

Consultation report of the public consultation on the scenario's, sensitivities and data for the CRM parameter calculation for the Y-1 Auction with Delivery Period 2025-26 and Y-4 Auction with Delivery Period 2028-29

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Introduction

Elia organized a public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-1 Auction with Delivery Period 2025-26 and for the Y-4 Auction with Delivery Period 2028-29. This public consultation took place in the framework of the Royal Decree laying down the method for calculating the required capacity volume and the parameters necessary for the organization of the auctions within the framework of the capacity compensation mechanism (hereinafter ‘the Royal Decree’).

Article 5, §2 of the Royal Decree sets out the topics to be at least submitted for public consultation, namely:

- the update of data and assumptions regarding the scenario(s), as well as any potentially selected sensitivities to be included in the reference scenario;
- the relevance of the sensitivities, including the data and assumptions on the basis of which they were established;
- the type of additional capacity;
- the public sources of the scenarios for the years subsequent to the year of delivery from which the input data are used to calculate inframarginal rents;
- the shortlist of existing technologies that will be reasonably available and which are eligible for the determination of the intermediate price cap.

The public consultation material consisted of an Excel file, containing all the data and assumptions regarding scenarios, sensitivities and parameters required by the Royal Decree, an explanatory nota in PDF format¹ and the slides presented during Working Group Adequacy from Friday 14 April 2023².

The consultation aimed at receiving comments from market participants on the presented data and assumptions as well as suggestions for additional sensitivities in order for the Minister to decide on a reference scenario for each auction. In line with the Royal Decree, this decision is to be taken on the basis of a proposal from the CREG, to be formulated taking into account this consultation report, including Elia’s recommendations, and after an advice on this proposal by the FPS Economy.

The consultation period was set from Tuesday the 18th of April until Friday the 19th of May 2023, 6:00pm and was publicly announced on the Elia website.

In total, 1 confidential reaction and 2 public reactions (FEBEG and Febeliec) were received.

¹ https://www.elia.be/fr/consultations-publiques/20230418_public-consultation-on-the-scenarios-sensitivities-and-data-for-the-crm

² <https://www.elia.be/en/users-group/adequacy-working-group/20230414-meeting>

This document is structured as follows:

- First, the legal and regulatory framework of this public consultation is reminded;
- Then, Elia's recommendation will be added in line with article 5, §3 of the Royal Decree;
- This public consultation report provides the overview of received questions, a justified answer from Elia and how these will be taken into account for the CRM calibration. Elia provides answers on the methodology, the scenario dataset, the proposed sensitivities, the preselected capacity types, the post-delivery scenarios, the intermediate price cap and the strike price.

This public consultation report will be published on Elia's website as well as all the non-confidential feedback received.

Finally, Elia would like to thank all the market parties for their contributions and for providing written feedback during the public consultation.

1. Legal and regulatory framework

The federal electricity law of 29 April 1999 foresees in its article 7undecies §2 that the Transmission System Operator (Elia) elaborates on a yearly basis and after public consultation, the reports providing the calculation for the necessary volume and a proposal of auction parameters. The procedure is further defined in a Royal Decree laying down the parameters with which the volume of capacity to be provided is determined, including their calculation methods, and the other parameters necessary for the organization of auctions, as well as the method and the conditions for granting an individual exemption from the application of the intermediate price ceiling(s) in the context of the capacity compensation mechanism (the Royal Decree) setting out the method for calculating the required volume of capacity and the parameters necessary for the organization of auctions under the capacity remuneration mechanism.

A first concertation and collaboration meeting was organized with the FPS Economy and the CREG on 24 March 2023. A second concertation and collaboration meeting was organized with FPS Economy and CREG on 07 April 2023. A WG Adequacy was organized to provide market parties all information regarding the scenarios put forward in the public consultation on 14 April 2023. Then, the public consultation was organized from 18 April 2023 to 19 May 2023 at 6pm. Based on the feedback received, Elia prepared this public consultation report as well as the recommendation required by the Royal Decree. Both the recommendation and answer to stakeholders' feedback were presented during the WG Adequacy organized on 16 June 2023. The CREG will elaborate a reference scenario proposal for each auction based on all available information and the FPS will provide an advice on them. Finally, the Minister will select the two final reference scenarios by 15 September 2023 based on the proposal from the CREG, Elia's recommendations and advice from the FPS.

2. Elia's recommendation

This section aims to provide Elia's recommendation, as mentioned in article 5, §3 of the Royal Decree. This recommendation is formulated to provide a robust, realistic, and balanced reference scenario proposal for each auction, taking into account the received feedback from stakeholders, while ensuring the security of supply of the country against a limited, but realistic subset of unexpected events, referred to as 'sensitivities' in this report, according to the proposed Royal Decree denomination. These sensitivities are therefore part of the proposed reference scenario. The received feedback from stakeholders and detailed comments can be found in the next chapter.

This recommendation is made for the calculation of the required volume and parameters needed in the framework of the CRM calibration report for Y-1 auction with Delivery Period 2025-26 and Y-4 auction with Delivery Period 2028-29. Elia's recommendation intends to integrate the feedback received in order to provide relevant and justified reference scenarios proposal. All answers and proposals from stakeholders can be found in the next section of this consultation report.

Elia proposes to take into account the scenario dataset presented in the public consultation as a starting point for the Y-1 auction with Delivery Period 2025-26 and Y-4 auction with Delivery Period 2028-29. This dataset has been constructed based on the latest published European Resource Adequacy Assessment (ERAA 2022³) from ENTSO-E. This initial dataset has been updated to take into account the latest available information on Belgian and European areas as well as feedback from stakeholders during the public consultation process which took place between the 18th of April and the 19th of May 2023. On top of this dataset, Elia's recommendation proposes to integrate some relevant sensitivities (as part of the reference scenario) for each auction's reference scenario as described below. Elia's recommendation intends to integrate the feedback received in order to provide relevant and justified reference scenarios proposal. All answers and proposals from stakeholders can be found in the next section of this consultation report.

Note that the dataset for each auction's reference scenario is to be found in Appendix: Scenario dataset proposed by Elia.

³ <https://www.entsoe.eu/outlooks/eraa/2022/>

Recommendation for the reference scenario for the Y-1 auction with Delivery Period 2025-26:

On top of the base dataset provided by Elia, for the Y-1 auction with Delivery Period 2025-26, Elia recommends integrating into this dataset the following sensitivities (as part of the reference scenario):

- Regarding fuel and CO₂ prices, Elia proposes not to take a sensitivity into account but recommends the relevant authorities to update the prices if significant forward price evolutions occur before the decision of the Minister.
- Regarding the demand in Belgium, Elia proposes to take into account the latest economic forecasts that will be published by the Federal Planning Bureau. The resulting electricity demand will be determined using the Total Demand forecasting tool 'BECalc' developed in collaboration with Climact for the FPS Environment. This forecasted demand will be presented in a WG Adequacy in the course of August. Except this update, Elia does not propose to integrate a sensitivity for the demand for Delivery Period 2025-26;
- Regarding the integration of flow-based CEP rules, Elia proposes to keep the central scenario, considering a 70%min RAM for all countries in order to be compliant with European regulation however Elia acknowledges that such risk exists.;
- Regarding the potential closure of thermal units due to CO₂ thresholds, Elia proposes to not consider any further closure of the thermal units in the reference scenario (besides those that are already announced via the Art. 4bis) for Delivery Period 2025-26;
- Regarding the sensitivity on the nuclear availability in France, Elia proposes to use the latest REMIT data calibrated to an expected yearly generation value. Indeed, as demonstrated in the past, REMIT data overestimate the nuclear availability in France. The reduction is calculated as described in the Explanatory Note of the public consultation based on the minimum EDF forecast for winter only which is obtained from the minimum EDF forecast for the entire year and a distribution factor based on historical generation. Note that if the EDF generation forecast is not available before the Minister decision, we propose to take 330 TWh instead. The choice to integrate this sensitivity is justified by the situation observed in the past winters exacerbated by the current situation observed in France. The reasons to consider such a sensitivity are multiple (non-exhaustive list):
 - major overhauls ongoing and foreseen to extend the lifetime of the fleet beyond 40 years;
 - recent crisis linked to the problems of stress corrosion cracking has had a major impact on the availability of nuclear units in 2022, and will continue to do so at least for the three next years⁴;

⁴ <https://assets.rte-france.com/prod/public/2023-06/2023-06-07-bilan-previsionnel-points-etape.pdf>

- the recent publication from RTE regarding the expected generation for next winters⁵;
- the significant and increasing difference between the REMIT unavailability forecast and the actual unavailability (more information on section 3.3.2);
- the vulnerability of the nuclear fleet to generic issues;
- more recently, RTE is planning to include sensitivities and stress-tests on the amount of outages in the framework of security of supply analysis.
- Regarding the demand side response from existing industry, Elia proposes to take into account the results of the updated market response study being performed by E-CUBE for winter 2022-23. This will be presented in a WG Adequacy in the course of August. Except this update, Elia does not propose a sensitivity for the demand side response for Delivery Period 2025-26.
- Regarding storage, Elia recommends the relevant authorities to monitor if possible regulatory changes on small-scale storage occur before the decision of the Minister and does not recommend to integrate any sensitivity.
- On other foreign risks:
 - Regarding the nuclear units Heysham 1 and Hartepool for which a recent extension was announced in the UK, Elia recommends to consider them as available unless a national publication confirms a delay or cancelation prior to the Minister's publication of the reference scenario;
 - Regarding possible export restrictions, Elia recommends not to take these into account but to monitor any future decisions taken by Norway, neighbouring countries or the European Commission.
 - Regarding the dataset related to other European countries, Elia proposes to consider in the reference scenario any further national announcement or relevant studies to be published before the decision of the Minister;

