred here to the Judgment of the General Court of 15 September 1998, *BP Chemicals v Commission*, T-11/95: "Where consecutive interventions are so closely linked to each other, especially having regard to their chronology, their purpose and the circumstances of the undertaking at the time of those interventions, that they are inseparable, they can be considered as a 'single intervention'".

- (b) the outsourcing of the sale of the electricity produced by the LTO Units under the Energy Management Services Agreement ('EMSA') that will be awarded through a competitive, transparent, non-discriminatory, and unconditional tender process, thereby ensuring compliance with market conditions; and
- (c) the indemnification by the Belgian State of Cost Coverage Losses in case of no closing, which does not go beyond the liabilities in normal market conditions in comparable transactions, whereby each party is held liable for costs incurred in relation to (the preparation of) the agreement in case of no closing due to either party. Engie remains 100 % liable for such costs if it is responsible for the closing not going through and a split is foreseen in case no party is responsible for the closing not going through.

5.1.2. *Incentive effect*

(295) Engie emphasised that the incentive effect, which the Commission deemed plausible in its assessment in recitals 229 and 239 of the Opening Decision, is not hypothetical, but that there is no doubt that Electrabel would not have continued operations of the LTO Units absent the LTO Project, including the three components. Engie submitted in this respect that:

- (a) Electrabel had already started implementing its strategy to withdraw from nuclear activities altogether and had no possibility to come back on this decision (made public in Engie's public financial communication ⁽¹¹⁷⁾) in the then applicable legal framework.
- (b) Engie's position was clearly reflected in the AFCN/FANC's position papers and reports on the feasibility of the long-term operation project for Doel 4 and Tihange 3 ⁽¹¹⁸⁾.
- (c) Engie's communication around the negotiation of the LTO Project with the Belgian Government made very clear that, without a risk-sharing mechanism and a solution for the costs of spent fuel and nuclear waste stemming from the operation of the seven Belgian nuclear power plants, Electrabel would not consider the lifetime extension of the LTO Units ⁽¹¹⁹⁾. This position was made clear from the start of the LTO Project discussions, as stated in an AFCN/FANC report and the communication by the CEO of Engie (as noted in recital 6 of the Opening Decision).

(296) In addition, Engie stressed that the incentive for Electrabel to continue operating the LTO Units stems from the whole package of support measures provided by the LTO Project, which has been adequately calibrated for this purpose. None of the sub-measures taken in isolation could have provided sufficient incentives. Likewise, removing any element of the package would have led Engie to refuse to proceed with the LTO Project. Engie concludes that, therefore, the measures referred to in recital 235 of the Opening Decision should not be regarded as individually providing a specific (or further) incentive but should be considered altogether.

⁽¹¹⁷⁾ As a result, in 2020, Engie impaired its nuclear assets. Engie, 2020 Universal registration document, section 1.4.1, p. 13. Available at: www.engie.com/sites/default/files/assets/documents/2021-03/ENGIE_URD_2020_0.pdf.

⁽¹¹⁸⁾ See e.g., AFCN/FANC, 28 November 2021, 'Position de l'AFCN sur le projet LTO pour Doel 4 et Tihange 3', p. 5 (convenience translation), available at: <https://afcn.fgov.be/fr/system/files?file=2021-11-28-afcn-position-lto-final-fr.pdf>. "[T]he operator Electrabel announced in November 2020 that the Belgian Government had clearly opted in its government agreement for a complete phase-out of nuclear power by 2025. With less than five years to go before that date, the operator of the Doel and Tihange nuclear power plants decided that it was no longer possible to prepare for a possible extension of the operation of its Doel 4 and Tihange 3 units. Electrabel therefore decided to devote all its resources to preparing for the final shutdown and dismantling of all 7 nuclear reactors at the Doel and Tihange sites. The 'LTO G2 Preparation' project was therefore stopped by the operator at that point."

⁽¹¹⁹⁾ See e.g., AFCN/FANC, 17 January 2022, 'Résumé et analyse des actions nécessaires pour l'activation du plan B - Long Term Operation Doel 4 & Tihange 3', p. 9, (convenience translation), available at: <https://afcn.fgov.be/fr/system/files?file=20220118-note-afcn-liste-analyse-actions-late-lto-vf.pdf>. "[...] Electrabel would like to have certainty before taking steps on its own. If the Government wishes to activate Plan B [the long-term operation of Doel 4 and Tihange 3], it will have to give priority to discussions with Electrabel on the conditions and certainties required before continuing with the development of Plan B (task 1). The AFCN again draws the Government's attention to the fact that virtually all the actions in Plan B that fall within the AFCN's remit (establishment of the LTO file) require Electrabel's cooperation. According to Electrabel, any discussion on a possible LTO is conditional on the existence of a clear, stable and coherent regulatory framework for nuclear safety. The AFCN understands this view and therefore plans to continue the work on clarifying the regulatory framework relating to nuclear safety during the first quarter of 2022'.

5.2. Engie's position on the necessity, appropriateness and proportionality of the several sub-measures of Component 1

5.2.1. *Set-up of a JV*

- (297) Engie considered that the creation of a joint structure in which the Belgian State holds a 50 % stake is necessary to achieve the objectives of the LTO Project, i.e., the timely restart of the LTO Units by November 2025. Engie submitted that it requested a risk-sharing mechanism on a 50/50 basis with the Belgian State before adopting the agreement on the LTO Project.
- (298) According to Engie, having only the remuneration mechanisms in place was unfit for this purpose, for several reasons: (i) the RA leaves residual risks for Engie, (ii) without the JV, Engie would have had to temporarily bear 100 % of the losses pending the indemnification/compensation otherwise provided by the agreements, and (iii) Engie was in the process of limiting its exposure to nuclear energy and did not want to invest alone the required CAPEX of more than EUR [2-2,5] billion for the LTO Project, and support alone all potential losses due to unexpected unavailabilities and cost overruns.
- (299) In addition, Engie argued that, through the financial involvement of the Belgian State in the profits and losses derived from the LTO Units (in particular dividends), Engie anticipated that the Belgian State would be further incentivised to take account of the LTO Units in its future political decisions. Engie therefore concluded that the creation of the joint structure aligns the interests of the Belgian State and Engie.
- (300) Engie also submitted that the JV is appropriate and proportionate since Engie, a private operator, will be able to counterbalance any risk of the Belgian State acting in a partial manner through its joint control over the strategic decisions concerning BE-NUC, and the Belgian State and Engie will exercise their rights in the governance of BE-NUC on an equal footing.

5.2.2. *Engie's position on the CfD*

- (301) Regarding the need for the CfD, Engie submitted, given the market failures related to the nuclear industry and the high volatility of the electricity market in the coming years, that the LTO Project is exposed to a strong risk of a funding gap, making the CfD a necessary instrument to achieve an objective of common interest. Engie also referred to the short duration of the lifetime extension (10 years) compared to the average investments in the nuclear sector, the significant costs, and the fact that the LTO Units will not run at 100 % capacity during the first three years, since simultaneously LTO extension works will be completed.
- (302) Engie submitted that the CfD design and the MPRA are appropriate and proportionate to preserve the incentives of the LTO Units to react efficiently to market signals. In this regard, Engie hereby to the same arguments of the Belgian State regarding the LTO Units' technical, regulatory and economic constraints (see section 2.1). Engie argued that, even today, absent the CfD and with a fleet of five reactors allowing more diversification strategy, Engie has very limited flexibility to adjust nuclear electricity production in response to short- and mid-term market signals. According to Engie, within this limited room for manoeuvre, the CfD has been designed to fully incentivise BE-NUC to react to price signals, to the extent technically feasible.
- (a) First, Engie emphasised that, unlike flexible electricity generation sources and newer generation units and/or other types of nuclear reactors, the LTO Units have been designed for baseload generation and have very limited modulation capabilities, so that its rational behaviour is not to modulate each time prices becomes negative or are lower than its short-run marginal costs (SRMC). Engie clarified that it is only since 2015 that economic power modulation of nuclear units in Belgium has been allowed by the AFCN/FANC, under strict technical constraints as explained in recitals 13 to 15 of this Decision. Therefore, given these constraints (combined with the risk of automatic shutdown with each modulation, the risk of imbalance that such shutdown would entail and the absence of fuel savings during modulation), Engie explained that the nuclear operator cannot freely adjust the electricity production of the units in reaction to negative prices, and that the best use of the limited modulation capabilities should be made.

- (b) Second, the MPRA and the change in the fuel cycle duration ensure that the planned outages will be set during the summer period, when the prices have historically been and are expected to be, at their lowest. This will ensure that the LTO units are available when the demand of electricity (and the prices) is expected to be at its highest. Engie also added that a planned outage of a nuclear unit takes around 12 months to prepare, has to be communicated to the market in advance and involves a large number of stakeholders. Once scheduled, the nuclear operator cannot change the date of the outage without the prior approval of the grid operator. Therefore, in practice, while outages can be planned in the light of long-term market conditions, the scheduling of a maintenance operation for nuclear power plant is not responsive to short-term market signals.
- (c) Third, Engie submitted that the MPRA provides the sufficient incentive for BE-NUC to maximise and capture the highest market price by scheduling outages when prices are expected to be the lowest, and strongly disagrees with the Commission's preliminary view that the effects of the MPRA '*are small in practice*' (as mentioned in recital 290 of the Opening Decision).

(303) Finally, regarding the parameters of the CfD design, Engie submitted that the DAM price is the appropriate MRP.

- (a) First, Engie argued that long-term products have no impact on the dispatching decisions of a nuclear power plant whose short-run marginal cost (SRMC) is inherently very low. Forward power prices have never turned negative in any European market, and such event can be considered as very unlikely in the future. As a result, Engie submitted that long-term products do not provide the necessary market signals to arbitrate dispatching decisions, but that, regardless of the MRP chosen, dispatching will always be driven by the comparison between the SRMC and opportunity costs, on the one hand, and the DAM price, on the other hand (taking the plant's flexibility capabilities into account).
- (b) Second, Engie submitted that using forward products as MRP would expose BE-NUC to significant and unmanageable risks stemming from the insufficient availability of appropriate long-term products in the Belgian market since:
 - The Belgian forward market is characterised by low and declining liquidity. The volumes traded on the year-ahead market are substantially lower than the expected annual production of the LTO Units ⁽¹²⁰⁾. This discrepancy highlights the impracticality of using long-term market products as a reference price for the CfD.
 - The illiquidity of the forward market not only makes it a poor benchmark for calculating the difference payment with the strike price, but also introduces significant risks related to price formation, market distortions and execution costs. In contrast, the DAM price offers the highest liquidity and transparency in price formation, thereby avoiding issues related to untransparent liquidity, replication costs, proxy-hedging costs and margining requirements.
 - The Belgian forward market lacks sufficient granularity to be an appropriate MRP ⁽¹²¹⁾.

⁽¹²⁰⁾ For instance, in 2024, only 9 TWh of electricity is expected to be traded on the year-ahead market, while the LTO Units are estimated to produce 14 TWh annually.

⁽¹²¹⁾ Forward products are mostly calendared, along with the next quarter and next month. However, given fluctuant and uncertain production pattern of the LTO Units due to the planned outages (even more exacerbated during the LTO work until 2029 and uncertainties around the work and planning) and unplanned unavailability, the use of a long-term product as MRP would lead to substantial volume risk and significant cost of unwinding forward hedges in case of non-production, further putting at risk the cash flow generation and the financial viability of BE-NUC.

- (c) Engie submitted that additional risks stem from the fact that its fleet of nuclear reactors will be significantly reduced as of 2025 due to the decommissioning of five out of seven nuclear reactors. This reduction will increase the risk of unavailability since any downtime or operational issues of the LTO Units cannot be compensated by other assets. Consequently, the production pattern of BE-NUC will become more uncertain, escalating the risk of failing to deliver electricity pursuant to long-term contracts. In such scenarios, BE-NUC would be compelled to repurchase electricity at potentially higher prices, leading to significant financial losses in addition to the loss of revenue from reduced generation. These losses would be exacerbated by the illiquidity of long-term markets, where wide bid-ask spreads and limited trading volumes could further inflate the cost of fulfilling contractual obligations ⁽¹²²⁾.

5.2.3. *Engie's position on the MOCP and SDC Loan*

- (304) Engie emphasised that the need for the MOCP and the SDC Loans is primarily linked to the particular context of the LTO Project, as a consequences of: (i) the late decision to extend the lifetime of Doel 4 and Tihange 3 and the restricted timing to prepare and implement the necessary LTO works, (ii) the ageing assets and increased systemic risk by having two units of the same technology, (iii) the simultaneous restarting and operating of the LTO Units during the first three years, and (iv) the levelised cost of electricity of the nuclear extension which is more O&M-weighted than a nuclear greenfield asset.
- (305) Engie further submitted that both the MOCP and the SDC Loans are strictly necessary since: (i) the payments due by the Belgian State under the RA does not cover important unavailability events, caused by technical issues or due to international regulatory contingencies or nuclear emergencies; (ii) contrary to the statement in recital 269(b) of the Opening Decision, such unexpected events are not 'extreme, low-probability' scenarios, but are likely to occur in the next ten years; and (iii) only events above a certain threshold are covered.
- (a) The RA allows for adjustments to the CfD strike price in BE-NUC's favour through specific 'Reopener events', which come however with limitations and exclusions. For instance, a shutdown of one or both of the LTO Units for safety measures following an emergency or required by a change in international regulations would not be covered by the RA. In addition, unavailability events due to certain technical issues such as the following would not be covered by the RA: safety-driven outages following routine regulatory inspections, which are part of expected operations; mandatory upgrades required by existing or widely adopted international regulations, such as those following the post-Fukushima Council directive 2014/87/Euratom ⁽¹²³⁾; precautionary shutdowns due to international incidents, which are foreseeable regulatory responses; stricter environmental regulations imposed by regional authorities, which often affect multiple sectors; supply chain disruptions that prevent necessary maintenance or repairs; and unforeseen degradation of critical equipment).
- (b) The probability of such technical/regulatory/emergency events arising is not as low as stated in the Opening Decision and could have an impact on both the cost of operations of the LTO Units as well as their availability. Engie mentioned in this respect:
- An accident such as the one in Chernobyl or in Fukushima cannot be ruled out, despite the strictness of the current nuclear safety regulations.
 - The inclusion of the MOCP in the agreement was based on the experience and history of operation of the Belgian nuclear fleet by Electrabel: over the 2012-2022 period, 11 significant unexpected unavailability events occurred due to technical reasons affecting the seven Belgian nuclear units.
 - There are several recent examples of extended unavailability of other nuclear fleets in the world (e.g. Ringhals 4 in Sweden in 2022, Civaux 1 in France in 2021, Taishan 1 in China in 2021).

⁽¹²²⁾ Engie faced such a situation in 2018, when several units were unavailable simultaneously, leaving the company with only 52 % of its nominal capacity in operation on average. Engie had to buy back its forward hedges in a context where the Belgian prices had increased considerably and the interconnection capacities were saturated, ending the year with an EBITDA loss of EUR [0-0,5] billion for its nuclear activities (compared to a profit of EUR [0-0,5] billion the previous year).

⁽¹²³⁾ 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, ELI: <http://data.europa.eu/eli/dir/2014/87/oj>).

- (c) All events resulting in costs below a threshold of EUR 5 million do not qualify as 'Reopener Events' and therefore are not compensated by the RA Counterparty.
- (306) Engie submitted that the MOCP is not an unlimited grant (contrary to what the Commission suggested in its Opening Decision) in light of the termination rights for the RA Counterparty as set out in the RA that would enable to limit its exposure.
- (307) Engie submitted that the principle of the extension of the SDC Loans to cover the portion of costs beyond the restart date has been granted by the Belgian State as a result of the advancing of the LTO restart date (from 2026 to 2025), at its request, implying that the LTO works must be undertaken while the units are in operation, which will lead to the generation of lesser revenues during the first three years of operation. It followed the key principle agreed between Engie and the Belgian State that the shareholders are exposed to any costs stemming from the LTO extension, while BE-NUC finances O&M costs with its own revenues.
- (308) Regarding the proportionality of the financial mechanisms provided by the LTO Project, Engie argued that they do not shelter BE-NUC from any operational risk, as suggested by the Commission in the Opening Decision. BE-NUC is partially exposed, amongst others, to availability risk throughout the lifetime extension of the LTO Units, as well as operating cost overruns after the True-Up Date, which may prevent its cash generation and negatively impact BE-NUC's rate of return. Those costs pertain, amongst others, to increases in personnel costs (retention programmes and additional recruitment/training costs for the continued operations), O&M costs (increases in the price of material, shortages in the supply chain for essential spare parts and components, requirements from the ANFC/FANC (all project modifications are subject to extensive review and challenge by AFCN/FANC prior to approval), unplanned major equipment breakdowns before restart, etc.), and fuel costs (contracts are partially linked to market evolution).
- (309) In addition, Engie argued that Electrabel, as the operator of the LTO Units, has strong incentives to maximise the availability of the LTO Units under normal operation conditions to avoid paying liquidated damages if availability drops below [90-100] % in any contract year.
- (310) Engie submitted a simulation showing the impact on the LTO profitability of events that would not be covered by the MOCP: (i) reduced availability events during the Run Phase as an illustrative purpose (increased Forced Outage Rate ('FOR')) and (ii) increases in some operating costs after the True-Up Date as a result of unforeseen costs, as well as a combination of both events. Table 16 shows that these events could have a significant negative effect on BE-NUC's IRR.

Table 16

Impact on the LTO profitability (100 %) of events not covered by the MOCP

	Base case (no reduced availability)	FOR + 5 %	FOR + 10 %
Base case (no operating costs overrun)		IRR = [5-10] % NPV = minus EUR [100-300] million	IRR = [0-5] % NPV = minus EUR [200-400] million
OPEX + 5 %	IRR = [5-10] % NPV = minus EUR [0-200] million	IRR = [5-10] % NPV = minus EUR [100-300] million	IRR = [0-5] % NPV = minus EUR [200-400] million
OPEX + 10 %	IRR = [5-10] % NPV = minus EUR [0-200] million	IRR = [0-5] % NPV = minus EUR [100-300] million	IRR = [0-5] % NPV = minus EUR [200-400] million

Source: Engie's response to the Opening Decision.

- (311) Engie also argued that the interest rate on the SDC Loans is proportionate and appropriate as shown by an independent analysis ⁽¹²⁴⁾. Engie added that the SDC Loans are intended to be repaid, subject to sufficient cash generation by BE-NUC, plus interests, at the end of the LTO period.

5.2.4. *Engie's position on the terms of the WCF and Shareholder Loans*

- (312) Engie clarified that the interest rate on the Shareholder Loans and the WCF will be an arm's length rate determined by the board of BE-NUC, by reference to prevailing market rates and any comparable third-party debt financing which may be available at the relevant time.
- (313) Engie also clarified that it has prepared a term sheet describing the methodology followed to set the interest rates. Engie explained that this methodology is consistent with Engie's transfer pricing loan policies and is in line with the OECD BEPS principle ensuring that the interest rate is set at an arm's length level (see recital 63).
- (314) Engie therefore concluded that the interest rate of both the WCF and the Shareholder Loans are proportionate.

5.2.5. *Engie's position on the EMSA*

- (315) First, Engie emphasised that the entity of the Engie Group ('GEMS') that might be selected as the EMSA partner as a result of the tender procedure, or as a temporary fallback solution, will be fully independent from the business unit Nuclear. Engie clarified that, since January 2024, the appropriate tender procedures, on the one hand, and firewalls within the Engie Group, on the other hand, have been put in place to avoid any involvement of Electrabel in the selection of the EMSA partner.
- (316) Second, Engie submitted that there is no risk of market foreclosure arising from the potential selection of GEMS in the EMSA tender. Engie argued that GEMS will act as a party under a precise mandate specifying the BIS Strategy (from which it cannot derogate), remunerated through a fee, and the ownership of the electricity will remain with BE-NUC until its sale. Therefore, since the corresponding sales from BE-NUC could not be attributed to GEMS/the Engie Group, there could be no reinforcement of Electrabel's position on the Belgian market should GEMS be appointed as the EMSA partner.
- (317) Third, the tender procedure to select the EMSA partner complies with the requirements of competitiveness, transparency, and non-discriminatory and unconditional character set out in the Commission's practice. It has been published at the EU level and will specify the qualification criteria (particularly concerning the applicant's financial strength and operational experience). Therefore, if GEMS would be selected through the tender procedure, this appointment of GEMS as EMSA partner can be considered as proportionate. Engie also argued that, in case the tender procedure is not successful, and GEMS is appointed as the EMSA partner as a fallback solution, the proportionality criterion would nevertheless be met: GEMS will be remunerated on market conditions, at a price determined by an independent expert in the event of disagreement between the parties, so that this remuneration would not go beyond what is strictly necessary to achieve the purpose of the EMSA. In addition, Engie explained that this fallback solution would only be temporary, and the Belgian State would immediately restart the organisation of a new competitive tender.

⁽¹²⁴⁾Memorandum of Compass Lexecon dated 22 August 2024 'Supplementary note on MOCP and SDC Loan', para. 1.12.

5.3. **Engie's position on the waste deal**

- (318) Engie submitted that the aggregate amount of the Waste Cap is sufficient to cover any additional risks that would not have been considered in the calculation of the base amount. Engie further notes that the Waste Cap is set to transfer significantly less risks to the State than was the case in the German precedent validated by the Commission. In particular, Engie argued the following:
- (a) The waste will not automatically be transferred to Hedera upon payment of the Waste Cap. Only the waste that meets very strict contractual transfer criteria ('CTCs') will be transferred, otherwise Electrabel will remain liable for it. The CTCs have been agreed between experts and are based on the current best practices. In addition, in case Electrabel needs to transfer further volumes, it must pay an additional amount to Hedera ('volume adjustment fees').
 - (b) In the German case, uncertainties remained regarding the location of the waste disposal sites, while in the case at hand the final disposal facility of category A waste is already known, which significantly reduces uncertainties.
 - (c) In contrast to the German case, the base amount of the LTO Project already includes a high level of contingencies.
 - (d) The German case used a nominal discount rate at 4,58 % (determined in relation to the EIOPA rates). Against the background of the significantly (+56 base points) risen EIOPA rate, the much lower (-158 base points) discount rate of 3 % (nominal) used in the LTO Project appears fully consistent with the current interest rate level. In addition, the 1 % real rate used in the LTO Project is conservative compared to other European countries.
 - (e) Hedera will be able to generate an investment return sufficient to cover its payments obligations. The Asset and Liability Management (ALM) study performed by [...] for the CPN revision of 2022 supports this view.
- (319) Engie therefore concluded that the amount paid by Electrabel under the waste deal will cover adequately the uncertainties taken over by BEGOV and will therefore be proportionate.
- (320) Regarding, the decommissioning liabilities, Engie submitted that Electrabel, as the nuclear operator of the seven Belgian nuclear units, will remain liable for its decommissioning obligations. Engie acknowledged however that Belgium will cover the (increase in) decommissioning costs directly resulting from the LTO Project, by way of a one-shot (full and final) lump sum payment to Electrabel.
- (321) Engie referred to the CPN/CNV advice on the LTO decommissioning and dismantling liabilities, in which it concluded that the impact of the LTO on decommissioning costs (in overnight costs) is an increase in decommissioning costs (dyssynergy) of EUR [100-500] million (in 2021 values) or, actualised, EUR [100-500] million (2023 values). Engie therefore concluded that the amount for the transfer of additional decommissioning liabilities resulting from the LTO as defined by the CPN/CNV is proportionate.

6. **COMMENTS FROM THIRD PARTIES**

- (322) In addition to the Engie submission, the Commission received submissions from 7 third-party respondents during the public consultation on the Opening Decision, which lasted until 9 September 2024.
- (323) Comments were received from Member States, undertakings, associations, and non-governmental organisations. The comments from third parties will also be addressed in the relevant parts of the assessment without specific mention being made of the specific comment.
- (324) A description of the comments and observations from third parties relevant for the State aid assessment, grouped by topic, is provided below.

6.1. **Comments on the existence of aid**

- (325) No comments were received on the existence of aid.

6.2. **Comments on the compatibility of aid**

6.2.1. *Comments as regards the appropriateness and need for the measure*

(326) The majority of the third parties stated their support for the Commission's concerns raised in the Opening Decision in connection with the appropriateness and need for the measure.

6.2.1.1. General observations

(327) One third party disagreed with the Commission about the existence and relevance of the market failures submitted by the Belgian State and argued that nuclear technology is simply not cost-effective and should not be supported through State funding. This party recalled that, in general, under EU State aid rules, operating aid is only allowed in exceptional circumstances and should be limited to technologies which are not yet marketable or not yet mature, provided that specific conditions are met. This third party disagreed with the appropriateness and need to support nuclear energy, which it considered a mature and unprofitable technology.

(328) Three out of seven third parties submitted that nuclear energy is not an appropriate technology to deal with security of supply issues because of the low flexibility of nuclear power plants, which have to produce continuously since a lot of modulation is not desirable.

6.2.1.2. Appropriateness of the CfD design

(329) Five out of seven respondents shared the Commission's concerns about the appropriateness of the CfD design. The most important concerns were: (i) conformity with EU legislation, (ii) setting of the strike price in the absence of a competitive procedure (such as for offshore wind farms), (iii) the limited incentives to adjust production to market conditions since (in the original CfD design) the threshold to reduce output is only set after 6 hours of negative prices on electricity markets, (iv) the choice of the reference price.

(330) However, one third party recognised the difficulties for nuclear operators to react to market signals due to the limited modulation capacities of nuclear power plants. In addition, one third party submitted that, concerning the CfD design, there should be no 'one-size-fits-all' solution and Member States should have the flexibility to adjust the CfD design based on specific circumstances. For instance, the CfD design principles should apply differently to nuclear technologies compared to intermittent energy sources and it should be recognised that nuclear power plants serve as baseload capacity.

(331) The Commission notes that none of the third parties had concrete comments on how to improve the CfD design proposed by the Belgian State at the time of the Opening Decision.

6.2.2. *Comments as regards the proportionality of the measure*

(332) Six out of seven respondents supported the Commission's concerns raised in the Opening Decision concerning the proportionality of the measure.

6.2.2.1. Comments on the package of financial measures

(333) In general, five out of seven respondents considered that the package of financial remuneration measures (including the CfD, MOCP, several loans) would not be proportionate. These third parties agreed with the Commission's preliminary assessment in the Opening Decision that the package of financial remuneration measures would allow for a full derisking of Engie.

(334) One party submitted that the Belgian Government has the most unfavourable position in this deal, with an accumulation of financial commitments to incentivise Engie to take part in the deal, since the risks are eventually borne by Belgian taxpayers.

- (335) One party compared the deal, as did the Commission, to the previous lifetime extension of Doel 1, Doel 2 and Tihange 1 in 2015, and recalled that this lifetime extension was achieved without State aid.
- (336) Concerning the remuneration and the calculation of the internal rate of return (IRR), one third party noted that, although this level of return may be typical for the nuclear industry, the current level of IRR would ignore the many derisking elements included in the proposed deal. Although no concrete indications of what a proportionate IRR would entail, were provided, a downward adjustment would be considered necessary.
- (337) The Commission observes an overall agreement among third parties regarding the need to carefully investigate the package of financial remuneration measures.

6.2.2.2. Comments on the waste deal

- (338) As a general comment, one third party recalled that the operation of nuclear power plants generates extremely long-lived and dangerous substances not occurring naturally anywhere on earth. This party claimed that the full cost of electricity production must include a credible plan for dealing with these substances after their use to produce energy.
- (339) Concerning nuclear waste management, the same party argued that deep geological repositories cannot constitute indefinite safe storage, as geological formations that have been stable for long periods of the earth's history may become unstable in the long run, because of climate change or the radiation itself. Therefore, the precautionary principle suggests storage above ground or in easily accessible locations and repackaging every 50 to 100 years.
- (340) Regarding the economic aspects of the waste deal, several third parties considered that the deal is too positive for Engie, as the costs for dealing with nuclear waste would be underestimated.
- (341) The Commission notes that most third parties did not provide concrete information on which part of the waste deal is problematic, which parameters would need to be changed and what would be a reasonable and proportionate value for the waste deal. Only one party claimed that Belgium should also consider the costs of identifying a nuclear waste deposit site but did not provide more details either.

6.2.3. *Comment received on potential undue distortions to competition and trade between Member States*

6.2.3.1. Impact on renewable energy sources and decarbonisation

- (342) Six out of seven third parties argue that nuclear energy support is not climate-friendly despite its contributions to fewer CO₂ emissions. These third parties pointed out that support for nuclear energy slows down the development of renewable energy sources and does not help in the achievement of climate objectives. In particular, the following arguments in this respect were raised:
- (a) One third party was concerned that the level and form of public subsidies for the nuclear power plants in Doel and Tihange could reduce the incentives for the expansion of renewable energy and thereby delay decarbonisation of the European energy system and electrification of the economy. Another third party pointed out that, as solar and wind production will have to adapt to inflexible nuclear energy production, their production will be disadvantaged. In particular, since renewable energy sources are exposed to competition, while Member States absorb the risks of nuclear operators.
 - (b) Some third parties argued that nuclear power cannot constitute a legitimate strategy for decarbonising EU economies, since nuclear power is not cost-competitive, binds too many scarce resources (not only financial but also human and material resources), and systematically suffers from delays.
 - (c) One third party submitted that, even if nuclear technology can contribute more to decarbonisation compared to other technologies, the overall environmental balance is negative (e.g. due to the nuclear waste disposal).

- (d) One third party remarked that the State aid granted to Engie could penalise a multitude of smaller actors of the future decentralised energy system. This party urged the Commission to consider the investment climate for solar and wind installations in Belgium, i.e. other more cost-effective technologies that may not require State aid, before locking in major amounts of State aid in nuclear power plants. This party also called for an assessment of the future need for baseload electricity.

(343) In contrast, one third party disagreed with the arguments set out above and submitted that nuclear energy plays an important role in achieving the EU climate objectives and security of supply. This party called on the Commission to keep in mind the complexity of nuclear investments and to provide some degree of discretion to Member States to choose a set of adequate aid measures in order to support nuclear investments.

6.2.3.2. Lack of tender procedure and sales of nuclear electricity

(344) One third party regretted that the proposed contract between the Belgian State, Engie and Electrabel for the lifetime extension of Doel 4 and Tihange 3 has been negotiated without the organisation of a tender procedure. According to this respondent, a combination of a portfolio of large-scale renewables and battery storage could have provided a similar electricity generation profile to nuclear power.

(345) Regarding the sales of nuclear energy in the current deal, another respondent stated that energy management services should be provided by an independent party in case no successful bidder can be contracted in a tender procedure.

6.2.4. *Other comments raised by third parties*

(346) One third party contended that the use of nuclear energy for the production of electricity is in breach of the 'polluter pays' principle and the precautionary principle set out in Article 191 TFEU.

(347) Several third parties raised concerns regarding security issues related to the operation of nuclear technology.

- (a) One party considered that major accidents in nuclear power plants cannot be excluded, which would have implications for other Member States as well.
- (b) More generally, the same party considered that the danger of nuclear power plants in armed conflicts has recently become apparent, as civil nuclear infrastructure is not, in principle, designed to counter the direct and indirect effects of war events. As such, nuclear power plants can become potential targets, the destruction of which could cause radioactive contamination, which not only represents a huge security risk, but can also destabilise a country's energy supply.
- (c) Another party argued that any extension of the lifetime of a nuclear power plant, despite any upgrades and safety improvements, entails increased risks of negative impacts related to the quality and reliability of the components of such nuclear reactors which are reduced over time. According to this party, ageing leads to a tendency for highly polluted reactor components to malfunction and operational disruptions to increase.
- (d) One party recalled that the availability of uranium and thorium remains limited, and that EU Member States' dependence on imports of uranium ores is close to 100 %. This party refutes the idea of a 'fuel cycle', arguing that the reprocessing of spent fuel cannot be repeated as often as possible, and it states that reprocessing poses significant safety, health, environmental and proliferation risks.

(348) One third party submitted that it had concerns regarding the execution of the environmental impact assessment. In particular, it put forward that key questions regarding necessary safety upgrades and ageing management would not have been considered in the public consultation. The party stated that it had submitted an extended position on the matter, which was not taken into consideration.

(349) Finally, one third party recalled that, although one of the arguments presented by Belgium to undertake the LTO Project is the reduction of its dependency on Russia for natural gas, the European nuclear industry remains strongly dependent on Russia for its nuclear fuel as Russia plays a key role in both the production and the reprocessing of uranium. According to this respondent, it would be easier to find alternative sources of natural gas than it would be to eliminate Russia from its current role in Europe's nuclear industry.

7. RESPONSE OF BELGIUM TO THE RESPONSE OF THIRD PARTIES

- (350) On 30 October 2024, the Belgian authorities sent their response to the comments submitted by third parties.
- (351) In general, the Belgian State welcomed the views that have been expressed but considered that several points raised were of a purely political nature, vague, or based on an incorrect understanding of the LTO Project.
- (352) In addition, Belgium explained that most of the issues raised had already been addressed in its prior submissions and its response to the Opening Decision. The main arguments provided by Belgium in response to the concerns raised by third parties will be highlighted below. In particular, the responses to the comments directly pertinent to the State aid assessment will be highlighted.
- (353) Regarding the criticism of some of the third parties that other financing mechanisms or other production technologies should have been considered (such as tender procedure for the electricity generation profile open to other energy producers, use of the Belgian capacity mechanism (CM), investment in large-scale renewables and battery storage), Belgium provided the following responses:
- (a) Belgium referred to the important investment costs involved in nuclear projects and the existence of additional market failures compared to other technologies (see recital 39), which makes financing of the LTO Project through the Belgian capacity mechanism impossible. In addition, Belgium submitted that an auction mechanism, such as the Belgian CM auctions, is not an adequate tool to finance nuclear power generation, so that the LTO Units require a specific support package.
 - (b) Belgium recalled that, according to Article 194(2) TFEU, Member States have the autonomy to shape their energy policies, including the option to incorporate nuclear power into their energy mix, and that a diverse combination of energy production methods is essential for maintaining a reliable and balanced electricity network. Belgium decided in 2022 that the nuclear capacities concerned should be part of the Belgian energy mix for a further ten years, and this decision on the energy mix cannot depend on the outcome of an auction.
 - (c) In addition, Belgium stressed that only Electrabel can reasonably operate the LTO Units as the current (majority-) owner of the LTO Units and only operator of nuclear power plants in Belgium. Belgium recalled that access to nuclear generation capacity requires special, including country-specific, know-how which is not available to all market players, and that a tender in the present case would not have provided meaningful results since no operator other than Electrabel could have been selected.
- (354) Regarding third party comments on the package of different measures (financial support, waste deal) to support the LTO Project, which would be excessive, not in line with market incentives and not proportionate, Belgium argues that the agreements include various mechanisms that will encourage BE-NUC to respond to market signals as much as possible, within the technical limitations of the plants. In particular:
- (a) Regarding the CfD, Belgium repeated that the CfD design is shaped by the LTO Units' technical, regulatory, and economic constraints. It has a pain/gain sharing mechanism, with an IRR between 6 % and 8 % that incentivises BE-NUC to: (i) optimise its cost structure prior to setting and revising the strike price, (ii) maximise the output of the plants when high prices are expected, and the electricity system nears scarcity (e.g. wintertime), (iii) mitigate potential windfall profits, (iv) trigger modulations in case of prolonged periods of negative prices, and (v) ensure that the planned outages for long-term operations, maintenance, and refuelling have been scheduled during the summer when prices tend to be at their lowest.
 - (b) Regarding the combination of several financial sub-measures on top of the CfD, Belgium submitted that these measures are limited to the minimum necessary and each cover specific risks related to the LTO Project (and hence are complementary). Belgium recalled that: (i) the MOCF and SDC Loans are essential to ensure that BE-NUC generates sufficient cash flows to pay the operator and maintain long-term operational viability, and (ii) the JV structure, Shareholder Loans and working capital facility are designed to have identical conditions for both the Belgian State and Electrabel in their capacity as shareholders and will be entered into on market conditions.

- (c) Belgium submitted that the LTO Project does not go against the 'polluter pays' principle and the precautionary principle and recalled that similar nuclear projects in Germany and the UK, with respect to both the funding mechanisms as well as the Waste Cap system, have already been found to respect the 'polluter pays' and the precautionary principle and have accordingly been approved by the Commission.
 - (d) Regarding the waste deal, Belgium submitted that the concerned nuclear waste liabilities will be transferred to the Belgian State by means of a lump sum payment of EUR 15 billion, the amount of which was determined based on a solid methodology and expert input. Belgium also pointed out that the ultimate responsibility for the safe management of spent fuel and radioactive nuclear waste lies with the Member States and is a fundamental principle, enshrined in Article 4(1) of Council Directive 2011/70/Euratom ⁽¹²⁵⁾.
- (355) Regarding the third-party comments concerning the hindrance of the development of renewable energy, Belgium argued that demand for electricity will continue to rise, creating opportunities for all types of electricity production. Belgium also emphasised its intentions to develop and support the further development of the renewable energy sector.
- (356) Regarding the third-party comment on environmental impact assessment, Belgium argued that an environmental impact assessment of the LTO Project has been conducted on the initiative of the FPS Economy, and that it was organised in full compliance with Belgian laws and the Aarhus Convention ⁽¹²⁶⁾. In addition, Belgium stressed that all public procurement rules have been respected by the Belgian authorities and Engie.
- (357) Regarding the third-party concerns about the sales of electricity from nuclear power generation, Belgium stressed that specific safeguards are put in place to ensure additional safeguards concerning the EMSA partner. Belgium stressed that Engie will be excluded from the selection and decision-making procedure, and that sufficient measures will be taken to avoid conflicts of interest when GEMS will take part in the EMSA tender.
- (358) On the comment related to the continued dependency on Russia, Belgium argued that Synatom's supply contracts negotiated or under negotiation through the supervision of the Euratom Supply Agency explicitly exclude suppliers of natural uranium and conversion services from Russia.