⁵ <https://assets.rte-france.com/prod/public/2023-06/2023-06-07-bilan-previsionnel-points-etape.pdf>

Elia's recommendation – Y-1 auction with delivery period 2025-26

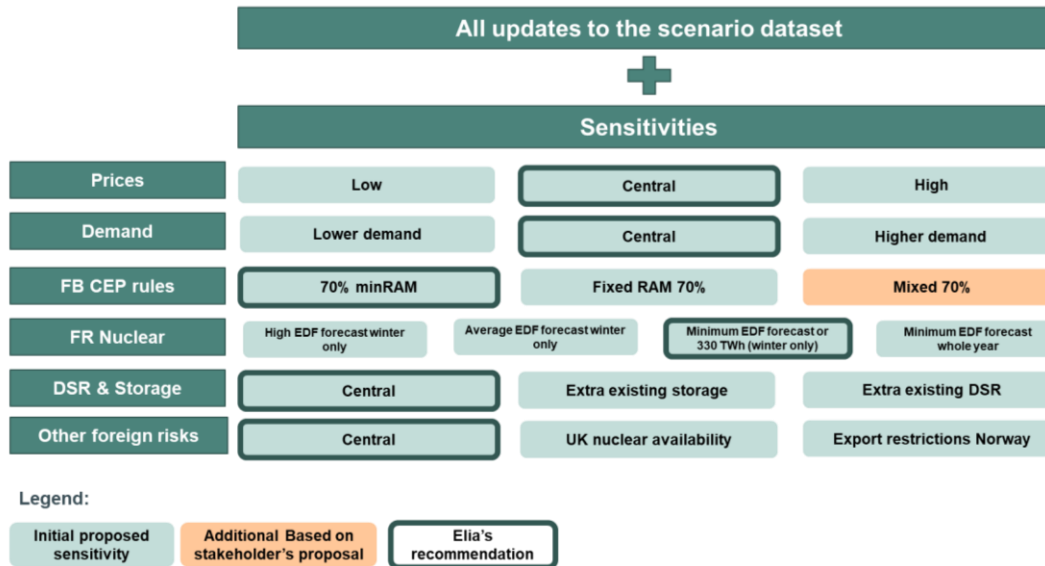


Figure 1: Elia's recommendation for the Y-1 auction with Delivery Period 2025-26

Recommendation for the reference scenario for the Y-4 auction with Delivery Period 2028-29:

For the Y-4 auction with Delivery Period 2028-29, Elia recommends to integrate into this dataset the following sensitivities as part of the reference scenario:

- Regarding fuel and CO₂ prices, Elia proposes not to take a sensitivity into account but recommends the relevant authorities to update the prices if significant changes in forward prices occur before the decision of the Minister.
- Regarding the demand in Belgium, Elia proposes to take into account the latest economic forecasts that will be published by the Federal Planning Bureau. The resulting electricity demand will be determined using the Total Demand forecasting tool 'BECalc' developed in collaboration with Climact for the FPS Environment. This forecasted demand will be presented in a WG Adequacy in the course of August. Except this update, Elia does not recommend to include a sensitivity for the demand for Delivery Period 2028-29.
- Regarding the integration of flow-based CEP rules, Elia proposes to keep the central scenario, considering a 70% min RAM in order to be compliant with European regulation. However Elia acknowledges that such a risk exists;
- Regarding the potential closure of thermal units due to CO₂ thresholds to be applied in the CRM, Elia proposes to consider the closure of all turbojets and old OCGTs not complying with the thresholds resulting in 190MW nominal capacity to be removed;
- Regarding the dataset related to other European countries, Elia proposes to consider in the reference scenario any further national announcement or relevant study to be published before the decision of the Minister;
- Regarding the sensitivity on the nuclear availability in France, Elia proposes to consider at least 4 units unavailable on top of the availability foreseen in the published ERAA 2022. This choice is justified by the situation observed in the past winters exacerbated by the current situation observed in France. In addition it provides a central value when considering the feedback of stakeholders (both 0 and 8 units were proposed). The reasons to consider such a sensitivity are multiple (non-exhaustive list):
 - major overhauls foreseen to extend the lifetime of the fleet beyond 40 years;
 - recent crisis linked to the problems of stress corrosion cracking has had a major impact on the availability of nuclear units in 2022, and will continue to do so at least for the three next years⁶;
 - the recent publication from RTE regarding the expected generation for next winters⁷ and looking at 2030⁸;

⁶ <https://assets.rte-france.com/prod/public/2023-06/2023-06-07-bilan-previsionnel-points-etape.pdf>

⁷ <https://www.edf.fr/groupe-edf/espaces-dedies/journalistes/tous-les-communiqués-de-presse/point-actualite-nucleaire-du-18-mai-2022>

⁸ [BP50_Principaux_résultats_fev2022_Chap14_Analyse_des_dynamiques_0.pdf \(rte-france.com\)](#)

- the vulnerability of the nuclear fleet to generic issues;
 - the French TSO's report that they expect that the reliability standard would not be met in the coming 3 winters based on their reference scenario (prior to the latest announcement on corrosion defects)⁹, despite the market-wide CRM implemented in France;
 - the French TSO also plans to perform sensitivities in the framework of the next 'Bilan prévisionnel' in order to assess the impact of lower nuclear generation¹⁰, which strengthens the need for Belgium to apply such sensitivity;
 - regarding the large amount of plausible uncertainties abroad, their significant impact on Belgium's security of supply and their uncontrollable nature for Belgian authorities, this sensitivity is assumed by Elia to be representative of those risks.
- Regarding the demand side response from existing industry, Elia proposes to take into account the results of the updated market response study being performed by E-CUBE for the winter 2022-23. This will be presented in a WG Adequacy in the course of August. Except this update, Elia does not propose a sensitivity for the demand side response for Delivery Period 2028-29.
 - Regarding storage, Elia recommends the relevant authorities to monitor if possible regulatory changes on small-scale storage occur before the decision of the Minister and does not recommend to integrate any sensitivity.
 - On other foreign risks:
 - Regarding the nuclear units Heysham 1 and Hartepool for which a recent extension was announced in the UK, Elia recommends to consider them as unavailable as the extension period ends before the 2028-2029 Delivery Period;
 - Regarding possible export restrictions, Elia recommends not to take these into account but to monitor any future decisions taken by Norway, neighbouring countries or the European Commission.
 - Regarding the dataset related to other European countries, Elia proposes to consider in the reference scenario any further national announcement or relevant study to be published before the decision of the Minister;

⁹ <https://assets.rte-france.com/prod/public/2021-04/Bilan%20previsionnel%202021%20-%20principaux%20enseignements.pdf>

¹⁰ <https://assets.rte-france.com/prod/public/2023-06/2023-06-07-bilan-previsionnel-points-etape.pdf>

Elia's recommendation – Y-4 auction with delivery period 2028-29

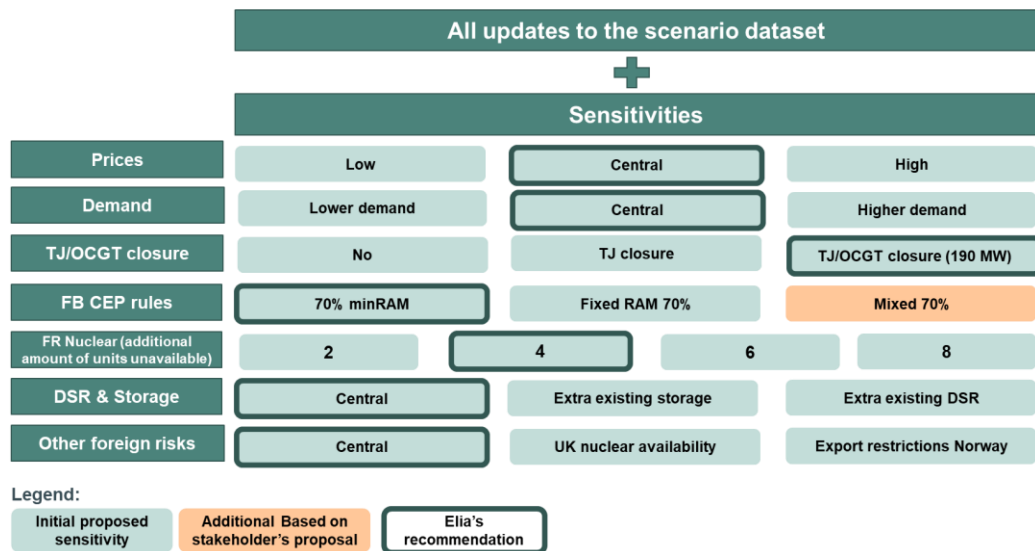


Figure 2: Elia's recommendation for the Y-4 auction with Delivery Period 2028-269

3. Received feedback and Elia’s answer

This chapter of the public consultation report provides an overview of the received feedback, a justified answer from Elia and how Elia proposes to take it into account for the CRM calibration, as part of Elia’s recommendation.

In the framework of this public consultation on scenarios, sensitivities and data for the Y-1 auction for the Delivery Period 2025-26 and Y-4 auction for the Delivery Period 2028-29, 3 answers were received: 2 non-confidential (FEBEG and Febeliec) and 1 fully confidential answer. This document provides answers to the 2 non-confidential feedbacks received.