8. ASSESSMENT OF THE MEASURE

8.1. Existence of State aid

- (359) Under Article 107(1) TFEU, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, in so far as it affects trade between Member States, is incompatible with the internal market.
- (360) A measure constitutes State aid within the meaning of Article 107(1) TFEU, if it fulfils four cumulative conditions. First, the measure must be funded by the State or through State resources. Second, the measure must confer an advantage on a beneficiary. Third, the measure must favour certain undertakings or economic activities (i.e., there must be a degree of selectivity). Fourth, the measure must have the potential to affect trade between Member States and to distort competition in the internal market.

⁽¹²⁵⁾ Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L199, 2.8.2011, p. 48, ELI: <http://data.europa.eu/eli/dir/2011/70/oj>).

⁽¹²⁶⁾ The UNECE Convention on Access to Information, Public Participation in Decision-making, and Access to Justice in Environmental Matters, usually known as the Aarhus Convention. The Aarhus Convention is a multilateral environmental agreement through which the opportunities for citizens to access environmental information are increased and transparent, and a reliable regulation procedure is secured.

- (361) In section 4.1.1 of the Opening Decision, the Commission explained that the three components of the notified measure were planned together and are inseparable from each other. Under point 81 of the Commission's Notice on the Notion of Aid, different measures can be considered as a 'single intervention'. This can be the case, in particular, where consecutive interventions are so closely linked to each other, especially having regard to their chronology, their purpose and the circumstances of the undertaking at the time of those interventions, that they are inseparable⁽¹²⁷⁾. For instance, a series of State interventions which take place in relation to the same undertaking in a relatively short period of time, are linked to each other, or were all planned or foreseeable at the time of the first intervention, may be assessed as one intervention⁽¹²⁸⁾.
- (362) The Commission explained in recitals 204 and 208 of the Opening Decision that the three components of the measure, including all their sub-components, aimed together at the lifetime extension of the LTO Units, since they were planned together, have the same objective and are established by the same agreement, namely the Implementation Agreement of 13 December 2023 (see recital 24), the same legislative act, namely the Phoenix Law concerning the security of supply of energy and the reform of the nuclear energy sector (see section 3.5.2), and are all granted by the same granting authority, namely the Belgian State. In addition, the lifetime extension of the two nuclear reactors, and hence the LTO Project, was initiated by the Belgian Government, and Engie's and Electrabel's participation in the agreement was conditional upon obtaining an appropriate level of remuneration, a guarantee against legal changes concerning electricity production from nuclear sources, and additional de-risking as regards the cost of nuclear waste (see recital 23). Therefore, each of the three components of the notified measure, including their sub-components, are closely linked and it would have been impossible to separate them, since together they constitute a necessary condition for Engie and Electrabel's participation in the LTO Project.
- (363) In light of the above, the Commission found that the three components should be examined together as a single intervention. The three components are interdependent and have mutually enhancing effects for the performance of the LTO Project. The Commission also made the preliminary finding, which applies to the three components of the measure considered together, that the intervention would entail State aid as it was granted from State resources imputable to the Belgian State, that the measure would confer a selective economic advantage and that it may have the potential to affect trade between Member States and to distort competition in the internal market.
- (364) The Commission has not come across any reasons to change its assessment in those respects during the formal investigation. Since the three components of the measure were planned together, have the same objective, are established by the same agreement and law, are granted by the same granting authority, and were all three necessary to convince Engie and Electrabel to participate in the LTO Project, the Commission considers that they are part of a single intervention and should be examined together as a single intervention.

8.1.1. *Imputability and existence of State resources*

- (365) For measures to be categorised as aid within the meaning of Article 107(1) TFEU, they must be granted directly or indirectly through State resources.
- (366) As explained in recital 213 of the Opening Decision, the combination of sub-measures of the LTO Project as described in section 3 of this Decision has been decided by the Belgian State (in agreement with Engie) at the time of signing the Implementation Agreement on 13 December 2023. In addition, the LTO Project involves the creation of a partly State-owned entity (BE-NUC) and the granting authority is the Belgian State.

⁽¹²⁷⁾ Judgment of 19 March 2013, *Bouygues and Bouygues Télécom v Commission and Others*, Joined Cases C-399/10 P and C-401/10 P, EU:C:2013:175, paragraph 104; Judgment of 13 September 2010, *Greece and Others v Commission*, Joined Cases T-415/05, T-416/05 and T-423/05, EU:T:2010:386, paragraph 177; Judgment of 15 September 1998, *BP Chemicals v Commission*, T-11/95, EU:T:1998:199, paragraphs 170 and 171.

⁽¹²⁸⁾ Judgment of 15 December 2021, *Oltchim SA v Commission*, T-565/19, EU:T:2021:904, paragraphs 93 to 197.

- (367) As explained in recital 214 of the Opening Decision, the LTO Project consists of a number of sub-measures involving a transfer of State resources to the benefit of BE-NUC, the newly set-up JV owned by the Belgian State and Electrabel. In particular, a State-backed CfD, allowing the JV to receive a complementary remuneration in case market prices would lead to a shortfall in revenues from operation, exposes the State to a transfer of State resources to the benefit of the JV.
- (368) Based on the reasons set out above, the Commission concludes that the measure is granted through State resources and is imputable to the State within the meaning of Article 107(1) TFEU.

8.1.2. *Selective economic advantage*

- (369) A measure is deemed selective if it favours only certain undertakings or the production of certain goods. The Commission reiterates that the present measure, including its various sub-components, assessed together and separately, confers a selective advantage within the meaning of Article 107(1) TFEU.
- (370) As explained in recital 217 of the Opening Decision, the LTO Project, including the three components of the notified measure, targets the lifetime extension of two nuclear reactors with a view to offering electricity in the energy market and thereby contributing to security of supply. The measure will provide the main beneficiaries, Electrabel and Luminus, as well as BE-NUC, with a specific advantage: (i) which is not made available to other energy operators in similar legal and factual situations, having regard to the objective and the effects of the measure (to provide financing and stable revenues to extend the lifetime of two nuclear reactors and to guarantee security of electricity supply in Belgium), and (ii) that they would not have obtained under normal market conditions and without a specific agreement regarding the various components of the measure. This advantage is selective in that it favours the owners and the operator of the LTO Units, that are in a comparable factual and legal situation to other generation capacity providers that do not have the opportunity to operate nuclear plants in Belgium, but that can also contribute to security of supply (such as gas plants, demand response operators, storage providers).
- (371) In addition, as explained in recital 218 of the Opening Decision, many of the individual sub-measures that are part of the LTO Project, confer a selective economic advantage on Electrabel and/or Luminus (and to the Contributing Companies where relevant). For instance, the RA in Component 1 includes a two-way CfD, establishing a fixed revenue stream for the production of electricity from nuclear sources, thereby shielding the owners of the plants from market risks. The Belgian State also provides a Shareholder Loan, SDC Loans and a minimum OPEX and capital payment to cover for the start-up costs of the LTO Units and their potential lack of profitability. These loans and agreements are not available to other competitors and thus confer a selective economic advantage on Electrabel, as part of BE-NUC, and Luminus. Component 3 provides cost recovery protection to Engie and Luminus in case of a change of law or policy, thereby reducing the investment risk and transferring it to the State and conferring an economic benefit that could not have been obtained under normal market conditions and which is not available to other market operators.
- (372) Belgium submits that the EMSA tender procedure will be conducted in accordance with the Belgian law on public procurement of 17 June 2016 and the Royal Decree of 18 June 2017 on public procurement for the utilities sectors. The EMSA partner will be selected through an open, transparent, non-discriminatory and unconditional tender. The competitive EMSA tender procedure, which uses and complies with the procedures provided for in the Public Procurement Directives, ensures that the transaction, in this case the purchase of energy management services, is compliant with market conditions and excludes any advantage granted to the energy manager. The LTO Project therefore does not confer a selective advantage to the EMSA partner.
- (373) Based on the reasons set out above, the Commission concludes that the LTO Project confers a selective economic advantage on the beneficiaries of the measure.

8.1.3. *Threat of undue distortion of competition and effects on trade*

- (374) As the Commission pointed out in recital 221 of the Opening Decision, the electricity market has been liberalised and electricity producers are engaged in trade between Member States so that an advantage granted to the producers of nuclear electricity is likely to distort competition and affect trade between Member States. Electricity from nuclear sources is generally sold on the internal market for electricity where it enters into competition with all sources of electricity, including those in other Member States. In addition, the Belgian electricity market is highly interconnected in the Core Capacity Calculation region.
- (375) Therefore, the Commission reiterates its position that the advantage granted to the beneficiaries through the LTO Project threatens to distort competition and affect trade between Member States.

8.1.4. *Conclusion on the existence of aid*

- (376) The Commission concludes that Component 1, Component 2 and Component 3 of the notified measure (together the LTO Project), as different measures pertaining to one single State intervention, involve State aid within the meaning of Article 107(1) TFEU.

8.2. **Lawfulness of the aid**

- (377) As the Commission pointed out in recital 224 of the Opening Decision, the measure was notified to the Commission on 21 June 2024 and has not been implemented to date. Belgium has confirmed that no actual works, other than the preparatory works that are part of the development activities under the JDA++, will be executed before the closing of the transaction. The closing of the transaction and implementation of the measure is made conditional upon the Commission's approval of the measure, since State aid approval is a pre-condition for the application of the Implementation Agreement.
- (378) Therefore, the Belgian authorities have fulfilled the notification and standstill obligations under Article 108(3) TFEU.

8.3. **Compatibility of the measure with the internal market**

- (379) Given the measure was found to involve State aid, the Commission has further examined whether it could be considered compatible with the internal market.

8.3.1. *Legal basis for the assessment*

- (380) The Commission has assessed the notified measure on the basis of Article 107(3), point (c), TFEU which provides that the Commission may declare compatible '*aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest*'.

8.3.2. *Positive condition: development of an economic activity*

8.3.2.1. *Contribution to the development of an economic activity*

- (381) Article 107(3), point (c), TFEU provides that the Commission may declare compatible '*aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest*'. Therefore, for the aid to be compatible under that provision of the Treaty, it must contribute to the development of certain economic activity ⁽¹²⁹⁾.
- (382) State intervention may be necessary to facilitate or incentivise the development of certain economic activities that, in the absence of the aid, would not develop or would not develop at the same pace or under the same conditions.

⁽¹²⁹⁾ Judgment of 22 September 2022, *Austria v Commission*, C-594/18 P EU:C:2020:742, paragraphs 20 and 24.

- (383) Belgium submits that all three components of the measure reduce the main risk factors which arise in investments in nuclear power generation assets. As explained in section 3.1 of this Decision and in section 2.3 of the Opening Decision, the aim of the notified measure is to enable investment in two existing nuclear reactors to ensure their operation for an extended period of 10 years (in particular through Component 1 of the measure, see section 3.3.1), thereby contributing to security of supply in Belgium, and securing the financing of nuclear waste and spent nuclear fuel in the long term (in particular through Component 2 of the measure, see section 3.3.2). Moreover, Belgium submits that the legal protections (through Component 3 of the measure, see section 3.3.3) are required to bring the LTO Project forward by reducing certain risks that are considered to be beyond the control of the investor.
- (384) The Commission recalls that the Court of Justice recognised the development of new nuclear capacity as an economic activity within the meaning of Article 107(3), point (c), TFEU ⁽¹³⁰⁾ and has established that Article 107 TFEU may be applied to investments in nuclear power generation ⁽¹³¹⁾. Since the LTO Project contributes to the development of electricity generation from nuclear energy sources in Belgium, it contributes to the development of an economic activity in Belgium.
- (385) Therefore, the Commission considers that the measure facilitates the development of certain economic activity as required by Article 107(3), point (c), TFEU.

8.3.2.2. Incentive effect

- (386) State aid can only be considered to facilitate an economic activity if it has an incentive effect. An incentive effect occurs when the aid induces the beneficiary to change its behaviour towards the development of the economic activity pursued by the aid, and if this change in behaviour would not otherwise occur without the aid.
- (387) As explained in recitals 5 and 6 of the Opening Decision and in recitals 19 and 23 of this Decision, Belgium has clarified that, in the absence of aid, Engie would not have the necessary incentives to continue to invest in the development of nuclear electricity generation capacity, in particular since, before the decision of the Belgian Government regarding the LTO Project in March 2022, Belgium planned to fully phase out nuclear energy (see section 2.2). In addition, Belgium explained that there are important market failures related to investments in energy generation resources in general, and in nuclear power generation in particular (see section 3.1). Investment in nuclear energy without State support is unlikely to be profitable due to the uncertainty of developments on the electricity market, in particular in the case of a lifetime extension for a limited period of 10 years.
- (388) As explained in recital 19 of this Decision and in recital 5 of the Opening Decision, Engie had already announced its plans to leave the nuclear sector in Belgium and adapted its communication and strategy accordingly. In response to the public consultation related to the Opening Decision, Engie confirmed that there is no doubt that Electrabel would not have continued operations of the LTO Units absent the LTO Project, including the three components (see section 5.1.2).
- (389) Belgium also submits that the development activities undertaken as a result of the conclusion of the JDA++ before closing of the transaction, are merely preparatory works and feasibility studies, and that no actual works will be undertaken before the formal closing of the transaction (see section 3.3.1.1).
- (390) The Commission considers that all components of the measure have the same specific objective and are all needed to make the LTO Project go forward.
- (a) The financial support mechanisms under Component 1 of the notified measure are necessary to de-risk the LTO Project and to cover its investment costs, including a reasonable profit, in particular since - under the current legal basis - the nuclear operator has to cease again nuclear activities after the 10-year lifetime extension, which creates an even higher level of uncertainty relating to revenues from nuclear energy generation.

⁽¹³⁰⁾ *Ibid.*, paragraph 63.

⁽¹³¹⁾ *Ibid.*, paragraph 32.

- (b) The waste deal under Component 2 of the measure and the agreement on legal protections in case of a change in the laws concerning nuclear power generation (Component 3) were also required by Engie and Electrabel before considering their involvement in the LTO Project and re-entering the nuclear business in Belgium.

(391) In light of the above, the Commission considers that the measure has an incentive effect as it induces the beneficiaries to engage in an economic activity that they would not carry out without the measure.

8.3.2.3. Compliance with relevant provisions of EU law

(392) As explained in the Opening Decision, the Court of Justice held in the Hinkley Point C case ⁽¹³²⁾ that ‘*State aid which contravenes provisions or general principles of EU law cannot be declared compatible with the internal market*’. For nuclear energy specifically, the Court of Justice clarified that, for the sector ‘*covered by the Euratom Treaty, State aid for an economic activity falling within that sector that is shown upon examination to contravene rules of EU law on the environment cannot be declared compatible with the internal market pursuant to that provision*’.

(393) Moreover, the Court of Justice highlighted that secondary legislation, such as Directive 2011/92/EU, under which certain projects are subject to an environmental impact assessment, applies to nuclear power stations and other nuclear reactors.

(394) The Court also clarified that investments in nuclear energy are not precluded by Article 194 TFEU on the Union policy on energy ⁽¹³³⁾. According to the case-law ⁽¹³⁴⁾, since EU Member States have the free choice, under the TFEU, to include nuclear energy in their energy mix, it is apparent that the objectives and principles of EU environmental law, and the objectives pursued by the Euratom Treaty, do not conflict, so that the principle of protection of the environment, the precautionary principle, the ‘polluter pays’ principle and the principle of sustainability cannot be regarded as precluding, in all circumstances, the grant of State aid for the construction or operation of a nuclear power plant.

(395) Thus, the fact that the measure concerns nuclear energy does not render it incompatible with the internal market. Belgium has opted for nuclear energy to address security of supply concerns and to contribute to the decarbonisation of its energy mix (see sections 2.3 and 2.4).

(396) As mentioned in recital 240 of the Opening Decision and recital 222 of this Decision, Belgium explained that the LTO Project development was preceded by an extensive and open environmental impact assessment process conducted in compliance with EU secondary legislation requirements ⁽¹³⁵⁾. In a reaction to a third-party comment in this regard (see recital 348), Belgium repeated that an environmental impact assessment of the LTO Project has been conducted on the initiative of the Belgian FPS Economy, and that it was organised in full compliance with Belgian laws and the Aarhus Convention (see recital 356). Therefore, the Commission has no indications that the LTO Project violates any provisions of EU environmental law.

(397) The LTO Project was communicated to the Commission and the Belgian authorities notified it pursuant to Article 41 of the Euratom Treaty.

(398) It is not excluded that Electrabel will need to execute construction works in order to bring the LTO Units in line with requirements imposed by the safety authority. According to the case-law, ‘*when the Commission applies the State aid procedure, it is required, in accordance with the general scheme of the Treaty, to ensure that provisions governing State aid are*

⁽¹³²⁾ Judgment of 22 September 2022, *Austria v Commission*, C-594/18 P EU:C:2020:742, paragraphs 44 and 45.

⁽¹³³⁾ Judgment of 22 September 2022, *Austria v Commission*, C-594/18 P EU:C:2020:742, paragraphs 48 and 49.

⁽¹³⁴⁾ *Ibid.*, paragraph 49.

⁽¹³⁵⁾ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (OJ L 26, 28.1.2012, p.1, ELI: <http://data.europa.eu/eli/dir/2011/92/oj>).

applied consistently with specific provisions other than those relating to State aid and, therefore, to assess the compatibility of the aid in question with those specific provisions. However, such an obligation is imposed on the Commission only where the aspects of aid are so inextricably linked to the object of the aid that it is impossible to evaluate them separately. [...] By contrast, if the aspect at issue can be separated from the object of the aid, the Commission is not required to assess its compatibility with provisions other than those relating to State aid in the context of the procedure provided for in Article 108 TFEU ⁽¹³⁶⁾. The General Court confirmed in its judgment relating to State aid for the nuclear power plant Paks II that the Commission is not required to verify that any aspect of an aid measure or any element relating to an aid, in the absence of an inextricable link, is in compliance with Union law ⁽¹³⁷⁾. In the respective case, the General Court further observed that '[t]he carrying out of a public procurement procedure and the possible use of another undertaking for the construction of the reactors would alter neither the object of the aid [...] nor the beneficiary of the aid [...]' ⁽¹³⁸⁾.