3.1 Methodology

FEBELIEC	<p>Febeliec continues just as previous years to strongly regret that Elia still, as for all other adequacy related studies and analyses, only conducts a consultation on the input data, sensitivities and scenarios, and does not conduct a full consultation on the methodology itself. Febeliec equally strongly regrets that Elia still does not involve the stakeholders in the development of this methodology, other than the stakeholders imposed by the law (FPS Economy plus coordination with CREG). Even though no such legal obligation exists, Elia could (and according to Febeliec, should) have opted for a much larger involvement from all stakeholders, in order to obtain a much stronger buy-in from stakeholders in the methodology, the study and its results. Febeliec will provide its comments on the consultation but this does not mean that Febeliec agrees with the applied methodology and should in no case be interpreted as such. Amongst others, Febeliec still has a wide range of comments and questions that it considers not (sufficiently) answered or resolved on the bi-annual Adequacy and Flexibility Study, which is the basis for the methodology and model for this study as well as the previous consultations on the scenarios, sensitivities and data for the CRM parameter calculations (including a.o. issues that Febeliec has raised regarding underlying studies applied by Elia, in particular referring to the E-Cube study determining demand side response in Belgium which has shown to be seriously flawed, as already indicated by Febeliec for many years).</p>
FEBELIEC	<p>Febeliec also wants to reiterate its longstanding position regarding the calculation being conducted for just one scenario, with only one specific subset of sensitivities being selected. While Febeliec understands that in the end one final scenario has to be selected for the calibration, Elia could still conduct calculations for multiple scenarios which would allow much better insight in the sensitivity of the results regarding the changes in the scenario. Even though no legal obligation exists for such additional calculations, there also does not exist a legal prohibition for such calculations and they would deliver essential insights</p>

	<p>for a thorough analysis and selection of the final scenario to be applied. Concerning Elia’s statement that it takes into account “the most recent relevant information”, it remains opaque which cut-off date is applied for selecting such information as well as the criteria applied to determine relevance or not. In some cases, references are made to press articles while in other cases policy announcements or REMIT announcements are used or in some cases only firm legal policy decisions, which creates an arbitrary feeling (e.g. regarding information taken into account for neighbouring countries). Febeliec insists that it would be wise and prudent to run at least some alternative scenarios, even though there is no legal obligation, in order to provide the necessary relevant input for any governmental decisions.</p>
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Elia would like to remind Febeliec that the reference scenario and CRM calibration processes as well as the methodology to determine the different CRM parameters are described in the Royal Decree on the determination of volume and parameters¹¹. The methodology applied is compliant with the latest European methodologies approved in 2020, as applied in the AdeqFlex 2023 study, in line with article 12, §2 and §3 of the Royal Decree.

Regarding the CRM calibration methodology itself, Elia would also like to remind that it has also been discussed extensively in the CRM Design phase, through the publication of design notes^{12,13}, discussions in task forces¹⁴, Royal Decree proposals^{15, 16} and different related public consultations^{17,18,19,20,21}.

Regarding the comment that Elia only conducts a consultation on the input data, sensitivities and scenarios, and does not conduct a consultation on the methodology itself in its adequacy studies, Elia disagrees with the comment from Febeliec. The methodology for the next Adequacy

¹¹ <http://www.ejustice.just.fgov.be/eli/arrete/2021/04/28/2021041351/justel>

¹² <https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/2020/crm-design-notes---september-2019---all.pdf>

¹³ <https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/2020/crm-updated-design-notes---march-2020---all---clean-version.pdf>

¹⁴ <https://www.elia.be/fr/users-group/crm-implementation/meetings>

¹⁵ https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/landing-page/20191122_royal-decree-methodology-elia-proposal_fr_nl.pdf

¹⁶ https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/landing-page/20191220_updated-kb-elia_volumeparameters_frnl_clean.pdf

¹⁷ https://www.elia.be/fr/consultations-publiques/20190913_formal-public-consultation-on-the-crm-design-notes-part-i

¹⁸ <https://www.elia.be/fr/consultations-publiques/20190902-formal-public-consultation-on-the-crm-design-notes-part-ii>

²⁰ <https://www.creg.be/fr/consultations-publiques/consultation-publique-concernant-le-projet-de-proposition-relative-aux>

and Flexibility study (AdeqFlex'23) was submitted to public consultation and was discussed in details with stakeholders during the dedicated Working Groups^{22 23}. This methodology was detailed with several documents on the webpage of the Adequacy and Flexibility public consultation²⁴. The consultation included the description of all methodological parts of the upcoming AdeqFlex'23. It was exactly the intention of Elia to involve a larger group of stakeholders than those foreseen by the law via the AdeqFlex'23 public consultation and the interactions during the Working Group meetings. Elia strongly believes that all information were transparently available for stakeholders. Elia would also like to remind that in the case of the CRM calibration process, the methodology is set by the dedicated Royal Decrees.

Elia regrets that Febeliec considers its comments and questions on AdeqFlex'23 public consultation as well as other public consultations on the reference scenario for the CRM calibration not sufficiently answered. Elia always answers every comment and question voiced during the public consultations for each of its adequacy studies in dedicated consultation reports.

On the E-CUBE study, Elia and E-CUBE are working to update the methodology for DSR volume estimation. Possible ways to improve the methodology applied by E-CUBE were submitted to public consultation and stakeholders were explicitly asked to provide input given the complexity and importance of the topic. Elia and E-CUBE are still working on the methodology improvements and are open to further suggestions by stakeholders.

Elia would also like to remind that the CRM calibration report aims to provide the necessary data in order to establish the different parameters of the CRM Y-1 auction for Delivery Period 2025-26 and the Y-4 auction for Delivery Period 2028-29. This objective is clearly different from an Adequacy and Flexibility study which provides different indicators on different time horizons and takes into account different scenarios and sensitivities. The objective of the CRM calibration justifies to take a single reference scenario, as stated in the Royal Decree. On the other way around, the next AdeqFlex'23 will provide additional insights regarding the impact of a high amount of sensitivities but does not aim to calculate the calibration parameters required under the CRM.

Elia considered all the relevant updates up to the start of the public consultation. These updates come mainly from both official sources or relevant national studies. This is the case for France with announcement from the French president or with the 'Bilan Prévisionnel', for Netherlands with the 'Monitoring Leveringszekerheid' published in January 2023, for Germany with the Easter Package or with the 'Netzentwicklungspläne' or for Great-Britain with the 'Future Energy

²² <https://www.elia.be/en/users-group/adequacy-working-group/20221028-meeting>

²³ <https://www.elia.be/en/users-group/adequacy-working-group/20230217-meeting>

²⁴ https://www.elia.be/en/public-consultation/20221028_public-consultation-adequacy-study-2022-2032

Scenario'. For Poland, press articles with historical installed capacities were taken into account to increase the RES capacities as the pace of onshore and PV installations increased more than expected in the ERAA dataset. These capacities were put forward in the public consultation. Elia takes note of Febeliec's comment and will consider it for the scenario quantification of future studies. Regarding the dataset related to other European countries, as mentioned in Elia's recommendation, Elia proposes to consider in the reference scenario any further national announcement or relevant study to be published before the decision of the Minister.

3.2 Scenario dataset

3.2.1 General remarks

FEBELIEC	On the general scope of this input for the CRM parameter for the Y-1 Auction for Delivery Period 2025-2026 and for the Y-4 Auction for Delivery Period 2028-2029, Febeliec also wants to reiterate its comments regarding ERAA 2022, which is the basis for a very substantial part of the analysis conducted by Elia, but which has been heavily criticised by many stakeholders but also ACER, who has in a formal opinion voiced its major concerns regarding ERAA 2022 and considering ERAA 2022 severely flawed and not in line with the legal obligations and requirements. Febeliec can only underwrite ACER's concerns and is extremely worried by such flawed analysis being used as the basis of Elia's analysis as this also severely undermines any outcomes of Elia's analysis and thus does not guarantee that the legal lowest cost criterion (nor any other legal criteria for that matter) can be achieved.
FEBELIEC	In general, Febeliec already wants to indicate the lack of much actual data provided by Elia. Many spreadsheets provide hardly any methodology used for the calculation or determination of the data, do still not provide all sources and thus in fact provide hardly any basis to provide input on.
FEBELIEC	Febeliec regrets that it is still not completely clear which power plants are included here, in particular diesel generators, emergency generators and process generators. Febeliec has made this comment on previous versions of this consultation and regrets that this is still not completely transparently tackled by Elia in its overview.
FEBELIEC	Febeliec continues to wonder, after already having made this comment in several previous consultations, how emergency generators (see also above) are treated, as it remains unclear if and how such generators are taken into account, and if so, for which volumes. Febeliec wants to stress that in Belgium literally 100s of MWs of emergency generators are installed, with its own members already having massive volumes of emergency generators (in at least

	one case even 100s of MWs for certain grid users), not even taking into account the 100s of MWs installed at a.o. hospitals, where a CREG study indicated an installed capacity of at least 200 MW. Febeliec explicitly asks that Elia finally provides some clarity on this element and its inclusion in the analysis.
FEBELIEC	<p>On climate years, Febeliec can only reiterate its known comments on the blackbox approach of Elia by applying the forward looking model of Météo-France, which also incorporates policy choices regarding climate scenarios and is as such not a neutral model. Moreover, Elia refers to ERAA but a.o. ACER has voiced also concerns about the approach chosen by ERAA in this domain as well as the underlying database.</p> <p>Febeliec proposes to include a scenario where the historic approach, with only 30 historic climate years (and also listed as an option in the European framework) is followed, to see what the impact is of the chosen approach compared to the previous approach, to get a feeling for the implications of the blackbox that is now applied by Elia.</p>

Regarding Febeliec's criticism of the ERAA2022 database, Elia would like to clarify that only the dataset collected from TSOs for ERAA2022 was utilised. Elia does not employ the same model as ERAA2022, nor does it rely on any results from ERAA2022. Elia conducts a sanity check on the ERAA2022 data, ensuring its accuracy and consistency and complements the dataset with more recent information when available. Moreover, Elia updates the information based on the latest available data, considering the known ambitions for initiatives such as Fit for 55 and RePower EU and national studies or plans. These updates were discussed with other TSOs to ensure comprehensive and up-to-date information. Finally this updated and sanity checked data set for main countries is made part of this public consultation, allowing market participants to provide feedback and respond accordingly. The methodology used by Elia is compliant with the ERAA methodology. Elia would like to remind that the implementation of the ERAA methodology is accompanied with a methodological stepwise implementation plan which ENTSO-E follows. In addition, the model and methodology used by Elia goes well beyond the developments performed by ENTSO-E on the matter as outlined in the upcoming AdeqFlex'23. In addition, Elia would like to remind that the previous Adequacy & Flexibility study (June 2021) was used to justify the need of a CRM in Belgium by the Belgian State and the mechanism was approved by the EC on the basis of that study, demonstrating the compliance with the regulation.