- (399) As mentioned in recital 243 of the Opening Decision, the Commission considers that the compatibility assessment of the notified measure could be affected by a possible incompliance with Directive 2014/25/EU if it produced additional undue distortions of competition and trade on the electricity market (market on which the beneficiaries are active). The Commission notes that Directive 2014/25/EU is of relevance as regards the direct award of (potential) construction works for the LTO Units to specific undertakings.
- (400) In the present case, even if Electrabel subcontracted all or part of the (potential) construction works related to the LTO Project which could be subject to public procurement regulation, the Commission considers that there is no 'indissoluble link' between the aid and public procurement aspects, because it is possible to evaluate them separately. The notified measure supports the lifetime extension of the two nuclear reactors independently of how the future contractor(s) is (are) chosen. The implementation of the notified aid also does not depend on the exact application of public procurement rules. The operation of the LTO Units and the conditions for marketing the electricity are therefore separable from the public procurement aspects regarding the refurbishment works of the nuclear reactors. It is therefore possible for the Commission to assess the measure without evaluating the public procurement aspects of the refurbishment works since such aspects are not inextricably linked to either the economic activity promoted by the aid or its modalities.
- (401) Regarding the EMSA, Belgium submits that a public tender is ongoing for the selection of an EMSA partner and that the tender procedure respects the rules of Belgian public procurement law (see section 3.3.1.5.1). The Belgian Government acts as contracting entity in the name and on behalf of BE-NUC (because BE-NUC is not yet fully operational), but BE-NUC itself will conclude the EMSA contract. In view of BE-NUC's activity, it was decided to apply the rules for the utilities sectors. The contracting entity will select eligible parties and invite them to submit an offer, based on the draft EMSA contract proposed by the contracting entity and subsequent negotiations and offers may follow. The Commission can therefore conclude that the EMSA tender respects the relevant Belgian and EU public procurement rules.
- (402) Belgium confirmed that the public procurement rules regarding the EMSA tender procedure (see recital 143) and public procurement rules in general (see recital 356) have been respected by the Belgian authorities and Engie. For the reasons mentioned in recitals 398 to 401, the Commission has no indications that the LTO Project violates any provisions of public procurement law.

⁽¹³⁶⁾ See Judgment of 3 December 2014, *Castelnou Energía*, Case T-57/11, EU:T:2014:1021, paragraphs 181-184. Judgment of 30 November 2022, *Austria v Commission*, T-101/18 EU:T:2022:728, paragraph 30.

⁽¹³⁷⁾ Judgment of 30 November 2022, *Austria v Commission*, T-101/18, EU:T:2022:728, paragraph 32.

⁽¹³⁸⁾ Judgment of 30 November 2022, *Austria v Commission*, T-101/18, EU:T:2022:728, paragraph 37. The reasoning concerning the need for an 'indissoluble link' for the Commission to assess the compatibility of EU Law of certain aid modalities has been endorsed by the Court of Justice in *Braesch*. See Judgment of 31 January 2023, *Commission v Braesch and Others*, C-284/21 P, EU:C:2023:58, paragraphs 96 to 99.

- (403) As mentioned in recital 245 of the Opening Decision and section 3.3.2.1 of this Decision, regarding the transfer of liabilities concerning nuclear waste and spent nuclear fuel, the agreement is in line with the provisions set out in Directive 2011/70/Euratom. The Euratom Treaty and the relevant secondary legislation put the prime responsibility for ensuring the responsible and safe management of spent fuel and radioactive waste and the financing thereof on the operators of nuclear installations in line with the principle set out in Article 4(3) of Directive 2011/70/Euratom. However, the State has the ultimate responsibility for the responsible and safe management of radioactive waste and spent fuel and for ensuring that adequate financial resources are available for such management. The Belgian authorities have demonstrated that the measure aims at securing the financing of spent fuel and nuclear waste management as a prerequisite for the responsible and safe management of these materials. Therefore, the Commission has no indications that the waste deal part of the LTO Project violates the provisions set out in Directive 2011/70/Euratom.
- (404) Since the LTO Project receives support in the form of a two-way CfD, the Commission considers that the principles set out in Article 19d(2) of Regulation (EU) 2019/943⁽¹³⁹⁾, as amended by Regulation (EU) 2024/1747 (the 'Electricity Regulation'), apply to all two-way CfDs, as of the entry into force of that Regulation on 16 July 2024. This includes instances where a Member State, without having the obligation to do so under the Electricity Regulation, decides to introduce a two-way CfD in relation to investments aiming to prolong the lifetime of existing facilities, as in the case of the LTO Project. In this context, the Belgian authorities made some modifications to the CfD design, in order to improve the modulation decisions by transferring the decision-making authority with respect to economic modulations to the EMSA partner, as explained in section 3.3.1.5.2. In addition, Belgium intensified the pain/gain sharing mechanism (updated MPRA), to more closely align financial support with changes in market prices (see recital 107). The Commission recognises that the size of the plants is relatively large compared to the liquidity of the intraday and balancing market in Belgium, that the plants in question rely on old nuclear technology with limited flexibility, that the plants are subject to particularly high security requirements, and that the prolongation and the introduction of economic modulations increase the risk of shutdowns (see section 2.1). At the same time, the Commission recognises that, although the Belgian intraday and balancing markets are increasingly integrated with neighbouring markets, they remain fairly small compared to the size of the two plants. Against this background, the Commission acknowledges the fact that the Belgian authorities made some modifications to the CfD design, in order to align it closer with the objectives of Article 19d(2) of the Electricity Regulation by ensuring that the LTO Units will be modulated in reaction to market signals, in particular also by ensuring - as much as technically possible - an efficient production and maintenance schedule.
- (405) As mentioned in recital 247 of the Opening Decision and recital 110 of this Decision, Belgium submits that any proceeds from the two-way CfD will flow into the general State budget (subject to separate accounting) and will be used primarily to fund the payments of the RA counterparty under the CfD for the LTO Units. Where the CfD proceeds exceed the amounts necessary to finance the costs of the CfD for the LTO Units, they could be used to finance the costs of another CfD. Belgium commits that, if any remaining CfD proceeds are used for purposes of distributing them to undertakings, the distribution will be carried out in accordance with Article 19d(2), points (d) and (e), of the Electricity Regulation. Belgium will inform the Commission upfront in case CfD proceeds are distributed to undertakings and, if need be, notify such a measure (see recital 110). Through this commitment, the Commission considers that Belgium provided sufficient assurance regarding compliance with the principles set out in Article 19d(2), points (d) and (e), of the Electricity Regulation. Belgium also confirmed that the CfD design includes penalty clauses in case of undue unilateral early termination of the contract, in line with Article 19d(2), point (f), of the Electricity Regulation (see recital 110).

⁽¹³⁹⁾ Regulation (EU) 2019/943 of the European Parliament and Council of 5 June 2019 on the internal market for electricity (OJ L 158, 14.6.2019, pp. 54, ELI: <http://data.europa.eu/eli/reg/2019/943/oj>), as amended by the Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 amending Regulations (EU) 2019/942 and (EU) 2019/943 as regards improving the Union's electricity market design (OJ L, 2024/1747, 26.6.2024, p. 1, ELI: <http://data.europa.eu/eli/reg/2024/1747/oj>).

- (406) As also mentioned in recital 248 of the Opening Decision, with respect to compliance of the JV with the Council Regulation (EC) No 139/2004 ⁽¹⁴⁰⁾, it appears from the submissions by the Belgian State and Engie that the planned JV cannot be considered full-functional within the meaning of Article 3 of that Regulation. Therefore, it follows that the measure is not notifiable to the European Commission as regards its compliance with that Regulation.
- (407) As stated in recital 249 of the Opening Decision and section 3.6 of this Decision, as regards the financing of the measure, the Belgian authorities explained that the costs related to the LTO Project are covered by the State budget where required. Benefits of the project would also flow to the State budget. There are no resources hypothecated to the measure and therefore the measure does not infringe Article 30 or Article 110 TFEU.
- (408) For the reasons set out above, the Commission concludes that the proposed measure does not, as such, infringe any relevant provisions of EU law.

8.3.2.4. Conclusion

- (409) In light of the above, the Commission concludes that the LTO Project meets the first (positive) condition of the compatibility assessment (i.e., that the aid facilitates the development of an economic activity).

8.3.3. *Negative condition: the aid cannot unduly affect trading conditions to an extent contrary to the common interest*

8.3.3.1. Identification of the market affected by the aid

- (410) As pointed out in the Opening Decision, the LTO Project was set up to contribute to security of electricity supply in the Belgian market, while reducing Belgium's dependency on fossil fuels (hereby also contributing to the decarbonisation of Belgium's energy system). At the same time, it has been established that the Belgian market is well interconnected in the Core Capacity Calculation region (see recital 374).
- (411) In light of the above, the relevant markets for the assessment of the measures at issue are the electricity markets in Belgium and the electricity market in the Core Capacity Calculation region.

8.3.3.2. Identification of the positive effects of the aid measure

- (412) As mentioned in recital 254 of the Opening Decision and Table 2 of this Decision, the lifetime extension of the two nuclear reactors is expected to represent 12 % to 16 % of electricity generation in Belgium, which allows to continue nuclear-based electricity generation and therefore maintain the necessary generation at the supply side in line with the specific energy mix chosen by Belgium. Together with the capacity procured through the capacity mechanism, keeping the two youngest nuclear reactors for another 10 years in the market is needed to address the continuously rising demand for electricity in Belgium, as shown in the latest resource adequacy assessment of the Belgian TSO (see section 2.4). The LTO Project therefore has positive effects on the market as it will help to address the resource adequacy concerns and contribute to security of supply in Belgium.
- (413) Furthermore, investments in nuclear energy sources provide reliable low-carbon generation assets. By ensuring secure supplies when phasing out the most polluting fuels and reducing dependency on natural gas, nuclear generation, with low carbon emissions per MWh of electricity produced, contributes (jointly with the development of renewable energies) to achieving national and European decarbonisation objectives.
- (414) The LTO Project will also directly support the objectives of REPowerEU as it will reduce dependence on imported fossil fuels (in particular gas) which are subject to price fluctuations and geopolitical risks, therefore strengthening energy security (see recital 21).

⁽¹⁴⁰⁾ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (OJ L 24, 29.1.2004, p. 1, ELI: <http://data.europa.eu/eli/reg/2004/139/oj>).

- (415) In light of the above considerations, the Commission concludes that the LTO Project has positive effects on the market as it will increase security of supply and contribute to the decarbonisation of Belgium's energy mix. Since the Core Capacity Calculation region is well interconnected, these positive effects would likely benefit the neighbouring Member States importing electricity from Belgium.

8.3.3.3. Necessity of the State intervention

- (416) In order to determine whether an aid measure is necessary, the Commission has to assess whether the measure is targeted towards a situation where the measure could bring about a material improvement that the market alone cannot deliver. Aid which improves the financial situation of the recipient undertaking but is not necessary for the attainment of the intended objective cannot be considered to be compatible with the internal market.
- (417) In the present case, Belgium wants to extend the lifetime of its two youngest nuclear reactors in order to address security of supply issues, while at the same time reducing the consumption of fossil fuels and thereby contributing to decarbonisation. The Commission has to assess whether State aid to keep nuclear energy in the market is necessary for achieving these objectives.
- (418) In section 2.3.2 of the Opening Decision and section 3.1 of this Decision, the Commission explained that the existence of market failures is a relevant factor for the assessment of the necessity of the aid and recognised certain market failures that call for State intervention regarding nuclear power development⁽¹⁴¹⁾. For nuclear energy investments in particular, the market failure arises principally due to a number of particular risks that are difficult to manage for merchant investors⁽¹⁴²⁾, such as:
- (a) the complexity of nuclear technology which leads to exposure to technical and project management risks, as well as market and investment risks (due to the capital intensity of the investments and volatility of energy markets), which are dealt with by Component 1 of the measure;
 - (b) the long-term risks related to nuclear waste management and decommissioning and dismantling of nuclear power plants, which are dealt with by Component 2 of the measure; and
 - (c) exposure to risks related to regulatory and political decisions, which are dealt with by Component 3 of the measure.
- (419) According to Belgium, each of the three components of the LTO Project deals with one of the risks and market failures as mentioned in recital 418.
- (420) Belgium also argues that the Belgian capacity mechanism is not an appropriate financing mechanism for nuclear energy capacity in Belgium, in particular given the short timeframe in which the lifetime extension has been decided, the additional uncertainties and market failures related to investments in nuclear energy compared to other technologies, the specific characteristics of the capacity mechanism, which has yearly auctions with an uncertain outcome, and a timing that is incompatible with the timing of the LTO Project (see section 3.3.4 and recital 353). In addition, Belgium submits that the notified measure, including the package of sub-measures, was necessary to convince Engie to start negotiations on the lifetime extension of the LTO Units, since Engie had already taken the decision to cease all nuclear activities in Belgium (see recital 19).

⁽¹⁴¹⁾ Commission Decision of 13.1.2015, SA.34947 (2013/C) (ex 2013/N), United Kingdom, Support to the Hinkley Point C nuclear power station (OJ L/2015/109, 28.4.2015, p. 44), recitals 382 to 385.

⁽¹⁴²⁾ See for instance Commission Decision of 13.1.2015, SA.34947 (2013/C) (ex 2013/N), UK, Support to Hinkley Point C Nuclear Power Station (OJ L/2015/109, 28.4.2015, p. 44); Commission Decision of 24.7.2017, SA.38454 (2017/C) (ex 2015/N), Hungary, Development of two nuclear reactors at the Paks II nuclear power station (OJ L/2017/317, 1.12.2017, p. 45); Commission Decision of 17.3.2017, SA.39487 (2016/NN), Belgium, Lifetime extension of the nuclear power plants Tihange 1, Doel 1 and Doel 2 (OJ C/2017/142, 5.5.2017, p.1); Commission decision of 16.6.2017, SA.45296 (2017/N), Germany, Transfer of Radioactive Waste and Spent Nuclear Fuel Liabilities in Germany (OJ C/2017/254, 4.8.2017, p. 1).

- (421) Belgium therefore argues that the lifetime extension of the two nuclear reactors is unlikely to take place absent State support, including an appropriate remuneration model (Component 1), an agreement on the transfer of nuclear waste and spent fuel liabilities (Component 2) and the legal protection provisions (Component 3), each of them addressing one of the above-mentioned market failures.
- (422) The need for each of the three components of the measure is assessed (separately) in sections 8.3.3.3.1, 8.3.3.3.2 and 8.3.3.3.3. The assessment of the combined need of Component 1, Component 2 and Component 3, as well as their potential cumulative effects is provided in section 8.3.3.6.

8.3.3.3.1. Need for Component 1

- (423) Regarding the technical, project management, market and investment risks mentioned by Belgium, the Commission has recognised in previous decisions that investments in new nuclear energy projects are subject to significant risk given the combination of high upfront capital costs, long construction times and a long period of operation to recover the investment costs. The Commission also recognised the lack of market-based financial instruments, as well as other types of contracts, to hedge against such substantial risk constitutes a market failure which is specific to few technologies among which nuclear energy ⁽¹⁴³⁾. However, this concerned investments in new nuclear energy plants. In contrast, the present case covers investments in the lifetime extension of two existing nuclear operators. The Commission therefore considers the issue of investing in the lifetime extension of the two nuclear reactors would not have presented itself in the absence of aid.
- (424) First, regarding the Commission's observation in recital 295 of the Opening Decision, that the 10-year lifetime extension of Doel 1, Doel 2 and Tihange 1 in 2015 took place without a package of financial support measures ⁽¹⁴⁴⁾, Engie submitted as response to the public consultation (see recital 290) that the circumstances of both projects are not comparable, since in the present case: (i) the Belgian Government took the decision on the LTO Project after Engie started preparations to leave the nuclear business, (ii) there are additional costs related to the tight time schedule of the current LTO Project, which were also recognised by the Nuclear Safety Authority (AFNC/FANC), and (iii) the increased share of renewables in the energy system lead to higher market price volatility compared to the situation and expectations in 2015.
- (425) Second, regarding the Commission's doubt about the need to have the full package of remuneration measures, Belgium and Engie submitted that each part of Component 1 fulfils a specific objective and that the sub-components are complementary. Belgium clarified in more detail the setup of financial measures (see also recital 68).
- (a) The operating and maintenance costs of the LTO Project are financed through the LTO operating revenues, whereby a stable flow of operating revenues is guaranteed through the CfD. As explained by Belgium and Engie, given the market failures related to the nuclear industry and the high volatility of the electricity market in the coming years, the LTO Project is exposed to a strong risk of a funding gap, making the CfD a necessary instrument to achieve stable operating revenues. The Commission considers that an appropriately designed CfD is a necessary instrument to guarantee a stable revenue stream in an uncertain market environment. The Commission already acknowledged in the Opening Decision the high risk of a negative NPV for the LTO Project in the absence of a CfD. Furthermore, the Commission also agrees that the lifetime extension of the LTO Units (10 years) covers a short time period compared to the average duration of investments in the nuclear sector (even more since the LTO Units will not run at 100 % capacity during the first three years because of the need to complete LTO extension works at the same time), while there are significant costs in order to make the LTO Units compliant with safety regulations.

⁽¹⁴³⁾ Commission Decision of 13.1.2015, SA.34947 (2013/C) (ex 2013/N), UK, Support to Hinkley Point C Nuclear Power Station (OJ L/2015/109, 28.4.2015, p. 44), recitals 382 and 383.

⁽¹⁴⁴⁾ Only legal protections against the risk of political hold-up were granted in that case (similar to the legal protections granted through Component 3 of the current measure).

- (b) The MOCP and SDC Loans complement the CfD in order to ensure long-term financial stability, since it cannot be excluded that periods of significant unplanned unavailability will occur during the 10-year period. Data provided by Electrabel indeed show that the probability of such an event is not small but likely to occur based on its experience with the Belgian nuclear reactors over the period 2012-2022 (see Table 10). The SDC Loans are meant to ensure sufficient cash during the Restart Phase of the LTO Project, when important works still have to be undertaken and the LTO Units cannot run at full capacity, and are planned to be paid back by the end of the 10-year period. In contrast, the MOCP is available through the entire 10-year period, but only covers situations of significant unplanned unavailability. A working capital facility (WCF) serves as an intra-year bridge to the annual MOCP. Belgium provided three scenarios showing the impact of the occurrence of significant unplanned unavailability events. As is clear from Table 11, without the MOCP and SDC Loans, the JV could go bankrupt in these situations which are not unlikely to occur during the 10-year period.
- (c) The Commission therefore acknowledges that the CfD, SDC Loans, MOCP and WCF are complementary measures, which are all necessary to ensure that BE-NUC has, at all times, sufficient liquidity to pay its operating, maintenance and fuel costs to allow for a safe and reliable operation of the LTO Units.
- (d) Since Engie was in the process of limiting its exposure to nuclear (see recital 19) and did not want to invest alone the required CAPEX of more than EUR [2-2,5] billion for the LTO Project, and support alone all potential losses due to unexpected unavailabilities and cost overruns, it requested a risk-sharing mechanism on a 50/50 basis with the Belgian State before subscribing to the agreement on the LTO Project (see recital 23), and insisted on the JV structure (creation of BE-NUC) on top of the remuneration mechanisms in the RA in order to cover the remaining funding and solvency risks. The CAPEX requirements of the LTO Project are funded by the JV shareholders on *pari passu* basis, either through equity or through Shareholder Loans.
 - Even with the financial remuneration mechanisms of the RA in place, significant risks remain, which Engie did not want to carry on its own. Engie provided a simulation showing the impact of reduced availability events and/or increased operating costs during the Run Phase that are not covered by the MOCP, which can have a significant negative effect on BE-NUC's profitability, as shown in Table 16.
 - Through the JV structure, the CAPEX financing can occur without exposure to debt, which in the present case would be highly expensive or difficult to obtain since commercial banks are unwilling to get exposed to nuclear assets.
 - The introduction of Shareholder Loans in addition to the equity injection follows from financial considerations since it grants more flexibility in the design of drawdown and repayment schedules and optimises the financial structure with respect to taxable income.
- (e) The Commission therefore concludes that the set-up of a JV, in which the risks related to cost overruns and forced outages not covered by the other financial instruments are shared with the Belgian State, can be considered necessary.
- (f) The JDA++ covers the costs related to the development activities that need to be undertaken in order to meet the expectations of the safety authority regarding the LTO Project. Given the tight time schedule of the LTO Project, the Commission considers it was therefore necessary to set up an arrangement and conclude on the funding of these activities.
- (g) Regarding the remaining sub-measures of Component 1, as already mentioned in the Opening Decision, the Commission considers that:
 - the O&M Agreement allows securing the coverage of all operating and maintenance costs at any time, so that it is necessary;

- the conclusion of an agreement on administrative practices and on the sales of energy is a requirement for the LTO Project to be operational in practice, so that the ASA and EMSA are necessary; and
- it a standard practice, as part of an agreement between two parties, to agree on terms in case of no closing of the transaction, so that the indemnification of cost coverage losses in case of not closing is necessary.

(426) Third, the Commission recalls the comments of third parties that argued that energy supply could also be guaranteed by cheaper technologies and considered that subsidies to the nuclear sector would slow down progress on other cheaper and more climate-friendly technologies (in particular renewables). Belgium submitted that Member States have the autonomy to shape their energy policies, including the option to incorporate nuclear power into their energy mix, and that a diverse combination of energy production methods is essential for maintaining a reliable and balanced electricity network. Given the fact that market concentration has decreased in recent years thanks to a higher share of renewable energy in the Belgian energy mix (see recitals 34 to 37), and given the recent investments of the Belgian State in the Princess Elisabeth offshore wind park ⁽¹⁴⁵⁾, the Commission sees no reason to conclude that the LTO Project would hinder the renewable energy buildup in Belgium. The need to invest both in nuclear and renewable energy is also plausible since renewables currently still have downsides such as availability of sites and network connection capacity. The remuneration through the (modified) CfD design provides more incentives to maximise production in high-price hours (to the extent possible given the old technology involved in the LTO Units). This reduces the competitive impact of the measure on market-based renewable investments, as renewable generation assets can be expected to run particularly often in the lower-priced time periods (as in those periods, the availability of renewable resources is high which reduces market prices).

(427) Finally, regarding Belgium's argument that the funding gap of the LTO Units cannot be adequately resolved through participation in the capacity mechanism (see section 3.3.4 and recital 353), the Commission recognises that the uncertain outcome of the CM auctions and the timing of the auctions is not compatible with Belgium's plan to have the LTO restart taking place in 2025. In particular, the Belgian Government announced the LTO Project in March 2022 and signed a binding Implementation Agreement on 13 December 2023 (see section 2.3). By that time, already three CM auctions had taken place.

(428) In light of the above reasoning, the Commission considers that all sub-measures of Component 1 have been proven to be complementary and necessary.

8.3.3.3.2. Need for Component 2

(429) Regarding the market failures and risks related to the uncertain costs of nuclear waste management and decommissioning, as mentioned in recital 276 of the Opening Decision, the Commission considers that these are dealt with by the transfer of liabilities regarding radioactive waste and spent fuel, as well as the transfer of additional decommissioning liabilities resulting from the LTO Project. The waste deal aims at ensuring the responsible and safe management of spent fuel and radioactive waste, since the transfer will secure the financing of nuclear waste and increase the safety level for interim storage and final disposal of these materials. Belgium submits that the additional decommissioning liabilities resulting from the LTO Project only cover the extra costs due to the LTO Project, do not cover any operating costs relating to day-to-day management or usual activities and are therefore not distortive.

⁽¹⁴⁵⁾ See Commission decision of 13.9.2024, SA.107336 (2024/N), Belgium, Support mechanism for lot 1 of the Princess Elisabeth offshore Zone (OJ C/2024/5754, 25.9.2024, p. 1).

- (430) As pointed out by the Commission in previous decisions regarding the transfer of nuclear waste liabilities in Germany and the UK ⁽¹⁴⁶⁾, the management of radioactive waste is characterised by long timelines, which may therefore require some form of State intervention. Moreover, the need for State intervention as to the responsible and safe management of radioactive waste is enshrined in Article 4(1) of Directive 2011/70/Euratom, which provides for the ultimate responsibility of the State in this regard. The transfer of the liabilities for radioactive waste management and decommissioning serves the objective to secure the financing of spent fuel and radioactive waste management as a prerequisite for the responsible and safe management of these materials. In addition, Engie was not planning to keep its nuclear activities in Belgium (see recital 19) and only agreed to start negotiations on the lifetime extension when there was an agreement on the financial arrangements but also on the transfer of nuclear waste liabilities (see recital 23).
- (431) Regarding the transfer of additional decommissioning liabilities resulting from the LTO Project in particular, since this transfer only covers the additional costs resulting from the LTO Project while the regular decommissioning and dismantling liabilities stay with the nuclear operator, and since it was the Belgian Government, not Engie or Electrabel requesting the lifetime extension, the Commission considers that this transfer of additional decommissioning liabilities resulting from the LTO Project is also needed. Compared to the assessment in the Opening Decision, the additional decommissioning costs related to the LTO Project have also been confirmed by the CPN/CNV in the meantime (see recital 200).
- (432) Furthermore, the Commission does not object to the release of Electrabel's non-European assets from Electrabel's perimeter given that Engie will ensure that at least EUR 4 billion of assets will remain in Electrabel (see recital 59 and 181).
- (433) In light of the above reasoning, the Commission therefore considers that Component 2 of the notified measure is necessary.

8.3.3.3.3. Need for Component 3

- (434) Regarding the market failures related to regulatory and political risks, as mentioned in recital 278 of the Opening Decision, the Commission considers that, while all technologies can in principle suffer from a political 'hold-up', given the controversial nature of nuclear technology, nuclear projects can be expected to suffer more from this ⁽¹⁴⁷⁾. In particular, Belgium has changed already a few times its political course regarding nuclear energy during the last 25 years (see section 2.2), so the Commission considers this risk particularly present in Belgium. Furthermore, the Commission did not receive any evidence to the contrary during the public consultation on the case.
- (435) The Commission therefore considers that the regulatory and political risks are efficiently dealt with through the legal protections measure and that legal protections are needed in the case of nuclear energy, as also recognised by the Commission in the decision in case SA.39487 ⁽¹⁴⁸⁾.

8.3.3.3.4. Conclusion on need of the measure

- (436) In light of the above, the Commission concludes that all three components of the measure (including their sub-components) are necessary to ensure the lifetime extension of two nuclear reactors in Belgium. Additionally, the Commission concludes that the measure produces an incentive effect for the beneficiaries thus ensuring that the LTO Project will be successfully realised.

⁽¹⁴⁶⁾ See Commission decision of 16.6.2017, SA.45296 (2017/N), Germany, Transfer of Radioactive Waste and Spent Nuclear Fuel Liabilities in Germany (OJ C/2017/254, 4.8.2017, p. 1); Commission Decision of 20.4.2016, SA.34962 (2015/N), United Kingdom, Waste Transfer Contract for New Nuclear Power Plants (OJ C/2016/161, 4.5.2016, p. 1).

⁽¹⁴⁷⁾ See also recitals 384 to 385 in the Commission Decision in case SA.34947 (see footnote 144).

⁽¹⁴⁸⁾ See Commission Decision of 17.3.2017, SA.39487 (2016/NN), Belgium, Lifetime extension of the nuclear power plants Tihange 1, Doel 1 and Doel 2 (OJ C/2017/142, 5.5.2017, p.1).

8.3.3.4. Appropriateness

- (437) The market failures mentioned in section 3.1, arising from: (i) an uncertain energy market and investment climate, (ii) uncertain costs related to nuclear waste, and (iii) exposure to political decisions, prevent the nuclear operator from obtaining revenue certainty. In the present case, the Commission considers that this is particularly problematic because of the old technology on which the LTO Units are based, which leaves little room for flexibility, as well as the limited duration of the lifetime extension of 10 years. These features, which are particularly present in the case at hand, further complicate the profitable operation of the LTO Units, so that the Commission considers State support appropriate.
- (438) Belgium submits that, because of the identified market failures and the specific risks related to nuclear energy, a separate support mechanism is required for nuclear energy. As mentioned in section 3.3.4, Belgium submits that other forms of direct financial support schemes have been considered (fixed feed-in premium, one-way CfD and regulated asset base model) but were not found appropriate for supporting the LTO Project. Belgium submits that the three components of the notified measure are required to address the market failures and risks. According to Belgium: (i) the particular set-up of the LTO Project and financial support measures of Component 1 are appropriate to guarantee stable revenues to the nuclear operator and to avoid insolvency of the JV in case of significant unplanned events, (ii) the Waste Cap and related sub-measures of Component 2 are appropriate to guarantee that the required funds will be available to finance responsible and safe spent fuel and radioactive waste management solutions, while (iii) the legal protections of Component 3 are appropriate to guarantee protection against changes in public opinion and policymakers' stance towards nuclear energy.
- (439) The Commission will assess - for each component separately - in the sections below whether Component 1, Component 2 and Component 3 of the notified measure, including their several sub-measures, are appropriate. The assessment of the combined appropriateness of Component 1, Component 2 and Component 3, as well as their potential cumulative effects is provided in section 8.3.3.6.

8.3.3.4.1. Appropriateness Component 1

- (440) First, as mentioned in recitals 285, 300 and 303 of the Opening Decision respectively, the Commission found the JDA++, the ASA and the indemnification of cost coverage losses in case of not closing to be appropriate measures. First, given the short time period before the LTO restart date and the need to start with the development activities as soon as possible after the decision to extend the lifetime of two nuclear reactors was taken by the Belgian Government, the Commission considers the conclusion of the JDA++ agreement, prior to the final closing of the transaction, as an appropriate instrument to make sure that the necessary development activities are undertaken in time by the nuclear operator. Second, the Commission considers that concluding an agreement on administrative practices (ASA), as well as agreeing on terms in case of not closing of the transaction, is a standard practice, as part of an agreement between two parties. Furthermore, the Commission did not receive any evidence to the contrary regarding these three sub-measures during the public consultation on the case. Therefore, the Commission considers the JDA++, the ASA and the indemnification of cost coverage losses in case of not closing as appropriate measures that must be part of the LTO Project.
- (441) Second, regarding the CfD, Belgium submits that the two-way CfD is the most appropriate option to address the market failures and to provide revenue certainty while avoiding excessive remuneration of the nuclear operator. Alternative support mechanisms (participation in the CM, fixed feed-in premium, one-way CfD, RAB model) have been examined by the Belgian authorities but were considered as less appropriate (see section 3.3.4). As mentioned in recitals 290 to 293 of the Opening Decision, the Commission had several concerns regarding the CfD design, and many of the third-party respondents to the public consultation agreed with the Commission's view (see section 6.2.1.2):
- (a) The (initial) CfD design corresponded to the granting of a fixed remuneration per MWh of electricity actually produced and lacked appropriate incentives to produce electricity and schedule maintenance in line with market circumstances, which risks undue distortions of market operations.

- (b) In addition, the (initial) pre-defined modulation arrangement provided for only penalties when production of the LTO Units was not reduced when the electricity price is minus EUR 20 per MWh or lower for more than 6 hours, which would lead to the granting of aid at times of negative electricity prices.
- (c) The Commission was also not convinced at the time that the (initial) pain/gain sharing mechanism would have an impact in practice.
- (d) Finally, it was questioned whether the DAM price as MRP in the CfD formula was the most efficient choice, and whether it would not be more appropriate to also include a long-term product in the MRP.

(442) As a response to the Commission's concerns regarding the CfD design, Belgium made some modifications:

- (a) Belgium clarified first that, due to the old nuclear technology on which the LTO Units are based, it is impossible to make them very reactive to any market signals. As mentioned in section 2.1, Engie was itself open to being able to valorise the flexibility of the LTO Units in the energy markets in the context of the measure, while highlighting the consequent risks of shutdowns due to the reactors' modulations. At the same time, the Belgian nuclear safety authority imposed a limitation to the number of economic modulations per cycle. In order to respond to the concerns of the Commission and third parties as mentioned in recital 441(a), while keeping in mind the technical constraints of the plants, Belgium decided to modify the remuneration of the independent EMSA partner. Belgium included a variable component to the remuneration formula, so that the EMSA partner has incentives to sell the nuclear electricity as much as possible in line with market circumstances, while keeping in mind the modulation restrictions, as explained in section 3.3.1.5.2. Under this new set-up, to respond to the concerns in recital 441(b), the modulation arrangement has been dropped as it will be up to the EMSA partner to decide when it is appropriate to trigger an economic modulation. The EMSA partner will have the right incentives to call for an economic modulation when market prices are low or negative, since it will obtain a penalty when not doing so.
- (b) Regarding the concern in recital 441(c), Belgium intensified the MPRA mechanism, so that the remuneration under the CfD is kept closer in line with changing market circumstances (see section 3.3.1.3.2).
- (c) Regarding the concern in recital 441(d), Belgium kept the DAM price as MRP in the CfD formula for the reasons mentioned in recital 98. In particular, during the formal investigation phase, Belgium stressed the high risk and large impact of encountering unplanned outages, in particular during the Restart Phase of the LTO Project. This would make the output of the LTO Units in the first three years of production very uncertain and therefore having a long-term reference price in the CfD design would increase the risks of the plants.
- (d) Finally, Belgium also confirms that the CfD counterparty (BE-WATT) will develop a risk management strategy for its open position, as is legally foreseen, and that its implementation will contribute to liquidity to the forward electricity markets (see recital 99). The adoption of the strategy is subject to an advice of the regulator, which will include an assessment of the impact of the strategy on the relevant electricity markets (see recital 158).

(443) The Commission considers that the modifications related to the CfD design and its implementation as well as the commitment to develop a risk management strategy that will contribute to liquidity of the forward electricity markets are sufficient to resolve the doubts raised in the Opening Decision. The Commission acknowledges that the LTO Units are based on an old technology with limited flexibility, which constrains the capacities of the nuclear operator to modify the output of the plants on a regular basis. This is in contrast to newer nuclear technologies or other designs of nuclear plants (e.g. grey versus black control rods) which allow for load following. In view of the limited extension of 10 years, the Commission recognises that the technology has to be taken as a given, which limits the capacities of the nuclear operator to significantly modify the behaviour of the plants. In that view, the Commission appreciates the attempts of the Belgian authorities and Electrabel to align the production and

maintenance as much as possible to market circumstances, first, by having delegated the decision-making authority regarding economic modulations to the EMSA partner and by having changed its remuneration, and, second, by having switched from an 18-month to a 12-month fuel cycle to schedule maintenance as much as possible during the summer period. In that respect, also the intensification of the pain/gain sharing mechanism contributes to the objective of having the CfD remuneration as much as possible in line with market circumstances and contributes to a higher exposure to market risk. While support at times of negative prices still cannot be fully excluded, due to limited flexibility of the plants and safety concerns, the modified CfD design together with the modified EMSA remuneration formula reduces incentives to produce at times of negative prices. The Commission also recognises that, in particular during the Restart Phase of the LTO Project, there is a high risk of unplanned unavailabilities and outages so that exposure to long-term markets might entail additional risks, so that the DAM price is more suitable as MRP in the initial period of the LTO Project. The Commission also notes that the Belgian authorities have the freedom to adjust the MRP in the CfD design as well as the EMSA remuneration settlement after the three initial years of the project. Finally, the impact of the use of the DAM on the forward markets is reduced by the hedging strategy that will foster the liquidity of forward markets, and the impact on the intraday market is mitigated by the variable costs borne by the EMSA partner.

- (444) As a consequence, and in view of the specific circumstances of the present case, which concerns existing nuclear units running on the basis of an old technology with limited flexibility, the Commission considers that the modified CfD design together with the modified EMSA remuneration is appropriate.
- (445) Third, the Commission also raised concerns on the appropriateness of the SDC Loans and MOCP, which cover respectively shut-down period costs and operational cash flow shortfalls that may arise, in a way akin to a potentially unlimited grant, sheltering the JV from any operational risks. In addition, the MOCP provides a 50 % capital protection. Belgium submits that, absent the SDC Loans, WCF and minimum OPEX and capital payment, additional equity contributions would be necessary, since, in case of a single unavailability event, the JV shareholders would be exposed to insolvency risks and a funding gap, rendering the investment unprofitable.
- (446) As a response to the Commission's concerns regarding the SDC Loans and MOCP, Belgium provided further clarifications and adjusted these measures:
- (a) Belgium submits that the SDC Loans will in principle be repaid. Regarding the risk that the SDC Loans would not be reimbursed should cash inflows be insufficient (since they come after the repayment of shareholders' contributions), Belgium argues that this scenario is very unlikely and that the SDC Loans are not reimbursed only in case of a very negative scenario (see recital 132), i.e., if there were several years of substantial unavailability, e.g. less than 60 % in each year from 2029 to 2035. Although not unlikely, this risk is small and only materialises in extreme circumstances, that would imply a major or a series of major unexpected events for a long period of time, and eventually might imply the termination of the plant (see point (b)). This situation would be to the disadvantage of the shareholders: the SDC Loans will not be fully repaid if and only if the project does not generate sufficient profits to pay any returns on the shareholders' investment, therefore the SDC Loans do not disproportionately benefit the shareholders.
 - (b) Similarly, Belgium submits that the MOCP only kicks in in case of a very negative situation and that Engie still risks losing 50 % of its capital investment. However, to respond to the concern that the MOCP might end up in an unlimited grant, Belgium has put a cap on the MOCP payments. As explained in recital 121, the RA Counterparty (i.e. the Belgian State) will exercise its termination right(s) under the RA in case the MOCP reaches a paid-out amount of EUR 2 billion.
 - (c) Finally, Belgium provided additional information regarding the risk of having a significant unplanned unavailability event in the 10-year period of the lifetime extension, which has been shown not to be small (see recitals 114 to 118) and its effects to have a big impact on the profitability of the LTO Project (see Table 11).