In response to Febeliec's comment regarding the lack of actual data, Elia respectfully disagrees. Elia provided the Excel with the detailed assumptions and an explanatory note detailing how each of the scenario components were determined. Elia also included all the parameters for the load determination as well as sources for each parameter and an explanation of the methodology. In addition, Elia would like to remind that Elia is always available during the public consultation (or before/after) to answer questions or clarifications on the data.

Regarding Febeliec's comment, the diesel generators and emergency generators are only taken into account if they actively participate in the day-to-day market. If so, their contribution is considered in the market response volume calculated by E-CUBE. Those volumes are therefore

not part of the profiled thermal volume, calculated based on information from the PISA database, in order to avoid double counting. In the context of the CRM auction, these capacities are eligible if they meet the specific criteria outlined in the functioning rules. To participate in the auction, they can select the appropriate Service Level Agreement (SLA) category or consider the derating factor labeled "Category V: Thermal technologies without a daily schedule."

Regarding Febeliec's comment on the use of the forward-looking model of Météo France, Elia wants first to recall that this approach is fully compliant with the ERAA methodology. It is also the goal that ENTSO-E moves towards such forward looking data in the upcoming ERAA studies²⁵. Using such kind of datasets is considered by Elia as best practice for the future. Note that ENTSO-E future-proof climate database (referred in Ref ²⁵ as ENTSO-E PECD v4.0) is being created and hence is still not available. At the moment of this study, Elia still relies on its best available forward-looking climate database (Elia's forward-looking climate database from MétéoFrance). Elia would like to recall that MétéoFrance is renowned institute in France and that this climate database is also used by RTE, the French TSO.

3.2.2 RES capacities

FEBEG	FEBEG has no specific remarks on the data provided. However, it is important that Elia and the federal authorities double-check (political) ambitions with technical and economic feasibility.
FEBELIEC	For renewables, as only aggregated numbers are given without any explanation, it is impossible to provide any meaningful comments

In response to FEBEG's comment regarding the double check with federal authorities, it is important to note that the scenario and sensitivities presented in this public consultation were previously discussed with the FPS.

Concerning the Febeliec's comment, Elia does not understand the feedback. The renewable capacities for the two considered Delivery Periods are presented in the Excel file for each category (wind onshore, wind offshore, photovoltaics, hydro run-of-river, biomass and waste). This information can be found on the sheet '1.1 Summary' from line 17 to 27. These numbers are fully aligned with the assumptions presented in the public consultation of AdeqFlex'23 and were discussed with the regions. Elia only models 1 balancing zone for Belgian and has no separate assumptions per region. The different sources are detailed in the explanatory note.

²⁵ "Towards a future-proof climate database for European energy system studies" by Dubus et al, Environ. Res. Lett. 17 (2022) 121001 <https://doi.org/10.1088/1748-9326/aca1d3>

3.2.3 Individually modelled thermal generation capacities

FEBEG	While we have no particular comments on the hypothesis put forward by ELIA regarding the thermal generation capacities, we would like to underline that there is a need to maintain long-term visibility on the CO ₂ emission's limits to participate in the CRM in order to allow the asset owners to make possible investment decisions in time.
FEBELIEC	Febeliec has no comments on the specific units presented, but reiterates a longstanding comment on the lack of transparency on the announced (temporary) closure of power plants in Belgium. Moreover, Febeliec also notices that Elia does not seem to consider any additional units in Belgium in the period till 2029 beyond two CCGTs contracted already in CRM auctions and one CHP and wonders whether this is a realistic assumption.

Elia takes note of the comment from FEBEG on long term certainty on the CO₂ emissions limits in the CRM. However, the CO₂ emissions limits are not the responsibility of Elia and are not part of this public consultation. Elia will share this consultation report along with the public responses to the public consultation with the relevant authorities.

Regarding Febeliec's first comment, Elia can only refer to the legal procedure related to the closure announcement of power plants in Belgium (article 4bis of the Electricity Law). Any question or request on this matter should be addressed to the competent authorities

Regarding Febeliec's second comment, Elia took into account all the available information regarding the units in the market for the Delivery Periods considered, 2025-26 and 2028-29. This information includes the 2 new CCGT but also the lifetime extension of 2 nuclear units (Doel 4 and Tihange 3). If the reference scenario selected by the Minister is not compliant with the applicable reliability standard (LOLE = 3h for now), Elia adds new capacities from the preselected capacity types, which are also submitted to public consultation. It might therefore happen that additional units are integrated in the reference scenario. Regarding this last point, Elia commits to explicitly mention in the CRM calibration report the capacity mix that is added (if required to meet the reliability standard) to the reference scenario. Therefore, the potential additional units in Belgium are not to be considered as an input but as a result of the scenario calibration process.

3.2.4 Profiled thermal capacities

FEBELIEC	Febeliec does not understand why biomass is expected to be reduced by 2028-2029 compared to the previous analysis and why gas CHP only is foreseen with a very small increase between 2025-2026 and 2028-2029
FEBELIEC	Because of a lack of breakdown (only aggregated data is shown), it is impossible to identify which periods certain categories (e.g. gas CHP, biomass) are available/producing and to have a view on their contribution to system adequacy.

Elia thanks Febeliec for its comment on the profiled biomass capacities. The profiled biomass capacity of 624MW for the scenario of the Y-4 auction for Delivery Period 2027-28 displayed in figure 10 of the explanatory note was incorrect. This was the value that was submitted to public consultation instead of the value in the actual reference scenario as selected by the Minsiter. The correct value should have been 504 MW. The installed capacity proposed for profiled biomass increases from 547 MW in the Y-1 auction 2025-26 to 567 MW in the Y-4 auction 2028-29, representing an increase compared to the previous CRM auction's capacity.

Regarding Febeliec's comment on the evolution of CHP, it is important to highlight that most of the current CHP installations are situated in Flanders. However, it is anticipated that many of these installations will no longer receive subsidies in the upcoming years. However, CHP units can still participate to the CRM auctions. Therefore, the trajectory assumed by Elia considers all the existing capacity and all the known mature projects.

The CHP and the biomass units that are not individually modelled are considered as profiled thermal generation. They are considered as full must-run according to a predefined profile, meaning that the production is to be considered fixed whatever the economic dispatch. This profile is determined based on historical metering data and has been updated in the framework of AdeqFlex'23 to better reflect the potential of the technology.

More precisely, for the aggregated profiled biomass and waste units, the latest analysis of the measurement data has shown no clear seasonal trend. A constant production profile of 60 % of the installed capacity is therefore considered. For the aggregated CHP, the available power output measurement data was analysed for the period 2018-2022 and clearly shows a seasonal and weekly trend as can be observed on Figure 3 and Figure 4 respectively. The profiles for aggregated CHP used in the simulations are based on the historically observed profiles.

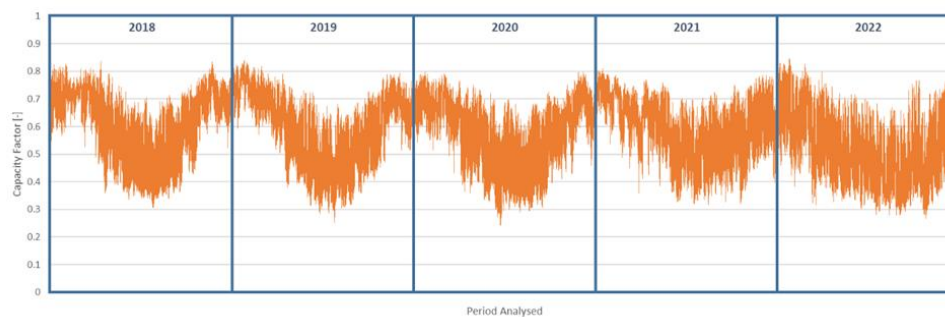


Figure 3: Historical evolution of the capacity factor of profiled CHP units generation in Belgium

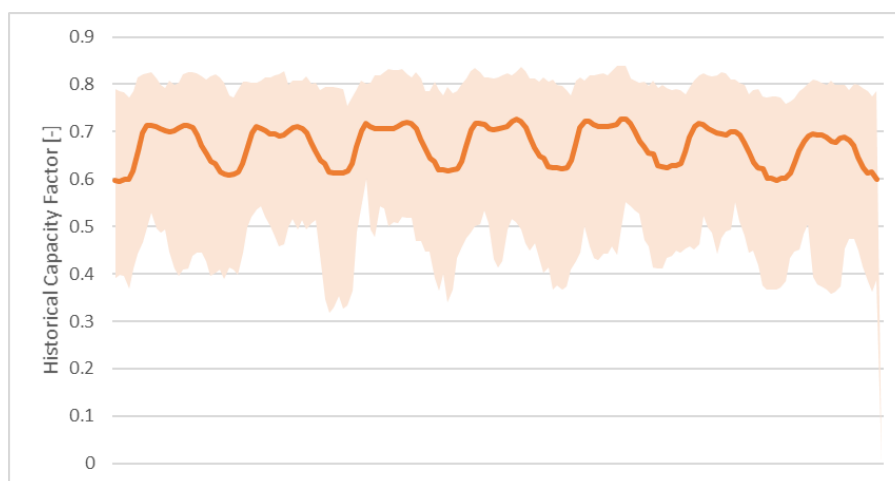


Figure 4: Average, min and max historical weekly profiles during winter of aggregated CHP units generation in Belgium

3.2.5 Forced outage rates

FEBELIEC	Febeliec does not understand why the forced outage rate of nuclear plants is increased as well as that for OCGTs. For the latter, if new OCGTs would be added to the system, it is questionable to which extent they would be facing such higher forced outage rates.
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Elia recommended the same forced outage rate for nuclear units for the Y-4 auction for Delivery Period 2027-28. The forced outage rate for the reference scenario was selected by the Minister and is based on data not including 2021. Note that the impact of the values for nuclear is marginal as 20% was selected by the Minister while 20.5% is proposed by Elia for the reference scenario selection. The forced outage rates for other technologies proposed for the Y-1 auction for Delivery Period 2025-26 and Y-4 auction for Delivery Period 2028-29 were calculated using a new methodology developed by N-SIDE and Elia²⁶ which was presented during the Working Group Adequacy of 28 October 2022 and put forward in the public consultation of AdeqFlex'23 in November 2022. In the new methodology the forced outage rates are calculated considering Belgian units as well as units from other European countries to provide more robust results. The outage rates were calculated on the 2015 -2021 period.

3.2.6 Storage

FEBEG	<p>FEBEG welcomes the approach of ELIA which splits large-scale batteries and small-scale batteries in two categories: the expected capacity (which considers the projects “in service” and also the volume contracted in the framework of the Y-4 auction for delivery year 2025-26) and a separate category for additional potential capacity which consists of future projects known today at Elia and which could potentially join the market.</p> <p>This differentiation provides a better view on what is and what could participate to the Security of Supply.</p> <p>However, Elia should definitely make a double-check of the additional potential capacity with the limited connection capacity for the future battery projects.</p>
FEBELIEC	For storage and in particular batteries, no full methodology is available describing volume determination. Febeliec considers the proposal from Elia regarding the large scale batteries added during calibration too high and is of the opinion that at least a substantial part of this capacity would also be

²⁶https://www.elia.be/-/media/project/elia/elia-site/public-consultations/2022/20221028_nside_study-on-the-outages-on-generation-units-and-dc-links.pdf

	constructed without CRM participation, implying that the capacity in the reference scenario should be substantially increased compared to the proposed 327 MW.
FEBELIEC	Moreover, Febeliec can under no condition accept the proposal of Elia for small scale storage, where Elia proposes lower capacities compared to the previous calibrations for Y-1 2025-2026 and only slightly higher capacity for Y-4 2028-2029 compared to Y-4 2027-2028, whereas currently many new and existing players are active in this domain and the business cases for such batteries, even without CRM, have become very positive. Febeliec considers the proposal from Elia for small scale storage a severe underestimate and thus not in line with the legal lowest cost criterion.

Elia thanks FEBEG for its input on large-scale batteries. On the volume assumption, Elia would like to precise that if Belgium is not compliant with the reliability standard capacity is added to the system during the calibration process. One of the possible capacities is large-scale storage (see ‘preselected capacity types’). On the methodology used to determine an estimate of the amount of storage volume considered, it has been limited to a determined percentage of the offer requests of developers on the Elia grid. The percentage applied to the offer requests is different depending on the maturity levels of those projects.

On the comment of Febeliec on the lack of a methodology for volume determination, the proposed battery capacities are based on ‘feasibility studies’ and ‘connection studies’ performed by Elia for potential battery projects. Elia proposed to work with an existing and a potential capacity that is added to the model during the economic optimization loop performed during calibration of the model. This also avoids over-estimating the battery capacity, which would result in a lower derating factor for this technology. This does not mean that Elia believes that no new battery projects would be developed without a CRM as capacities added during calibration could also join the market without a CRM. In the end, it is the calibrated reference scenario which should represent the expected capacity mix in Belgium as this is used to calculate the CRM parameters.

For small-scale batteries, Elia has neither a database indicating the existing capacity installed, neither the projections of the foreseen installed capacity in the coming years. Therefore, the following reasoning was conducted to make the projections for the coming years, which include the Delivery Periods of the two CRM auctions considered in this report:

- Since 2019, subsidies/bonus for home batteries have been put in place in Flanders. Around 185 MW of home batteries was estimated to be installed in July 2022 for Flanders²⁷;
- The bonus in Flanders gradually decreases until March 2023, for maximum 9 kWh. Therefore, it is assumed that the number of home batteries in Flanders will continue to increase as in 2020/2021 until March 2024, followed by a slower growth rate after that. No other incentive is assumed;
- The installation of home batteries is mainly driven by the installation of PV. In 2021, it seems that 2% the PV installations in Flanders have added a battery capacity of the size of the PV installation, compared to 0,13% in Wallonia. This number is assumed to decrease up to 0,2 % in Flanders and to increase up to 0,2 % Wallonia after March 2024 and the end of the bonus;
- Elia cross-checked the proposed capacity with the latest data on small scale batteries from Fluvius²⁷ (See Figure 5). Fluvius reports a total of 275 MW of home batteries connected to their grid in 2022. For December 2022 the data is not up to date yet. This is in line with the 282 MW for 2022 foreseen according to the trajectory assumed by Elia.

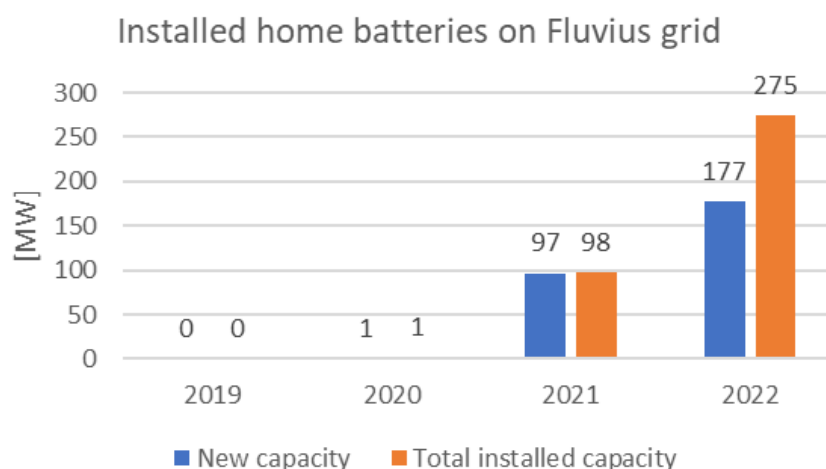


Figure 5 : Installed small-scale home batteries on Fluvius Grid
(Fluvius open data platform consulted on 07/06/2023)

²⁷ https://opendata.fluvius.be/explore/dataset/1_22-energieopslagsystemen-gekoppeld-op-distributienet/information/?sort=-maand_in_dienst

3.2.7 Consumption and peak demand

FEBEG	<p>Total electricity consumption & peak demand: ELIA does not provide the final total electricity consumption that will be used as it will be updated with the latest Climact calculations based on Plan Bureau economic estimates to be published in June 2023. We invite ELIA to transparently inform and to ask feedback from the stakeholders once these figures are known.</p> <p>While on one hand some might put forward that the electricity consumption could be reduced due to the consequences of the high electricity prices and collateral effects of the war in Ukraine (demand destruction), we also witness a sharp acceleration of the energy transition with an increased rate for further electrification. FEBEG therefore strongly recommends ELIA to consider these evolutions in the determination of the demand (and peak demand).</p>
FEBELIEC	<p>For Demand, Febeliec was extremely surprised by the proposed values by Elia, especially for 2028-2029. Between 2027-2028 (last year's exercise) and 2028-2029, Elia adds 13,5 TWh of demand in one single year, a Y-on-Y increase with 15%! Moreover, Elia increases in that same single year the electricity peak consumption from 15 to 18 GW, an increase with 20%! Moreover, Elia reduces demand side response with almost 20%, to the level it foresees for 2025-2026, implying that despite higher prices and evermore flexible loads and smart meters and its own CCMD program, consumers would not react in any way to price signals! The demand reduction/destruction (implicit and explicit) observed during the recent energy crisis, with price levels in the 100s of euros but nowhere near the 1000s of euros of scarcity situations, thus does not seem to be taken into account at all by Elia.</p>
FEBELIEC	<p>Regarding EVs, Febeliec is very surprised to see that Elia compared to its 2027-2028 analysis adds 839.000 EVs in one single year (from 850K in 2027-2028 to 1689K in 2028-2029) and also adds 925000 HPs in one single year compared to its previous analysis. Looking at the values for 2025-2026, Elia suddenly reaches 870K EVs and 885K HPs, which makes Febeliec wonders about the probability of these values. Moreover, Elia also adds in one single year for 2028-2029 11,2 TWh of industrial demand (9,2 TWh for industry and 2,0 for data centres), values which do not align with a.o. EnergyVille in its study end 2022 on "How can Belgium become carbon neutral between now and 2050?", which also indicates industrial electrification but at a slower rate than proposed by Elia.</p>
FEBELIEC	<p>For the average peak load, Febeliec cannot accept the proposed values by Elia, especially not for 2028-2029, as this would imply that consumers, when prices are high (in scarcity situations, relevant for the calibration of the CRM) would continue to consume under normal behaviour, whereas the recent history has shown that consumers are already to a large extent price sensitive if prices already reach levels of 100s of euros and would presumably be even more price</p>