- (447) The Commission therefore concludes that the SDC Loans and the MOCP are necessary and appropriate instruments in order to safeguard the viability of the LTO Project, in particular in the light of the particular circumstances of the present case, which concerns existing nuclear reactors, that are based on an old technology, and therefore subject to the risk of significant unplanned outages. In that perspective, given that the lifetime extension is limited to a period of 10 years, which limits the possibility to recoup significant losses, the MOCP provides a backstop to the JV by protecting it from operational risk. Without additional guarantees in the form of the MOCP and SDC Loans, a private investor would likely not take the risk of undertaking the LTO Project. Considering the potential scale of MOCP payments in the event of a prolonged shutdown of one of both the LTO Units, over several years, it seemed necessary to cap this mechanism at an amount that would correspond to market practices and that would allow sufficient time to restore normal operation of the LTO Unit(s). The Commission welcomes the limitation of the (potential) MOCP payments, so that the exposure of the Belgian State is at least quantified and known upfront.
- (448) Regarding the Belgian State's involvement in the JV, Belgium argues that this allows the Belgian State to co-control the project company, as the two shareholders enter into the JV under equal terms and conditions. It also enables the Belgian State to retain some degree of ownership over critical infrastructure. The Commission therefore concludes that the JV is appropriate.
- (449) Fourth, regarding the EMSA, the Commission considers it appropriate to choose a partner to sell the electricity produced by the LTO Units on the wholesale market, under the condition that this partner will act fully independently and not in the interest of Electrabel. The Commission however had doubts regarding the limitation of the sales to the day-ahead wholesale market. Belgium clarified that the EMSA partner has the freedom to sell the electricity generated by the LTO Units on any market and not being limited to the DAM (see recital 152). Belgium also confirmed that the EMSA partner will be selected through a competitive tender, and that safeguards will be put in place to ensure that Engie has no influence on the tender procedure or outcome (see sections 3.3.1.5.1 and 3.3.1.5.3). In addition, in case GEMS will be selected as EMSA partner, Belgium and Engie commit to put the necessary safeguards in place so that there will be no interference with the other trade activities by GEMS (see section 3.3.1.5.3). Therefore, the Commission finds the set-up of the EMSA agreement and the selection of the EMSA partner appropriate.
- (450) Finally, the Commission had concerns regarding the appropriateness of the combination of several remuneration mechanisms that come on top of the CfD and considered that the package of sub-measures under Component 1 can only be deemed appropriate insofar as they do not lead to undue, additional undue distortions of trade and competition. Since the Commission has no indications that the EMSA partner would not be operating independently, nor that Engie would be shielded from all market risks (through the adjusted MPRA mechanism, the cap on the MOCP and the 50 % capital risk), the Commission can conclude that all sub-measures under Component 1 can be considered, both individually as well as together, appropriate.

8.3.3.4.2. Appropriateness Component 2

- (451) As mentioned in recital 304 of the Opening Decision, the management of radioactive waste is characterised by long timelines and may therefore require some form of State intervention; the ultimate responsibility of the State regarding responsible and safe management of radioactive waste is set out in Article 4(1) of Directive 2011/70/Euratom.
- (452) The Commission therefore considers that the transfer of liabilities regarding nuclear waste and spent fuel to an independent public body, Hedera, is an appropriate means to grant more responsibility for the final disposal of spent fuel and radioactive waste to the Belgian State and to secure its funding over a long period of time. The Commission has also not identified any alternative measure or set-up, than the one described in section 3.3.2.2, that would allow Belgium to achieve these objectives equally well.

- (453) Regarding the transfer of additional decommissioning liabilities resulting from the LTO Project ('decommissioning dyssynergies'), as referred to in section 3.3.2.4, this transfer only covers the additional costs resulting from the LTO Project while the regular decommissioning and dismantling liabilities stay with the nuclear operator. The CPN/CNV indeed confirmed that there are dyssynergies impacting the decommissioning and dismantling costs and quantified the amount. Since, it was the Belgian Government, not Engie/Electrabel, requesting the lifetime extension, the Commission considers that the transfer of decommissioning dyssynergies, through a one-off lumpsum payment by the Belgian State, is appropriate.
- (454) Finally, the transfer of nuclear waste liabilities to the Hedera fund, a segregate public body securing the funds for their intended purpose and controlling the costs in relation to the transferred liabilities, both under the control of an independent government body (CPN/CNV), justifies the release of Electrabel's non-European assets from Electrabel's perimeter and ensures the appropriateness of the transfer of liabilities regarding radioactive waste and spent fuel.
- (455) The Commission therefore considers that Component 2 of the notified measure, including its sub-measures, is appropriate to address the market failure related to the uncertain costs of waste management and decommissioning.

8.3.3.4.3. Appropriateness Component 3

- (456) The Commission considers that nuclear technology is particularly subject to a political hold-up. Therefore, as already stated in recital 306 of the Opening Decision, the Commission considers an agreement on legal protections appropriate to address the market failure related to political and regulatory risks, as also recognised by the Commission in the decision in case SA.39487 ⁽¹⁴⁹⁾.

8.3.3.4.4. Conclusion on appropriateness of the measure

- (457) The Commission considers that the modifications on the measure, including a modification of the CfD design, the intensification of the MPRA and a cap on the MOCP, as well as the additional clarifications on the combination of sub-measures are sufficient to lead the Commission to conclude on the appropriateness of Component 1. The Commission also considers the specific circumstances of the case, which concerns an investment in existing nuclear plants based on an old technology and for a limited period of time. Regarding Components 2 and 3, the formal investigation has not brought forward evidence to deviate from the Commission's earlier conclusion that Components 2 and 3 are appropriate.
- (458) In light of the above, the Commission considers the sub-measures under Component 1, Component 2 and Component 3 as an appropriate way to support the LTO Project.

8.3.3.5. Proportionality

- (459) To assess the proportionality of a measure, the Commission must verify that the measure is limited to the minimum that enables the successful completion of the LTO Project for the attainment of the objectives pursued.
- (460) In the Opening Decision the Commission explained that the proportionality assessment must take into account the combination of support measures proposed by the Belgian authorities, i.e., the combination of Component 1, Component 2 and Component 3, including the combination of sub-measures within each component.
- (461) The Commission will first assess in the sections below whether Component 1, Component 2 and Component 3 of the notified measure, including their several sub-measures, are proportionate. The assessment of the combined proportionality of Component 1, Component 2 and Component 3, as well as their potential cumulative effects is provided in section 8.3.3.6.

⁽¹⁴⁹⁾ See also recital 103 in the Commission Decision in case SA.39487 (see footnote 25).

8.3.3.5.1. Proportionality of Component 1

- (462) As noted in recital 331 of the Opening Decision, the JDA++, O&M Agreement, ASA and the indemnification of cost coverage losses in case of no closing, were found to be concluded at market terms and can therefore be considered to be proportionate. As mentioned in recital 324 of the Opening Decision, the Commission acknowledged that the implementation of a competitive bidding process for the O&M Agreement may not be appropriate given the sensitivity and specific nature of the LTO Units, so that its proportionality may be assessed through the level of margin earned by Electrabel by executing the agreement, which should be set on market terms. Since the levels of margins set in the O&M Agreement are aligned with those applied under the LTO Partnership Agreement with Luminus, which is a relevant reference agreement since it covers similar services, the Commission found the O&M Agreement proportionate. Furthermore, the Commission did not receive any evidence to the contrary regarding the proportionality of the JDA++, O&M Agreement, ASA and the indemnification of cost coverage losses in case of not closing, during the public consultation on the case.
- (463) The JV was also considered proportionate in the Opening Decision since the Belgian Government and Electrabel will exercise their rights on an equal footing: the governance of the JV, as well as the costs and revenues will be equally shared.
- (464) In this section, the Commission assesses the proportionality of the internal rate of return (IRR) of the LTO Project, as well as the remaining financial sub-measures of Component 1 (MOCP, WCF, SDC Loans, Shareholder Loans). In order to ensure the proportionality of the State aid measure and avoid over-compensation, the State aid measure must ensure the minimum rate of return for the beneficiary to undertake the investment. In other words, the minimum rate that closes the funding gap of the Project. The funding gap is defined as the difference between the NPV of the factual scenario and of the counterfactual scenario, and it is at the same time the minimum amount of State aid needed for the measure to have an incentive effect on the firm and the maximum amount of State aid proportionate to trigger the investment.
- (465) The funding gap concept is deeply rooted in ordinary business decision-making. When profit maximising companies decide on whether to undertake a project, they assess the value generated by the project in question against alternative courses of action and choose the one with the highest expected return. Thus, for companies to be willing to undertake a project that is not the one with the highest expected return, they may need to be incentivised by means of State aid covering the funding gap.
- (466) In order to identify which part of the different enhancement is attributable to the impact of the intervention, since such improvement might occur not only due to the LTO Project but also due to other factors, Belgium provided a counterfactual scenario, which was not at the Commission's disposal at the time of the Opening Decision ⁽¹⁵⁰⁾. In that case, the counterfactual scenario is a scenario where no lifetime extension of the LTO Units would take place, which would be the case if no agreement is concluded with the Belgian Government. In the counterfactual analysis, the outcomes of the intervention are compared with the outcomes that would have been achieved if the intervention had not been implemented. In such situation, Electrabel would: (i) continue to operate the nuclear reactors until their original legal end dates and (ii) keep all waste-related liabilities. The Belgian Government provided the financials related to this point, namely the specified forecasted undiscounted ⁽¹⁵¹⁾ free cash flows related to the operations of the Belgian nuclear units for their remaining lifetime (until their legal end dates in 2025). Belgium submits that the cash flows of the LTO Units for the remaining duration of the legal lifetime remain unchanged with or without the LTO Project.
- (467) There were three main concerns in relation to the proportionality of Component 1 in the Opening Decision, that are relevant for the Commission's assessment:
- (a) the MOCP and the terms of the WCF, Shareholder Loans and SDC Loans (see section 8.3.3.5.1.1);
 - (b) the target IRR of 7 % underlying the financial model (see section 8.3.3.5.1.2); and
 - (c) the EMSA agreement (see section 8.3.3.5.1.3).

⁽¹⁵⁰⁾ The counterfactual analysis referred to in the Opening Decision refers to the scenario in which Engie would undertake the LTO Project without having reached an agreement with the Belgian Government.

⁽¹⁵¹⁾ The free cash flows were not discounted as there is less than one year of operation remaining to the legal end date.

8.3.3.5.1.1. Proportionality of the financial support measures of Component 1

- (468) First, as mentioned in the Opening Decision, the Commission considered that the MOCP in effect provides a backstop to the JV as any revenue shortfall stemming from a lack of electricity generation occurring during the initial period and the run-phase period will be covered by a payment of the Belgian State, thus financially sheltering the JV from any operational risk. The main issue of the MOCP was related to the fact that it could *de facto* represent an almost unlimited grant to BE-NUC in case of long unplanned periods of unavailability of the LTO Units. Theoretically, if a major unexpected event or a series of major unexpected events lead to prevent the LTO Units from producing electricity for the 10-year duration of the LTO Project, the MOCP could get triggered as high as EUR [7 000-8 000] million. Belgium provided additional clarifications regarding the non-negligible probability that such significant unplanned outage events would occur (see recitals 114 to 118), and the consequences it could entail (see Table 11) and Belgium committed to limit the MOCP payment to EUR 2 billion (see recital 121). This amount, which appears in line with the industry's practices regarding levels of guarantee, corresponds to the upper bound of a scenario when both LTO units are simultaneously unavailable for two consecutive years. In view of the plant's extension period (limited to 10 years), two years was considered the maximum length of time that could be dedicated to identifying and resolving a problem or a series of problems, in accordance with their significance, before considering the possibility to terminate the plant. The Commission therefore considers the capped amount of the MOCP is proportionate.
- (469) Second, regarding the SDC Loans, Belgium submits that, until 2028, the SDC Loans cover the costs during the period when the LTO Units are not scheduled to generate net income, and are repayable to the Belgian Government, which ensures that the aid is minimised. As mentioned in the Opening Decision, the Commission had concerns about the repayment of the SDC Loans, since, in practice, the SDC Loans constitute a line of financing junior to all other loans, as well as to the JV's equity. This implies that they may not be repaid at the end of the LTO period should the electricity generation not be large enough, thus bearing substantial risk that the interest rate, set at the lower of the OLO (five year) ⁽¹⁵²⁾ rate in Belgium plus 200 basis points and 6 %, may not reflect. Belgium clarified that the SDC Loans will not be repaid only in case of a very negative scenario, so that the risk that they are not reimbursed to the Belgian State is very small (see recital 132). In particular, Belgium highlighted that in such very negative scenario there would also not be any return on the capital contribution. Indeed, the risks of the SDC Loans only relate to the risks of the project's performance and profitability, as the SDC Loans are not used to finance the capital expenses. Concerning the interest rate, it is capped at the maximum level that would not exceed the target IRR range under the MPRA of 6 %-8 %. The Commission therefore considers that the terms and conditions of the SDC Loans are proportionate. Should the final terms and conditions of the SDC Loans amend the notified measure as presented in this Decision, Belgium commits to notify them to the Commission.
- (470) Third, as regards the terms of the WCF and Shareholder Loans, Belgium clarified during the formal investigation procedure that these will be procured on market terms, at interest rates that have not yet been set, but would be set by reference to prevailing market rates and any comparable third-party debt financing available at the relevant time. A term sheet has been prepared setting the terms and conditions of both Shareholder Loans and describing the methodology to set the interest rate. Belgium clarified that this methodology is consistent with Engie's transfer pricing loan policies and is in line with the OECD BEPS principle, ensuring that the interest rate is set at an arm's length level. Pursuing to the term sheet, the interest rate is expected to be a floating interest rate, set at the EURIBOR 6-month rate plus an expected margin of approximately [0-3] %. The Commission notes that the margin added to the EURIBOR 6-month rate will be estimated from the [...] which is a widely recognised and used tool to estimate margin spreads on the basis of criteria such as the maturity, credit worthiness, and currency of the loan and the borrower. Concerning the rating that will be considered for the JV when estimating the margin spread, in the absence of a formal rating for BE-NUC from a credit rating agency, Belgium estimates it by considering the lowest credit rating of the entity's shareholders. These are the Belgian State (Moody's rating of Aa3 ⁽¹⁵³⁾) as confirmed on

⁽¹⁵²⁾ This matches the estimated duration of the SDC Loans (5 years).

⁽¹⁵³⁾ Equivalent to AA- using S&P and Fitch rating terminology.

the Belgian government website ⁽¹⁵⁴⁾, S&P rating of AA and Fitch rating of AA- as confirmed on the Belgian government website and also checked by the European Commission on the S&P Capital IQ Pro portal ⁽¹⁵⁵⁾ on 16 January 2025) and Electrabel (Moody's rating of Baa1 ⁽¹⁵⁶⁾ as per publicly available report of 10 July 2024 ⁽¹⁵⁷⁾ and Fitch rating of BBB+ as per publicly available information on Fitch website ⁽¹⁵⁸⁾). This is a standard approach, particularly considering that the LTO Units constitute a core activity of Electrabel, further supported by an uncapped parent company guarantee from Engie (Moody's rating of Baa1 ⁽¹⁵⁹⁾ and Fitch rating of BBB+ ⁽¹⁶⁰⁾), and considering the equity structure of the JV. The Commission therefore considers that the terms and conditions of the WCF and Shareholder Loans are proportionate. Should the final terms and conditions of the WCF and Shareholder Loans amend the notified measure as presented in this Decision, Belgium commits to notify them to the Commission.

- (471) Given the insertion of a cap on the MOCP and the additional clarifications on the SDC Loans and the terms of the WCF and Shareholder Loans, the Commission considers that the MOCP, WCF, SDC Loans and Shareholder Loans are proportionate.

8.3.3.5.1.2. Proportionality of the target return of 7 % (on which the CfD is based)

- (472) As part of the RA, a two-way CfD will apply between the parties. The Commission assessed the methodology for setting the strike price, including by checking the parameters fed into the financial model which determines the strike price level. As mentioned in recital 71, in the base case scenario of the Signing Financial Model which underlies the Implementation Agreement signed on 13 December 2023, Belgium assumes that the costs to modernise the two reactors amount to EUR [2-2,5] billion of capital expenditures, which would result in a strike price of EUR [80-90] per MWh to ensure an internal rate of return of 7 % over the lifetime of the LTO Units. In other terms, discounting the free cash flows at a post-tax rate of 7 % would result in a NPV of zero, showing proportionality of the IRR and closing the funding gap. Moreover, Belgium submits that the RA includes a pain/gain sharing mechanism (MPRA) through which Engie partly shares risks with the Belgian state when market prices turn out to be lower or higher than expected in the base case scenario. At lower prices, the target return (in the form of a lower strike price) drops from 7 % to 6 %, while at higher prices, the target return (in the form of a higher strike price) rises to 8 %.

- (473) During the formal investigation procedure, Belgium provided additional explanations for why the target rate of return of 7 % and the range of 6 to 8 % is proportionate, showing that the aid amount is limited to the minimum needed to bridge the funding gap.

- (474) First, Belgium modified the CfD design so that electricity production from the LTO Units is better in line with market signals and no incentives are provided to the EMSA partner to sell electricity at negative prices. As mentioned in section 8.3.3.4.1, the Commission considers that the modified CfD design is indeed appropriate.

⁽¹⁵⁴⁾ See <https://www.debtagency.be/en/datafederalstaterating>.

⁽¹⁵⁵⁾ Only S&P and Fitch rating, when available, are shown on the S&P Capital IQ Pro portal accessible by the European Commission.

⁽¹⁵⁶⁾ Equivalent to BBB+ using S&P and Fitch rating terminology.

⁽¹⁵⁷⁾ See https://www.engie.com/sites/default/files/assets/documents/2024-07/Credit_Opinion-Electrabel-SA-Update-to-credit-10Jul2024-PBC_1410170.pdf.

⁽¹⁵⁸⁾ See <https://www.fitchratings.com/entity/electrabel-sa-96533890>.

⁽¹⁵⁹⁾ Baa1 is equivalent to BBB+ under S&P and Fitch credit rating terminology. https://www.engie.com/sites/default/files/assets/documents/2024-07/Credit_Opinion-ENGIE-SA-Update-to-credit-03Jul2024-PBC_1409724.pdf.

⁽¹⁶⁰⁾ See <https://www.fitchratings.com/entity/engie-sa-80361337>.

- (475) Second, Belgium updated the benchmarking exercise to conclude that the profitability range of 6 %-8 % is in line with industry benchmarks, namely the IRR of 7 % corresponds to a premium of approximately 4 % above the risk-free rate of approximately 3 % (see section 3.3.1.3.1.1). The international benchmark analysis that was provided by Belgium uses, to the extent possible, comparable companies and projects. Given that the nuclear sector relies on very specific and tailor-made financing, often with strong government involvement, proposing a benchmark of exactly equivalent mechanisms appears unrealistic. In fact, Belgium recognised that the variety of market and regulatory frameworks, risk profiles, as well as company and project characteristics, hinders the development of a fully comparable set of companies or projects. However, the examples proposed by Belgium can be considered relevant as they rely on companies and projects holding nuclear assets across various geographies, which mobilise financing mechanisms that are closest to those of the Project. On the IRR of 6 % to 8 %, it appears that, as for most projects with both comparable ranges and financial protective measures, the parameters retained by Belgium are on the lower end of the scale.
- (476) Third, Belgium modified the MPRA mechanism, so that the adjustment of the IRR occurs faster in line with market circumstances (see section 3.3.1.3.2). By adjusting the steps of the MPRA from 30 % to 20 %, leading to an intensification of the mechanism, it will result in a faster downward movement of the IRR when market price is lower than the strike price, or in a faster upward movement of the IRR when market price is higher than strike price. All other things being equal, this would lead to a stronger impact on the IRR of the JV in case of changes in market prices within the price range.
- (477) Fourth, based on the updated MPRA and current market price projections, Belgium calculated the actual rate of return BE-NUC would obtain today, which would amount to 6,5 % which is 0,5 basis points lower than the target rate of 7 %, and lying at the lower end of the 6 %-8 % range. This assessment is based on the evolution of the electricity markets since the signing of the agreement (2023), and the fact that projections for 2025-2035 would have decreased. The Commission notes that these assessments are in line with current EEX quotes. As of 16 January 2025, average price projections are the following: 79,72 EUR/MWh per 2025, 80,23 EUR/MWh per 2026, 75,75 EUR/MWh per 2027, 64,99 EUR/MWh per 2028 ⁽¹⁶¹⁾.
- (478) Fifth, Belgium compared the target IRR with the theoretical cost of capital, based on two widely accepted methodologies, namely the weighted average cost of capital (WACC) and the cost of equity (unlevered CoE). Belgium computed the WACC, which lies in the range of 6,2 %-7,4 %, and the unlevered CoE, which lies in the range 6,2 %-7,5 %. In this context, to further confirm whether the target IRR is proportionate, the Commission compared Belgium's target WACC to a market based WACC range ⁽¹⁶²⁾. A target IRR higher than the range means a disproportionately high return, a target IRR lower than the range means a disproportionately low return (i.e., a return that a market investor would not accept). To estimate a theoretical WACC range on the basis of market data, the Commission relies on the standard WACC formula, also used by Belgium and described in section 3.3.1.3.1.2.1.
- (479) For the CoE, the Commission relied on the standard CAPM formula, also used by Belgium and described in section 3.3.1.3.1.2.2, by estimating each of its components on the basis of market data as explained as follows.
- (480) For the risk-free rate, in line with the Belgian approach, the Commission relies on the yields on the 10-year Belgian government bond (OLOs) that can well approximate the Euro-denominated risk-free factor in the sovereign credit rating of Belgium and be consistent with the project duration of 10 years. Regarding the averaging period, the Commission considered both a 6-month and 12-month trailing average amounting to, respectively, 3,01 %

⁽¹⁶¹⁾ See <https://www.eex.com/en/market-data>.

⁽¹⁶²⁾ Given that the market parameters used for the unlevered CoE and the WACC are the same, the Commission will focus on the WACC calculation in this section.

and 3,03 % as of September 2024 ⁽¹⁶³⁾. The estimated range of the risk-free rate therefore falls within the lower and upper estimates computed by Belgium of 2,8 % and 3,11 % (based on the 12-month trailing average for mid-2023 and end-2023 respectively). These estimates are also in line with the average risk-free rates used in Belgium according to Fernandez et al. data ⁽¹⁶⁴⁾ for the beginning of 2024.

- (481) For the market risk premium, Belgium assumes a range between 5,27 % and 5,75 %, on the basis of Damodaran's and Kroll's data (see Table 8). These databases are widely recognised and relied upon in the finance and business world. The Commission finds these sources reliable and assumes in its low scenario the average of Damodaran's data (5,27 %) and in its high scenario Belgium's conservative figure of 5,75 %. For its baseline scenario, the Commission considered a third widely recognised and relied upon data source, namely the yearly survey data published by Fernandez et al ⁽¹⁶⁵⁾, estimating the market risk premium at 5,7 % at the beginning of 2024. For conservativeness reasons, the Commission considers the average of the three sources (Damodaran, Kroll, and Fernandez), which is 5,57 %, for its baseline scenario.
- (482) For the unlevered beta, the Commission assessed both methodologies put forward by Belgium which are based on the simple average and the median of five peer utility companies' leverage (debt/equity) and betas estimated as 5-year trailing averages as of mid-2023 with daily frequency. The Commission considers this methodology and the data source (Bloomberg) in line with widely recognised methodologies ⁽¹⁶⁶⁾. For its baseline scenario, the Commission takes the average of the lower ([0,40-1,00]) and upper ([0,40-1,00]) estimates for its baseline scenario ([0,40-1,00]). For the process of un-levering and leveraging the beta estimates, in line with Belgium, the Commission also relies upon the Hamada approach (as described in Table 6) and uses, for conservativeness reasons, the lower bound of Belgium's estimate for the target leverage (debt/equity) of 53 %.
- (483) For the gearing ⁽¹⁶⁷⁾, the Commission notes that the range of 34,6 %-35,2 % (see Table 6) is derived from the target leverage ranging from 53 % and 54,5 % based on peer companies used for the beta estimates as described in recital 482. For conservativeness reasons, the Commission uses the lower bound of the estimates in its baseline scenario ⁽¹⁶⁸⁾.
- (484) For the pre-tax cost of debt estimations, Belgium employs a widely recognised methodology consisting in adding to the risk-free rate a corporate spread (based on the company's operating industry). In line with this methodology, for its baseline scenario, the Commission adds to the risk-free rate of 3,03% (Baseline scenario) the average of the beginning-2023 and the beginning-2024 corporate spreads of, respectively, 2,69% and 2,17% ⁽¹⁶⁹⁾.

⁽¹⁶³⁾ Data retrieved from S&P Capital IQ Pro on 4 September 2024.

⁽¹⁶⁴⁾ Widely recognised data source. Prof. Fernandez et al. publish a survey on the market risk premium and risk-free rate used for many countries on a yearly basis. 2024 survey available here, showing an average risk-free rate of 3,1 %. Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024 by Pablo Fernandez, Diego Garcia de la Garza, Lucía Fernández Acín - https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4754347.

⁽¹⁶⁵⁾ Widely recognised data source. Prof. Fernandez et al. publish a survey on the market risk premium and risk-free rate used for many countries on a yearly basis. 2024 survey available here, showing an average market risk premium of 5,7 %: Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024 by Pablo Fernandez, Diego Garcia de la Garza, Lucía Fernández Acín :: SSRN.

⁽¹⁶⁶⁾ Using a 5-year trailing average with a daily frequency allow to smooth out short-term volatility and provide a more stable measure of risk.

⁽¹⁶⁷⁾ The gearing (debt/total capital) is derived from the target leverage used in the process of un-levering and leveraging the beta estimate as described in section 3.3.1.3.1.2. The gearing is calculated as (target leverage/(1+target leverage)).

⁽¹⁶⁸⁾ The gearing is also broadly in line with industry information provided by Damodaran, who estimates an average gearing of 39,25 % for the power sector for 2023 (figures published in January 2024, available at https://pages.stern.nyu.edu/~adamodar/New_Home_Page/dataarchived.html#capstru).

⁽¹⁶⁹⁾ From Damodaran's website, page 'Archived data' (https://pages.stern.nyu.edu/~adamodar/New_Home_Page/dataarchived.html#discrate), files for 1/24 and 1/23 for Europe under section 'Cost of Capital by Industry'.

- (485) The Commission's conclusions on the WACC are shown in Table 17 below. The table shows three WACC scenarios, which are the result of three sets of assumptions: 'Belgium Low', Commission 'Baseline' scenario, and 'Belgium High'.

Table 17

Presentation three WACC scenarios

Scenarios (*)	Belgium Low	COM Baseline	Belgium High
Risk-free rate	2,8 %	3,0 %	3,1 %
Market risk premium	5,3 %	5,6 %	5,8 %
Levered Beta	[0,40-1,00]	[1,00-1,60]	[1,00-1,60]
Pre-tax cost of debt	5,5 %	5,5 %	5,3 %
Gearing	34,6 %	34,6 %	35,2 %
Tax rate	25 %	25 %	25 %
WACC	6,5 %	7,0 %	7,2 %

(*) Numbers rounded to the first decimal.

- (486) The WACC parameters shown in Table 17 result in a WACC of approximately 7,0% under the Commission Baseline scenario and within the range estimated by Belgium under the Low and High scenarios. The target IRR of 7 % is within this range. It should be noted that:

- (a) these figures do not include any specific nuclear risk premium or other premia such as illiquidity premium to reflect the risk mitigation provided by the different measures described in the sections above ⁽¹⁷⁰⁾.
- (b) the Belgian 'Low' scenario beta and gearing estimate are based on the simple average of the peer companies selected. However, in particular concerning the beta, in its additional explanations on the range of the cost of capital estimates provided in December 2024 as discussed in section 3.3.1.3.1.2, Belgium highlights that a simple average of comparable betas would underestimate the market risks of a utility exposed to some nuclear generation, as it assigns the equal weight to companies with various portfolio compositions ⁽¹⁷¹⁾. For this reason, Belgium submitted slightly revised unlevered beta estimates by taking the simple average of all peers except for the one with the lowest nuclear generation mix in its assets, yielding the value of [0,40-1,00] and by taking the average between the unlevered betas of two companies with the highest nuclear exposure, yielding the value of [0,40-1,00]. The Commission recognises the validity of the remarks raised by Belgium. Should the average ([0,40-1,00]) of the two unlevered beta estimates be considered for the WACC under the Commission baseline scenario, the WACC would result in a slightly higher estimate of 7,12 %.
- (c) under the revised market (electricity) price projections as mentioned in section 3.3.1.3.1.3, the estimated realised IRR is actually 6,5 %.

- (487) Finally, as mentioned in recital 318 of the Opening Decision, the proportionality of the financial sub-measures of Component 1 is linked to their appropriateness. As mentioned in section 8.3.3.4.1, the Commission concluded that the package of financial sub-measures of Component 1 can be considered appropriate to address the market failures and risks related to nuclear investments.

⁽¹⁷⁰⁾ Which is in line with the Dukovany decision.

⁽¹⁷¹⁾ See Belgium, December 2024, 'SA.106107 Supplementary note - Additional explanations on the range of cost of capital estimates': For instance, Iberdrola (with unlevered beta of [0,00-0,60]) had 5 % of its installed capacity in nuclear assets and 14 % of its generation was coming from nuclear. At the same time, 53 % of Fortum's total generation was nuclear, and its beta stood at [0,40-1,00].

- (488) For the reasons mentioned above, the Commission considers that Belgium has sufficiently demonstrated the proportionality of the CfD design and the underlying IRR.

8.3.3.5.1.3. Proportionality of the EMSA agreement

- (489) Finally, Belgium confirmed during the formal investigation procedure that a tender for the selection of the EMSA partner will be organised and clarified in more detail the selection criteria and conditions applying to the EMSA partner (see section 3.3.1.5.1). The Commission considers that the bidding process is competitive, namely open, clear, transparent, non-discriminatory, and based on objective criteria which have been defined ex ante in accordance with the objective of the measure and the minimising the risk of strategic bidding. The selection criteria were also published on the relevant Belgian and EU platforms and sufficiently far in advance of the deadline for submitting applications to enable effective competition. Indeed, Belgium implemented additional provisions and safeguards to ensure that the objectives of the EMSA will be attained and that the expected services will be delivered adequately (e.g., RFI, RFC, as explained in section 3.3.1.5.1).
- (490) Belgium also took measures to effectively identify and prevent any potential conflicts of interest with Engie during the set-up of the tender procedure.
- (491) To respond to the concerns of the Commission in recital 328 of the Opening Decision, Belgium also modified the CfD design by granting the decision-making authority regarding economic modulations to the EMSA partner, which has - through the modified remuneration formula - the right incentives to take economic modulation decisions in line with market circumstances, ensuring optimal dispatch and maintenance of the LTO Units, as well as reduced incentives to produce at times of negative prices (see section 8.3.3.4.1). As a consequence, the Commission considers that the EMSA partner will not be incentivised to offer the full capacity of the LTO Units on the DAM at the lowest price allowed.
- (492) The modified remuneration formula of the EMSA partner also takes the right balance between the increased risks of shutdowns and maintaining the right incentives for the EMSA partner to strive to be balanced. Therefore, the Commission considers that the EMSA tender will attract sufficient bidders.
- (493) In addition, Belgium has clarified that specific provisions and measures have been foreseen in case of GEMS' participation and selection in the tender or in case GEMS has to temporarily act as EMSA partner in case of an unsuccessful tender procedure (see section 3.3.1.5.3). The Commission considers that these measures are sufficient to ensure the independency of the EMSA partner in all circumstances.
- (494) For the reasons set out above, the Commission considers that Belgium has sufficiently demonstrated the proportionality of the EMSA.

8.3.3.5.2. Proportionality of Component 2

- (495) In order to determine whether the transfer of nuclear waste and spent fuel liabilities is proportionate, the Commission has verified whether the terms at which the transfer of nuclear waste and spent fuel liabilities takes place are defined in such a way that the risk of cost overruns affecting the State, and the related uncertainty are reduced as much as possible. Due to the nature of radioactive waste management and the remaining uncertainty as to the site selection and the costs of disposal, this might not go as far as to entirely exclude any possibility of cost overruns, as recognised in previous Commission decisions concerning nuclear waste and spent fuel liabilities (see footnote 149).
- (496) The Commission has also pointed out in previous cases, that radioactive waste management is characterised by long timelines, which may require some form of state intervention. Belgium also submits that the need for state intervention to ensure responsible and safe management of radioactive waste is enshrined in Article 4(1) of Directive 2011/70/Euratom, which provides for the ultimate responsibility of the State in this regard, as well as in the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Belgium argues that State intervention might be justified in order to avoid the risk of a heavier future burden on the State if no action is taken.

- (497) Belgium has also submitted that, in line with the 'polluter pays' principle laid down in Euratom Recommendation 2006/851, the Belgian nuclear operator has set aside adequate financial resources for the cost of managing spent fuel and radioactive waste during the productive life of the seven nuclear reactors. Regular review of the adequacy of these financial resources has been done by the CPN/CNV. In addition, Belgium argues that the current waste deal continues to respect the 'polluter pays' principle and meets the requirements referred to in Articles 4(3), point (e), and 5(1), point (f), and Article 9 of Directive 2011/70/Euratom, for the following reasons:
- (a) The nuclear operator remains responsible for decommissioning obligations and activities to bring radioactive waste and spent nuclear fuel in line with the contractual transfer criteria. Furthermore, Belgium argues that these CTC can be considered very strict, further limiting the risk taken by the Belgian State. The State also bears no financial or other responsibility for the pre-transfer management part, which is done by the nuclear operator.
 - (b) The volume of waste has been defined upfront and the nuclear operator bears the volume risk if more waste is produced than agreed upon, through the volume adjustment fee, while no refund is provided if less waste is created.
 - (c) A risk premium has been included in the lump sum payment to cover uncertainties for which, in accordance with IAS 37 (International Accounting Standards), no provisions had yet to be made.
 - (d) The payment of the lump sum of EUR 15 billion by Electrabel occurs immediately rather than over a period of several decades and is managed and invested by an independent public body (Hedera), securing the funds for their intended purpose and controlling the costs in relation to the transferred liabilities, both under the control of an independent government body (CPN/CNV). This ensures that the financial resources are available when the final disposal of radioactive waste becomes operational, and reduces the risks related to potential insolvency of Electrabel. Through the upfront lump sum payment of the Capped Amounts the Belgian State will already have the financial resources at its disposal and will no longer depend on the existence of a private nuclear operator in a distant future.
- (498) The Commission acknowledged in recitals 337 to 340 of the Opening Decision the fact that there are many positive features characterising the waste deal agreed between Belgium and Engie, such as: (i) the immediate cash payment, based on the current nuclear provisions (certified by international accountants) and including a risk premium, which insures the Belgian State against potential insolvency of the nuclear operator, (ii) the inclusion of the volume adjustment fee in case the amount of nuclear waste would be higher than currently foreseen, and (iii) the inclusion of strict contractual transfer criteria.
- (499) The Commission considers that the transfer of nuclear waste liabilities to the Hedera fund, a segregate public body securing the funds for their intended purpose and controlling the costs in relation to the transferred liabilities, both under the control of an independent government body (CPN/CNV), justifies the release of Electrabel's non-European assets from Electrabel's perimeter (and the accompanying monitoring of the CPN/CNV), and ensures the proportionality of the transfer of transferred liabilities regarding radioactive waste and spent fuel, given that it has been assessed that at least EUR 4 billion of assets is at closing of the transaction in the Electrabel perimeter. Furthermore, as already mentioned in recital 334 of the Opening Decision, the release can be considered proportionate since Engie grants an unlimited and non-cancellable parent company guarantee covering: (i) Electrabel's decommissioning obligations (which also includes the risk that the value of the provisions is insufficient), (ii) the volume risk under the Waste Cap agreement, and (iii) the repayment of loans with Synatom.
- (500) Finally, Belgium also clarified that the Signing Financial Model considers the LTO Waste and the LTO Spent Fuel management or back-end costs, estimated at approximately EUR 0,9 million per assembly (in 2022 values) (see recital 177), so that these values of the waste can be attributed to the lifetime extension period only and are not considered in the waste deal.

- (501) There were three main outstanding issues in relation to the proportionality of Component 2 in the Opening Decision, that are relevant for the Commission's assessment:
- (a) the height of the discount rate to calculate the present value of the transferred nuclear waste liabilities, potentially not reflecting the very long-term risks related to a complete transfer of all waste liabilities to the Belgian State (as mentioned by the CPN/CNV in its advice);
 - (b) the height of the risk premium; and
 - (c) the value of the transfer of additional decommissioning liabilities resulting from the LTO Project, which was not yet known at the time of the assessment in the Opening Decision.
- (502) First, to compute the present value of the nuclear waste and spent fuel liabilities, Belgium chose for a unique nominal discount factor of 3 %, based on a 2 % inflation rate and a 1 % real rate, in contrast to the CPN/CNV's advice to apply a two-step approach, whereby a discount rate of 3,17% is used for the first 30 years (based on the 30-year OLO rate) and a discount rate of 2,17 % is used for the period thereafter (based on the risk-free rate). The Commission questioned why Belgium diverted from the CPN/CNV approach.
- (503) As explained in section 3.3.2.3.1, Belgium explained that the discount rate of 3 % is a conservative long-term rate, by comparing it with the simulated unique rate equivalent to the two-step approach of the CPN/CNV (calculated at different points in time) and the Ultimate Forward Rate ('UFR') of EIOPA. As shown in Table 14, comparing the 3 % discount rate with these other reference rates taken at different point in time since the signing of the Implementation Agreement, the 3 % rate is situated at the lower end of the range of references.
- (504) The 3 % rate is also in line with the Belgian 30-year OLO rate and it would be the best available estimate, in line with market practice, given the extended time period and given that the 3 % is already on the lower bound of the various estimates. It is also considerably lower than the discount rate of 4,58 % used by Germany in a similar case and approved by the Commission in case SA.45296.
- (505) Belgium assumes in the calculation of the Waste Cap a constant inflation rate of 2 %, which is the long-term inflation target of the ECB. The CPN/CNV expressed concerns that the actual inflation of nuclear construction costs (based on the ABEX index) might be higher than the 2 % inflation target of the ECB (see recital 278). Belgium argues that the 2 % ECB inflation target is the correct proxy of inflation for the Waste Cap calculation, since: (i) the ABEX index is only a weak proxy for nuclear construction costs as it only covers residential construction and (ii) the underlying structural trends of the ABEX index and CPI index are similar. The Commission agrees with Belgium's reasoning to take as relevant inflation rate the ECB target rate of 2 % in line with market practice.
- (506) Therefore, the Commission concludes that a discount rate of 3% can be considered conservative and therefore proportionate.
- (507) Second, regarding the height of the risk premium, Belgium clarified that to the base amount of EUR 9 815 million a significant additional risk premium of EUR 5 185 million, has been added to cover remaining uncertainties, based on a technical note by ONDRAF/NIRAS.
- (508) Belgium clarified during the formal investigation phase how the uncertainties and risks associated with the transfer of financial responsibility for the management of radioactive waste and spent fuel from the seven Belgian nuclear power plants to the Belgian State, as identified in the ONDRAF/NIRAS note, were taken into account in the calculation of the risk premium (see Table 15).
- (509) The Commission acknowledges that it is not straightforward to quantify all these risks and to assess their likelihood. Nevertheless, the Commission considers that the risk premium in the Waste Cap agreement is meant to cover all the 'less-likely-than-not' risks as identified in the ONDRAF/NIRAS note and therefore considers the risk premium of EUR 5 185 million proportionate.