	sensitive and thus show higher elasticity when price levels would reach 1000s of euros under scarcity situations, which is the only moment when peak load is relevant for the exercise conducted by Elia in the framework of the CRM calibration.
FEBELIEC	For total electricity demand, and as also requested during the meetings of the WG Adequacy but formally refused by Elia, Febeliec most strongly insist that an analysis is conducted on the quality of Elia’s total electricity forecasts during all its adequacy assessments (starting already a decade ago with the strategic reserve analyses) in comparison with the observed reality on the one hand for now historic years with measured values and on changes for future years over the different analyses it has conducted, as Febeliec is convinced that Elia systemically overestimates total electricity demand and thus creates a biased analysis of potential adequacy concerns at the detriment of unwarranted adequacy concerns and unnecessary costs for strategic reserves and CRMs, resulting in an unnecessary and undue additional system cost for consumers. Febeliec finds the approach by Elia non-representative of reality, resulting in a probably severe overestimate of total Belgian demand and thus an overestimate of adequacy needs, which will then result in potentially unnecessary higher costs for consumers (if needs are unnecessarily and artificially increased) who are currently already facing the very negative impact of higher energy bills.

As mentioned in the explanatory note of the public consultation, Elia proposes to take into account the most up-to-date forecast of electricity consumption based on the latest economic figures to be published by the Federal Planning Bureau in June 2023. The projected electricity consumption will be updated in line with the updated economic projections. The updated electricity forecast will be communicated to stakeholders during a WG Adequacy in August in which stakeholders are invited to provide feedback.

Regarding Febeliec’s comment on the significant increase of the total load which is linked to the increase of the EVs, HPs, and the expected electrification of the industry²⁸. The sales of hydronic HPs increased massively in Belgium²⁹ and across Europe³⁰ in 2022 and are expected to keep increasing³¹. Note that reversible AA heat pumps (522k untis) are now also taken into account as these saw spectacular growth in recent years. However those are mainly assumed to be used

²⁸ https://single-market-economy.ec.europa.eu/publications/net-zero-industry-act_en

²⁹ <https://www.attb.be/nl/nieuws-attb/enorme-toename-van-aantal-warmtepompen-in-2022/>

³⁰ https://www.iea.org/commentaries/global-heat-pump-sales-continue-double-digit-growth?utm_content=buffer661be&utm_medium=social&utm_source=linkedin.com&utm_campaign=buffer

³¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13771-Heat-pumps-action-plan-to-accelerate-roll-out-across-the-EU_en

as cooling units and only deliver secondary heat. So a lower (-50%) consumption is assumed and they are assumed to not be used during very cold moments. EV sales are rising fast as well. According to Febiac, 25 % of the cars sold in 2022 were fully electric or plug-in hybrid, this increased to more than 35% in the first 3 months of 2023³² ³³. According to Elia, these recent observations confirm the numbers proposed for both reference scenarios. In addition to this, the evolution of EVs and HPs are aligned with the most recent Regional Climate Plans³⁴ and the Federal Climate Plan that will be handed over to the European Commission end of June 2023.

The values proposed for the electrification of the industry are derived from the Elia Group viewpoint focused on industry, logistics and data centres . This study includes quantified trajectories for industrial demand in the lead-up to 2050 as well as intermediate values for 2030 & 2040. The values for 2030 are based on observed requests from Elia-connected clients and in-depth interviews of different industrial companies, sectoral organisations and researchers. Since the study focused on the target years 2030, 2040 and 2050, the values proposed for both Delivery Periods come from an intermediate trajectory for the yearly changes from 2023-2035, which was carried out by taking known commissioning dates into account (both those which have been publicly announced and those communicated to Elia).

Regarding Febeliec's comment on the peak load, Elia wants to insist that the peak load does not include the flexibility. Therefore, the peak load is not a good indicator of the load during scarcity moments. Consumers are indeed expected to react to prices but this reaction is only known after running the economic dispatch model. A significant part of the HPs and EVs as well as the additional electrification from industry and data centres is assumed to be flexible and react to prices. On top of the flexibility of HPs, EVs and additional electrification there is flexibility provided by DSR from existing industry. As such, this DSR is only a part of the flexibility. While it is true that the value proposed for DSR from existing industry in Delivery Period 2028-29 is lower than what was included in the CRM Y-4 2027-28 scenario, the total flexibility is higher. For the Y-4 2028-29 scenario, Elia proposed to start from a lower value of DSR from existing industry but to add potential additional DSR capacity from existing industry during the calibration of the phase of the model. The flexibility coming from additional electrification of industry has a very strong impact on adequacy. While the additional electrification leads to an increased load, the impact on the net load during scarcity moments is much more limited due to the assumed associated flexibility as visible in Figure 6.

³² <https://www.febiac.be/public/pressreleases.aspx?ID=1467&lang=FR>

³³ <https://www.vlaanderen.be/publicaties/plan-flamand-energie-climat-2021-2030-cadre-general-applicable-aux-plans-nationaux-integres-en-matiere-denergie-et-de-climat>

³⁴ <https://awac.be/2023/03/21/pace-2030/>

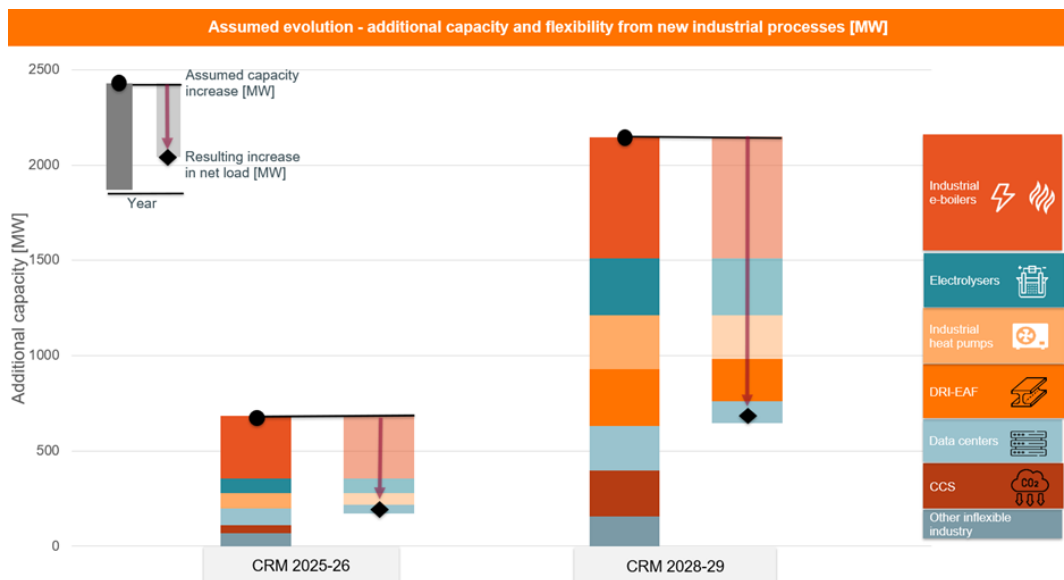


Figure 6 : Additional electrification of the industry, data centres and electrolysers and associated flexibility

On the comment from Febeliec on a comparison between historical consumption and past consumption trajectories assumed by Elia, Elia would like to stress the constantly changing environment in which it has to take assumptions. Policies, consumer behaviour, technologies and the geopolitical/economic context are constantly evolving and make it difficult to take accurate assumptions, especially several years in advance. Elia proposes the trajectories it deems the most likely to materialise and submits them to public consultation.

3.2.8 Demand side response

<p>FEBEG</p>	<p>We welcome the approach of ELIA to split the demand-side response (DSR) from the industry into two categories: the existing capacity proposed for the reference scenario and potential additional capacity.. As mentioned in previous consultations, FEBEG is convinced that the Demand Side Response will play an increasing important role for the security of supply in the coming years; however, the proposed 'existing' value remains very high in our opinion.</p> <p>In particular, the forecast for industrial Demand Side Response (DSR) in Belgium is relatively high compared to neighboring countries. Table 1 presents a comparison between the proposed assumptions in the explanatory note on CRM parameters, 1.8 GW (1.8 GW) existing and an additional potential of 450 MW and 900MW for Y-1 DY2025/26 and Y-4 DT2028/29 respectively, and the values from ERAA2022 for the neighboring countries. When accounting for the size of the countries, it is clear that those forecasts for Belgium are high.</p>
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		Table 1: DSR capacity [GW]				
		BE- existing	BE- max potential	DE	FR	NL
	Y-1 25/26	1798	2248	2999	4200	700
	Y-4 28/29	1798	2698	5499	6500	700
FEBELIEC	<p>Febeliec continues as in previous years to voice important questions and comments towards the values used for demand side response as well as the applied studies. Febeliec in this case wants to explicitly refer to the E-Cube study, on which it already voiced numerous comments over the years and which has shown in the current energy crisis not to deliver robust results (as predicted by Febeliec and now acknowledged also by Elia), yet which Elia continues to apply for the determination of demand side response despite its known and proven flaws. While Febeliec appreciates that (finally) the methodology applied by E-Cube will be updated, it cannot accept (nor even understand) why the current methodology, with its known flaws, is still applied, only because this (flawed) methodology has already been applied in the past (and to which Febeliec has continuously opposed for exactly this reason). Febeliec considers this approach by Elia wrongful and even intellectually bizarre.</p>					
FEBELIEC	<p>Concerning the data used by Climact, within the short timeframe of this consultation it is impossible to validate all data applied. However, Febeliec wants to reiterate its longstanding comments on the use of outdated data, in casu the economic perspectives of the Federal Planning Bureau of June 2022, which predate the summer of 2022 with substantially higher price levels for gas and electricity (reaching new record levels), leading to severe economic impact for (industrial) consumers and demand side response as well as demand side destruction. Moreover, these very high price levels (especially also in comparison with the rest of the world) also have an effect on future consumption of energy as new investments are shifting to a large extent to global regions with lower price levels. As such, the forecast of the Federal Planning Bureau for economic growth and recovery might be overly optimistic</p>					
FEBELIEC	<p>On demand side response volumes, Febeliec reiterates and most strongly urges Elia to take into account not only voluntary direct and indirect demand response based on peak prices but also voluntary demand side response to longer periods with high energy prices (below peak price levels but for extended periods) as can be observed at this moment. The impact on overall demand (and thus also implicit demand response) could clearly be observed both in 2022 as well as 2023, with several percentage points of demand reduction and thus a very clear correlation between high (not peak) prices and demand (and demand response), which is according to Febeliec far from sufficiently taken into account in the studies by Elia and thus leads to a bias</p>					