(510) Third, regarding the calculation of the amount of decommissioning dyssynergies, the Commission takes note of the advice by the CPN/CNV to reduce the amount proposed by Engie to EUR [100-500] million (in nominal terms) (see recital 200) and considers this amount as proportionate.

(511) In light of the above reasoning and additional clarifications provided by Belgium, the Commission considers that Component 2 of the measure is proportionate.

8.3.3.5.3. Proportionality of Component 3

(512) The provisions on legal protections concluded with Engie provide that the Belgian State will indemnify Engie for the direct losses it actually incurs, whenever new regulations concerning nuclear operators in Belgium or Electrabel's nuclear activities are adopted which have a negative impact on the terms of the transaction.

(513) In the event of a unilateral act by the Belgian State resulting in the premature shutdown of the Doel 4 and Tihange 3 nuclear reactors or the modification of the economic parameters set out in the agreements, the owners of the nuclear power stations can activate compensation clauses included in the agreements and apply to a court or an arbitral tribunal for compensation. The claimant must prove its claim and the amount of compensation is not determined by the Belgian State or by the owners of the nuclear reactors, but by a third party.

(514) As already mentioned in the Opening Decision, the procedure before a court or an arbitral tribunal to determine the amount of damage to be compensated should ensure that the amount of aid is kept to a minimum and therefore proportionate.

8.3.3.5.4. Conclusion on the proportionality of the measure

(515) The Commission considers that the modifications on the measure, including a modification of the CfD design, the intensification of the MPRA and a cap on the MOCP, as well as the additional clarifications on the combination of sub-measures are sufficient to make the Commission conclude on the proportionality of Component 1. The Commission hereby also considers the specific circumstances of the case, which concerns an investment in existing nuclear plants based on an old technology and for a limited period of 10 years. In addition, the Commission considers the additional clarifications on the computation of the discount rate and the risk premium sufficient to be able to conclude on the proportionality of Component 2 of the measure. Finally, regarding Component 3, the formal investigation has not brought forward evidence to deviate from the Commission's earlier conclusion that Component 3 is proportionate.

(516) In light of the above, the Commission considers the sub-measures under Component 1, Component 2 and Component 3 as a proportionate way to support the LTO Project.

8.3.3.6. Combination of the three components and potential cumulative effects

(517) Belgium submitted, as a response to the Opening Decision (see section 4.4.4), that Components 1, 2 and 3 of the measure, although serving the same purpose of the lifetime extension of the LTO Units and having been entered into at the same moment in time, differ in terms of subject matter and nature, purpose and beneficiaries, so that all components and sub-components of the measure can be considered as complementary to one another, which limits any potential cumulative effects to arise.

- (518) Regarding the claims made by Belgium (see recitals 517 and 419) that each of the three components of the LTO Project deals with a specific risk or specific set of risks and specific market failures as mentioned in recital 418, the Commission acknowledged in previous decisions concerning nuclear energy that the combination of those specific risks and market failures is unique to nuclear technology ⁽¹⁷²⁾, and constitutes a general feature of all EU markets, including the Belgian electricity market.
- (519) The Commission considers that each of the three components of the measure covers a separate risk and market failure and that there are no overlaps in this respect between the three components. Therefore, the Commission concludes that in order to cover all the identified risks related to nuclear technology (technical and project management risks, market and investment risks, long-term risks related to nuclear waste management and decommissioning and dismantling of nuclear power plants, regulatory and policy risks) the combination of the three components of the measure (Component 1, Component 2 and Component 3) is necessary and appropriate.
- (520) Regarding the proportionality of the combined set of measures, the Commission considered in the Opening Decision that Belgium had not sufficiently demonstrated the impact of the three components of the measure on each other, in particular regarding the proportionality of the combined set of all sub-measures.
- (521) Belgium clarified during the formal investigation that, on the one hand, the financial model on which the financial support measures of Component 1 are based, includes the additional costs related to the operational waste and spent fuel produced by the LTO Units during the LTO Period as well as the amount of decommissioning dyssynergies (borne by the Belgian State), while, on the other hand, the waste deal concerns not only the LTO Units, but all seven nuclear reactors in Belgium and takes into account all nuclear provisions to be made until the original legal end dates of the seven nuclear reactors (see section 3.3.2.5). Therefore, the Commission agrees that, where needed, the costs of nuclear waste and spent fuel have been considered in the financial model of Component 1 on which the calibration of the financial sub-measures of Component 1 is based, while the biggest part of the waste deal in Component 2 (considering the transfer of liabilities related to nuclear waste and spent fuel until the original legal end date of the seven nuclear reactors) does not overlap with the financial sub-measures in Component 1. Therefore, the Commission concludes that the impact of the sub-measures of Component 2 has been correctly taken into account in the analysis of the proportionality of Component 1.
- (522) Belgium acknowledges that Components 2 and 3 of the measure (potentially) change the risk profile of Electrabel. However, according to Belgium, Components 2 and 3 do not alter the risk profile of BE-NUC, the main beneficiary of Component 1. Therefore, the risk profile of BE-NUC constitutes the relevant factor to assess the proportionality of Component 1. As mentioned in section 3.4, the Commission agrees that the beneficiaries of the three Components of the measure are each time slightly different and that the impact of each Component of the measure needs to be assessed at the level of the relevant beneficiary. This said, BE-NUC and Electrabel are the main beneficiaries of Components 1 and 3. The reduced risk profile of Electrabel and BE-NUC through the legal protection measures of Component 3 has been considered in the assessment of the financial sub-measures of Component 1, for instance, since the target IRR of the LTO Project is considered to be at the lower end of the spectrum in the updated benchmarking exercise (see section 3.3.1.3.1.1), hereby approaching the profitability of companies with a reduced risk profile. In addition, no additional nuclear risk premium (or liquidity) premium has been added, in line with the reduced risk profile (see recital 486(a)). Finally, while the target IRR is 7%, the expected realised IRR is 6,5 %, and could even be much lower considering that unexpected events are very likely to happen on a yearly basis which have a negative impact on the returns of the project (see section 3.3.1.3.1.3).

⁽¹⁷²⁾ See for instance Commission Decision of 13.1.2015, SA.34947 (2013/C) (ex 2013/N), UK, Support to Hinkley Point C Nuclear Power Station (OJ L/2015/109, 28.4.2015, p. 44), recital 385; Commission Decision of 24.7.2017, SA.38454 (2017/C) (ex 2015/N), Hungary, Development of two nuclear reactors at the Paks II nuclear power station (OJ L/2017/317, 1.12.2017, p. 45), recital 322; Opening Decision of 30.6.2022, SA.58207 (2021/N), Czechia, Support for Dukovany II, a new nuclear power plant in Czechia (OJ C/2022/299, 5.8.2022, p. 5), recitals 182-184.

- (523) Therefore, the Commission concludes that the cumulative effect of the three components of the measure has been taken into account where needed in the proportionality assessment, and therefore concludes that also the combination of the three components of the measure is proportionate.

8.3.3.7. Avoidance of undue negative effects on competition and trade and balancing test

- (524) For the measure to be compatible with the internal market, the negative effects of the measure in terms of undue distortions of competition and impact on trade between Member States must be limited and outweighed by the positive effects of the aid.

- (525) In order to analyse the market impact, the Commission has examined the impact on competition caused by having the incumbent and sole operator of the two LTO Units, Electrabel, and the second company (in terms of market shares) on the Belgian electricity market, Luminus, as main beneficiaries of the notified measure. Given Electrabel's strong position in the highly concentrated Belgian electricity market (see section 2.5), the selection of Electrabel as main beneficiary of the aid raised doubts regarding a potential undue distortion of the market structure.

- (526) In section 4.3.3.1 of the Opening Decision, the Commission assessed the fact that Electrabel (as important beneficiary of the LTO Project and sole operator of the LTO Units) was chosen without a tender, selection process, or public call for expression of interest. Therefore, it was not clear whether other potential operators had been considered, raising the question of whether Electrabel would be the most efficient operator and on what technical or economic grounds Electrabel was selected.

- (527) The Commission considered the following arguments in the Opening Decision in order to conclude that the selection of Electrabel, without a tender, would lead to no potential undue distortion of the market structure:

- (a) Electrabel has always been the only operator of nuclear power plants in Belgium and therefore has the required experience with the operation of the Belgian existing nuclear power plants as well as the required licences. Therefore, there is no alternative operator who would be a more suitable entity to act as the operator of the nuclear reactors (see recital 22).
- (b) In other cases, involving the construction of new nuclear reactors (*e.g.*, Paks II ⁽¹⁷³⁾), the beneficiary of the aid regarding the operation of the plants was not selected through a tender.
- (c) The support is granted for a limited period (10 years) and only supports the continued operation of the two nuclear plants and no new investments.

- (528) In the Opening Decision the Commission also referred to Engie's strong position in the Belgian electricity market and expressed concerns of potential undue distortions of the market structure because of the aid measure under discussion. The Commission had concerns and questions in this regard, in particular related to

- (a) the CfD design,
- (b) the independence of the EMSA partner, designated to sell the nuclear electricity,
- (c) the potential displacement of alternative investments because of the measure.

⁽¹⁷³⁾ See footnote 145.

- (529) First, as explained in more detail in section 3.3.1.3.2 and assessed in section 8.3.3.4.1, Belgium amended the CfD design, by granting the decision-making power to modulate to the EMSA partner, who is - through the modified remuneration formula - incentivised to call for economic modulations when market prices are lower and not to call for economic modulations when market prices are higher (in contrast to the initial CfD design where there were incentives for the nuclear operator to produce all the time). The Commission also questioned the use of the DAM as MRP in the CfD formula. Belgium did not change the MRP, arguing in this respect that the use of a long-term product in the CfD is less fit, because of the reduced production during the Restart Phase of the LTO Project (when at the same time LTO works will be ongoing), the risk of outages over the entire lifetime of the LTO Project, while at the same time the nuclear fleet will be reduced from 7 to 2 nuclear reactors (see recital 98). Belgium has the flexibility to revise the choice of MRP after 3,5 years (see recital 100). Belgium also confirms that the CfD counterparty (BE-WATT) will develop a risk management strategy for its open position, as is legally foreseen, and that its implementation will contribute to liquidity to the forward electricity markets (see recital 99).
- (530) Second, Belgium confirmed that the EMSA agreement will be awarded through an open, competitive tender procedure, in order to select an independent EMSA partner to sell the electricity produced by the LTO Units. The organisation of a tender resolves the Commission's doubt about the procedure to grant the EMSA agreement. Regarding the Commission's concern about the independence of the EMSA partner, in particular in case the tender is not conclusive and GEMS, Engie's trading section, would cover the electricity sales during the first year, or in case GEMS is selected as EMSA partner through the tender, Belgium clarified in more detail the additional safeguards that will be taken in those cases (see section 3.3.1.5.3).
- (531) Finally, as already mentioned in the Opening Decision, the Commission was concerned that the LTO Project would leave too little room for other investment projects in the energy sector. The potential negative implications of the LTO Project for investments in renewable energy in particular, were also pointed out by some of the third-party comments (see section 6.2.3.1). The Commission considers that the claims by third parties were not sufficiently substantiated and considers that the LTO Project will not fully absorb the insufficient generation capacity for electricity during the period 2025-2035, for the following reasons:
- (a) In its latest resource adequacy study (2023 NRAA), Elia mentioned that the 2 GW additional capacity of the LTO Units will not suffice to fulfil the expected increase in demand for electricity in the next 10 years.
 - (b) Through the Belgian capacity mechanism other new and existing generation technologies (in particular thermal generation, demand response and storage) have access to financing for a short or longer period of time (CM contracts are granted for 1, 3, 8 or 15 years). Therefore, the LTO Project will not unduly affect the situation of other generation technologies in Belgium and will not discourage any investment in new thermal installations, demand response and storage until 2035.
 - (c) There are no indications that Belgium would stop supporting the development of new generation capacity from renewable energy sources. For example, the Commission approved in 2024 Belgium's plans for the development of wind farms in the North Sea, through the Princess Elisabeth Offshore wind project (see footnote 148).
- (532) For the above-mentioned reasons, the Commission has no indications that the LTO Project will prevent new players from entering the market to produce electricity in Belgium and/or prevent other players from developing new generation capacities. Consequently, the impact of the LTO Project on the retail market is expected to remain limited as well.
- (533) Furthermore, the Commission also observes that market concentration of the Belgian energy market has been slightly decreasing in recent years (see section 2.5), and the parallel decommissioning of Engie's other nuclear reactors in Belgium might further continue this trend.

- (534) Regarding Component 2, the Commission observed in recital 372 of the Opening Decision that the transfer of nuclear waste and spent fuel liabilities will not have the immediate effect of improving the competitive situation of the beneficiaries vis-à-vis their competitors. At first, this component of the measure will force the nuclear operator to pay a higher cash amount than what has currently been accumulated on the balance sheets. The volume adjustment fee, which makes sure that the nuclear operator pays an additional amount in case more nuclear waste is produced than originally foreseen, acts as a safeguard. Moreover, after the formal investigation, the Commission concludes - based on the additional elements provided by Belgium as explained in section 3.3.2.3 - that the upfront lumpsum payment of EUR 15 billion will sufficiently reduce the risk taken by the Belgian State when taking over the nuclear waste liabilities from Electrabel and is therefore proportionate. Likewise, the other sub-measures of Component 2 have also been found proportionate (see section 8.3.3.5.2). Therefore, the sub-measures of Component 2 have no potential negative effects on competition and trade between Member States.
- (535) Finally, regarding Component 3, as mentioned in recital 373 of the Opening Decision, the legal protection clauses, if and when applicable, are merely compensatory in nature. Therefore, the Commission considers that they have no potential negative effect on competition and trade between Member States.
- (536) In conclusion, in view of the modifications to the CfD design, the organisation of a tender on the EMSA agreement (and the modifications in the remuneration of the EMSA partner) and guarantees on the independence of the EMSA partner, the absence of indications that the LTO Project will hamper the development of other electricity generating technologies in Belgium, as well as the proportionality of the transferred nuclear waste and spent fuel liabilities and legal protections, the Commission considers that potential undue distortions on the Belgian market will remain limited.

8.3.4. *Weighing the positive effects of the aid against the negative effects on competition and trade*

- (537) Following the assessment in section 8.3.2 of this Decision, the Commission acknowledges that the measure is aimed at promoting an investment in nuclear energy and therefore contributes to the development of an economic activity, i.e., electricity generation from nuclear energy sources, while also contributing to security of electricity supply, as well as reducing Belgium's dependence on fossil fuels (hereby also contributing to Belgium's decarbonisation objectives).
- (538) The Commission acknowledges that without the aid, including all three components constituting the measure, the investment could not be expected to be implemented. The aid is therefore necessary to the development of this economic activity and provides an incentive effect.
- (539) The Commission has found that the two-way CfD, complemented by the other financial measures to support the financial viability of the JV, the deal on the transfer of nuclear waste and spent fuel liabilities as well as the legal protections are appropriate instruments. The formal investigation has not brought forward evidence that other measures would have been equally effective with lower distortive effects, in particular given the particular circumstances of the case which concerns an extension of the lifetime of existing assets and this for a limited period of time.
- (540) The aid will be granted in a proportionate way, as the beneficiary will not retain extra profits beyond what is strictly necessary to ensure the economic operation and viability of the nuclear power plant. The modified CfD design and the modified remuneration formula of the EMSA partner (of which the parameters are subject to review in 3 years' time), as well as the cap on the MOCP, ensure that the LTO Units will produce electricity in line with market signals, that the nuclear operator and the JV are more exposed to market risk, while the Belgian State's exposure has been reduced.

- (541) The regular review of a clearly defined set of input values to the financial model, allowing upward and downward adjustment, ensures that the significant uncertainties which currently exist regarding capital and operational costs do not result in over-compensation of the beneficiaries. The application of an (intensified) pain/gain sharing mechanism further ensures that there are incentives to operate the LTO Units as efficiently as possible, while also sharing the burden with the Belgian State in case market prices are higher or lower than expected.
- (542) The rate of return on equity in the range of 6 % to 8 % (with a target rate of 7 %) is at the lower end compared to benchmark projects and in line with the cost of capital, and therefore considered proportionate. This is particularly true given the circumstances of the LTO Project, which concerns a lifetime extension of existing assets based on an old technology and for a limited period of 10 years.
- (543) The Commission also notes that neither Electrabel nor BE-NUC will control the sales of electricity generated by the LTO Units, but that an independent EMSA partner will sell all electricity on the market. This will contribute to ensuring that Engie's market position is not reinforced on the Belgian market.
- (544) In addition, the Commission has no indications that the LTO Project will prevent new players from entering the market for the production of electricity in Belgium and/or prevent other players from developing new generation capacities, and concludes that overall, the potential undue distortions of competition are limited, based on the considerations in section 8.3.3.
- (545) After a thorough balancing and taking into account the commitments offered, the Commission reached the conclusion that undue competition distortions resulting from the measure are kept to the minimum necessary and are offset by the positive effects of the measure.

8.3.5. *Conclusion on the compatibility of the aid*

- (546) Based on the assessment conducted in this Decision and in light of the specific circumstances of this case, namely the lifetime extension of existing nuclear reactors based on an old technology with limited flexibility and this for a limited time period of 10 years, the Commission finds that the package of measures notified and subsequently amended by the Belgian authorities, including the review possibilities and commitments provided, is compatible with the internal market pursuant to Article 107(3), point (c), TFEU.

9. CONCLUSION

- (547) The measure as amended is compatible with the internal market on the basis of Article 107(3), point (c), TFEU.
- (548) The Commission notes that the Implementation Agreement and accompanying documents have been provided, for assessment, with the terms of the EMSA and the Signing Financial Model. Belgium commits that the agreements for which the final terms and conditions have not yet been set (e.g., the terms of the ASA, Shareholder Loans, SDC Loans, WCF) will contain standard clauses that any investor would seek for a similar project and that the terms will be set at arms' length. Should the final terms and conditions of those documents amend the notified measure as presented in this Decision, Belgium commits to notify them to the Commission.

HAS ADOPTED THIS DECISION:

Article 1

The measure which Belgium is planning to implement to support the lifetime extension of two nuclear reactors in Belgium, namely Doel 4 and Tihange 3, is compatible with the internal market.

Implementation of the measure is accordingly authorised.

Article 2

This Decision is addressed to the Kingdom of Belgium.

Done at Brussels, 21 February 2025.

For the Commission
Teresa RIBERA
Executive Vice-President