	<p>from Elia towards artificially higher but in reality unwarranted adequacy needs. Febeliec also opposes the view from Elia regarding the need for a CRM for demand response to develop, as the current crisis (as also described above) shows clearly that even without such CRM demand clearly reacts in substantial capacities on prices (and this even despite most non-industrial consumers not possessing smart meters and thus delivering only implicit and not even explicit demand side response).</p>
FEBELIEC	<p>On the proposed values for demand side response capacity, Febeliec refers to its above-mentioned comments on the proposal by Elia and cannot accept that for 2025-2026 and 2028-2029 the same base value is applied. Moreover, in light of the recent observations as well as the on-going efforts to unlock flexibility from demand (e.g. smart meter roll-out, dynamic price contracts, Elia’s own CCMD program, efforts taken by Elia towards opening its ancillary services for medium and low voltage consumers, efforts taken by DSOs, the European Commission’s work on a Network Code on demand side response, the new legislation being discussed regarding the Electricity Market Reform, the increased interest in small scale batteries which make consumers reflect also more profoundly on their consumption, ...), Febeliec considers the capacities which Elia considers potentially to be added during calibration too low (and not even reflecting reality as a substantial part of demand side response will also be developed without CRM, in particular in the non-professional segment) and tis most explicitly for 2028-2029 where Elia is not ambitious at all for any potential increase.</p>

Regarding FEBEG’s comment on high assumptions for DSR capacities compared to other countries. Elia would like to remind that it follows a quantitative methodology to calculate the existing DSR volume based on market bids. The additional potential DSR volume is not part of the central scenario but could be added during calibration of the model. Elia agrees that the DSR capacity for Belgium is quite high but deems this realistic. Belgium has a high level of industrialization and several initiatives have been taken to encourage the development of DSR capacity in Belgium. The CRM mechanism in particular provides strong incentives for the development of DSR capacities in Belgium³⁵.

³⁵ https://smarten.eu/wp-content/uploads/2022/01/the_smarten_map_2021_DIGITAL_final.pdf

On Febeliec’s comment on the E-Cube study, Elia would like to remind that this methodology was developed in discussions with stakeholders and some additional improvements were already implemented. Nonetheless, Elia agrees that the methodology has its shortcomings, as detailed in the explanatory note to this public consultation, and proposed several possible improvements to the methodology. Elia explicitly consulted these possible improvements and asked stakeholders for suggestions for further improvements. Elia is still open to further suggestions by stakeholders.

Regarding Febeliec’s comment on the Climact data, Elia would like to stress that the electricity consumption forecast by Climact will be updated with the latest economic projections from the Federal Planning Bureau when they will be published in June. The Federal Planning Bureau publishes detailed economic growth forecasts per sector, including industry sub-sectors which take into account the latest developments. Elia deems this the most reliable forecast for economic growth in Belgium.

Elia would also like to remind that the impact of high prices on the electricity consumption of both industry and households is taken into account in the electricity consumption forecasted by Climact as mentioned in the explanatory note to this public consultation.

On Febeliec’s comment that Elia considers that new DSR capacities would only develop if they are contracted under the CRM, Elia disagrees. Elia proposes the same value of existing DSR for both Delivery Periods 2025-26 and 2028-29 and to add potential new DSR capacities during the calibration process if Belgium is not compliant with its reliability standard . The addition of potential DSR capacity during calibration does not mean that additional DSR capacity would not join the market outside of the CRM. It is just a mean to obtain a calibrated scenario for Belgium (= comply with its reliability standard) on which the CRM parameters are calculated. In end, it is the calibrated reference scenario which should represent the expected capacity mix as this is used to calculate the CRM parameters.

Elia would also like to remind that on top of the existing and potential additional DSR volumes there is also additional DSR from the electrification of industry which amounts to 1.2 GW in the 2028-29 Delivery Period.

3.2.9 Economic parameters

FEBEG	There is an inconsistency between excel & explanatory note: we assume that the explanatory note is correct and that the order of the categories in the excel is not: it should be first gas, then coal and finally oil.
FEBELIEC	Febeliec would like to see how Elia justifies its proposed (and highly increased) price levels for a.o. CO2 in 2025-2026 (more than three times higher than in the previous analysis) and oil in 2028-2029 (also than three times higher than in the previous analysis)

Elia thanks FEBEG for pointing out the inconsistency and apologizes for the error regarding the prices in the Excel. Indeed, the version of the explanatory note is correct. The correct table in the Excel sheet should have been as follows:

Category	Price [€ 2022/MWh]	
	2025-2026	2028-2029
Gas	35.5	28.0
Coal	18.6	11.4
Oil	36.7	34.9
	Price [€ 2022/tCO2]	
	2025-2026	2028-2029
CO2	107	120.3

Table 1 : Economic parameters proposed for the public consultation for Y-1 auction with Delivery Period 2025-26 and Y-4 auction with Delivery Period 2028-29

The prices proposed for the public consultation (see

Table 1) were provided for informative purposes. Given the volatility in prices, Elia proposed to recalculate the prices for this public consultation report. The prices are determined by the latest available forward prices of coal³⁶, oil³⁷, gas³⁸, and CO2³⁹. In cases where no specific information is available, an interpolation is conducted, taking into account the latest future price and the price provided in the latest World Energy Outlook report⁴⁰ under the "Announcement Pledges" scenario. Elia invites the relevant authorities to take into account updated price information after publication of this report if relevant price changes occur before the final decision of the scenarios by the Minister.

Category	Price [€ 2022/MWh]	
	2025-2026	2028-2029
Gas	34,1	26,8
Coal	12,9	9,9
Oil	35,9	32,4
	Price [€ 2022/tCO2]	
	2025-2026	2028-2029
CO2	92,9	104,0

³⁶ <https://www.cmegroup.com/markets/energy/coal/coal-api-2-cif-ara-argus-mccloskey.html>

³⁷ <https://www.cmegroup.com/markets/energy/crude-oil/light-sweet-crude.quotes.html>

³⁸ <https://www.eex.com/en/market-data/natural-gas/futures#%7B%22snippetpicker%22%3A%22300%22%7D>

³⁹ <https://www.eex.com/en/market-data/natural-gas/futures#%7B%22snippetpicker%22%3A%22300%22%7D>

⁴⁰ <https://www.iea.org/reports/world-energy-outlook-2022>

Table 2 : Economic parameters proposed for Y-1 auction with Delivery Period 2025-26 and Y-4 auction with Delivery Period 2028-29

Regarding Febeliec’s comment on CO2 and oil prices being 3 times higher than in the previous analysis, Elia refers to the inconsistency pointed out by FEBEG. An overview of the fuel prices in the scenario for the Y-4 auction for Delivery Period 2027-28, the fuel prices provided for the public consultation and the updated prices are shown in Figure 7.

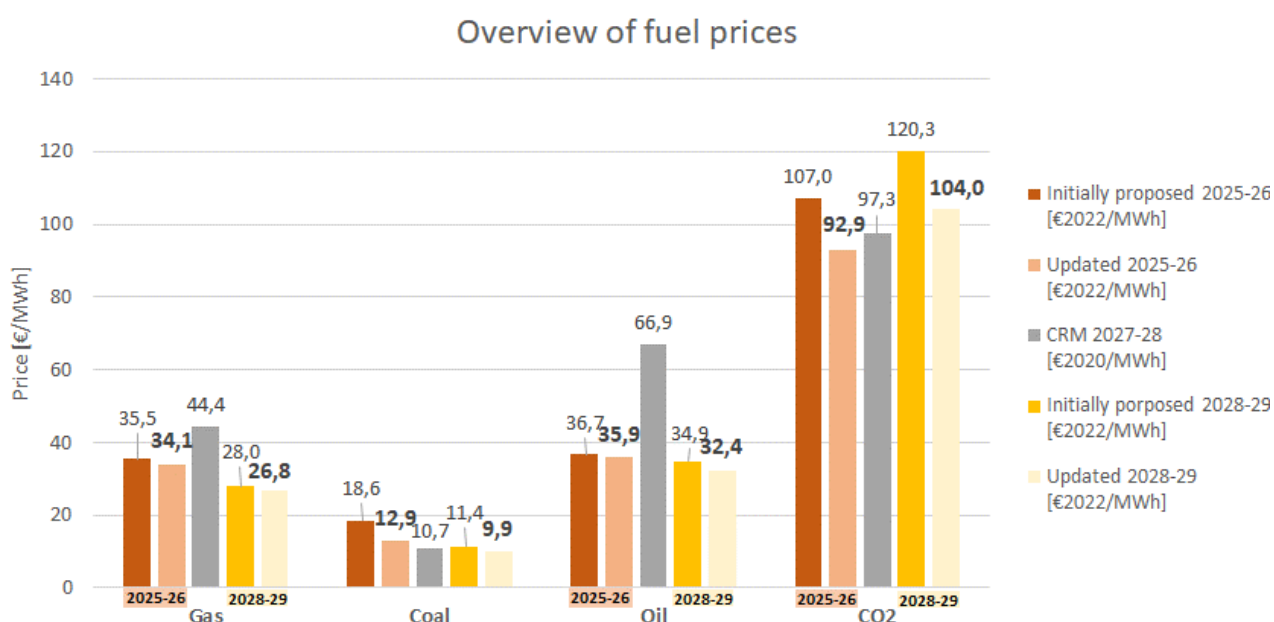


Figure 7: Overview of the fuel prices

3.2.10 Flow based domain

<p>FEBEG</p>	<p>FEBEG has taken note of the use of fixed RAM 70% for the entire European perimeter, however, as stated previously, FEBEG considers that the consideration of the minRAM 70% for all EU countries listed in the excel sheet is overly optimistic for several reasons.</p> <p>FEBEG members still observe a difficult and slow process to achieve anything near a dependable and universal application of the 70% by 2025. The application of Individual Validation Adjustments has further complicated the view on what progress is being achieved to reach 70% by 2025 and leads to (too) frequent situations of reduction of the RAM. As previously observed, there exist several exit doors to not apply the 70% in order to consider internal network elements in DA capacity calculation. We also observe situations in which the application of default flow based parameters leads to very low import/exports possibilities for Belgium.</p> <p>Furthermore, the assumption of a complete transmission grid availability in the winter period remains overly optimistic according to FEBEG. A non-complete grid will increase internal flows on network elements which will put under pressure the compliance with the so-called CEP rule of minRAM 70%.</p> <p>Finally, FEBEG considers that during moments of grid tension, TSO's ability to make the necessary adjustments to guarantee the 70% will be degraded. As such, there will be very limited probability that in such a context 70% will be achieved on all borders, even if the two previous comments would no longer be applicable.</p> <p>Therefore, FEBEG reiterates its view that a sensitivity should be integrated in the reference scenario that is more pessimistic by using RAM values lower than 70% rather than fixed RAM 70%.</p>
<p>FEBELIEC</p>	<ul style="list-style-type: none"> • Febeliec agrees that for the minimum minRAM 70% is chosen (although Febeliec insists that this value is a legal minimum and TSOs should strive to do better as consumers pay for 100% of the (cross-border) infrastructure). Febeliec also opposes any value below 70% as his 70% is a strict legal requirement. • On cross-border capacities, Febeliec does not see any information on which future grid (based also on investments) is taken into account, which is a.o. very relevant in light of many recent announcements (e.g. on hybrid offshore grids).

Regarding the flow-based domain, Elia takes note of the feedback from both FEBEG and Febeliec on the ambition of minRAM 70% for Delivery Periods 2025-26 and 2028-29.

Regarding FEBEG’s comment on the uncertainties of reaching a minRAM of 70%, from 31/12/2025 onwards, the 70% minRAM requirement has to be applied rigorously to all CNECs. Elia agrees that there is a risk for Delivery Periods 2025-26 and 2028-29 that this requirement is not met by some countries, but does not consider this as the central assumption.

Regarding Febeliec’s comment on the future grid considered, Elia has developed a flow-based framework which does not rely on historical domains, but instead aims to mimic the operational flow-based capacity calculation workflow. The framework is based on the grid model used is based on the TYNDP 2022. The hybrid offshore grids are not in the scope for Delivery Periods 2025-26 nor 2028-29.

3.2.11 Balancing capacity

FEBELIEC	Febeliec regrets that Elia takes every year higher volumes of balancing capacity to be reserved, while at the same time watering down certain balancing obligations for BRPs (e.g. Day Ahead balancing obligation). As Elia considers needs for balancing capacity to rise over time, it should rather strengthen balancing obligations, in order to avoid that evermore capacity needs to be contracted and paid for by consumers.
FEBELIEC	Febeliec insist that the impact of cross-border balancing capacity should be taken into account as reduction factor for balancing capacity needs, as by 2028-2029 all European balancing platforms should be functional and thus should reduce the balancing capacity reservation needs. At the same time also inter-TSO capacity must be taken into account. Moreover, Febeliec also wants to point to studies in the framework of regulatory incentives conducted by Elia ,which could result in less or no reservation of balancing capacity, while this impact is not at all taken into account in this report.

For the amount of balancing capacity taken into account, Elia relies on its best estimates to fulfill the legal requirements on the need to dispose of sufficient reserve capacity. The effect of the relaxation of the DA balance obligation on the system imbalance could be negative in case of massive wrong bets by the players, which Elia considers very unlikely thanks to the financial incentive that represent the Imbalance tariffs. Nevertheless, Elia analyzed and simulated a worst case scenario concluding that the impact of the relaxation of the DA balance obligation on the balancing capacity needs would be negligible. This scenario was consistent with the scenarios carried out by Elia in the framework of the “MOGII System Integration Study.

In order to correctly capture the effect of balancing risk on the adequacy needs, the reserve capacity to be taken into account in the adequacy simulations should be limited to the reserve capacity needs during scarcity periods. Based on the dynamic nature of the FRR needs, and previous observations that renewable and demand prediction risks in terms of shortages are lower during scarcity conditions, Elia proposes to limit the final FRR needs to 1039 MW, i.e. the size of the largest nuclear generation unit (Doel 4), and this on top of the ‘static’ FCR values. As such, Elia proposes to update the total balancing needs to be included in the reference scenario for Delivery Period 2025-26 and 2028-29 to 1134 MW and 1136 MW respectively. The proposed values are shown in the

Table 3.

	Balancing capacity [MW]	
	2025-2026	2028-2029
Total FCR	95	97
Total FRR	1221	1353
Total reserve capacity	1316	1450
Total FCR during scarcity	95	97
Total FRR during scarcity	1039	1039
Total reserve capacity in scarcity periods	1134	1136

Table 3: Balancing capacity for Y-1 auction with Delivery Period 2025-26 and Y-4 auction with Delivery Period 2028-29

3.2.12 Other countries data

FEBELIEC	Concerning the updates of other countries data (wrongly labelled neighbouring countries by Elia in the explanatory note), Febeliec takes note that Elia derives information from recent national studies (where it is unclear which cut-off point is taken into account to include or not updates), but also ambitions, in some cases apparently based on press articles while for other cases only official sources are used.																																								
FEBELIEC	<p>On the proposed values, Febeliec can only observe some surprising elements. Febeliec has composed, based on the proposed values by Elia, following overview:</p> <table border="1" data-bbox="469 768 1391 1346"> <thead> <tr> <th>Demand (TWh)</th> <th>2025-2026</th> <th>2028-2029</th> <th>% increase</th> </tr> </thead> <tbody> <tr> <td>Belgium</td> <td>88,7</td> <td>104,4</td> <td>18%</td> </tr> <tr> <td>France</td> <td>480</td> <td>506</td> <td>5%</td> </tr> <tr> <td>Germany</td> <td>574</td> <td>619</td> <td>8%</td> </tr> <tr> <td>Netherlands</td> <td>124</td> <td>141</td> <td>14%</td> </tr> <tr> <td>UK</td> <td>295</td> <td>316</td> <td>7%</td> </tr> <tr> <td>Spain</td> <td>259</td> <td>261</td> <td>1%</td> </tr> <tr> <td>Italy</td> <td>329</td> <td>342</td> <td>4%</td> </tr> <tr> <td>Poland</td> <td>167</td> <td>178</td> <td>7%</td> </tr> <tr> <td>Denmark</td> <td>41</td> <td>50</td> <td>22%</td> </tr> </tbody> </table> <p>It is surprising to observe that, with the exception of Denmark, Elia proposes with +18% the largest relative increased in demand of all observed countries (and Denmark has a much lower absolute consumption level, skewing the relative increase), while most other countries, facing the same European legislation and goals and impact on electrification, show only single digit increases over the period 2025-2029 (in the case of Spain even only +1%). In this perspective, Febeliec can only question Elia’s potentially overambitious proposed values, which however have a very clear impact on adequacy needs and concerns and thus also on the overall system cost as this could lead to additional but unwarranted costly CRM capacity needs.</p>	Demand (TWh)	2025-2026	2028-2029	% increase	Belgium	88,7	104,4	18%	France	480	506	5%	Germany	574	619	8%	Netherlands	124	141	14%	UK	295	316	7%	Spain	259	261	1%	Italy	329	342	4%	Poland	167	178	7%	Denmark	41	50	22%
Demand (TWh)	2025-2026	2028-2029	% increase																																						
Belgium	88,7	104,4	18%																																						
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Italy	329	342	4%																																						
Poland	167	178	7%																																						
Denmark	41	50	22%																																						

Regarding the Febeliec's comment on the update of the other countries data, Elia tries to include in its studies as much as possible up-to-date information. These updates come mainly from both official sources or relevant national studies. This is the case for France with announcement from Macron or with the 'Bilan Prévisionnel', for Netherlands with the 'Monitoring Leveringszekerheid' published in January 2023, for Germany with the Easter Package or with the 'Netzentwicklungspläne' or for Great-Britain with the 'Future Energy Scenario'. In some specific cases, information found in the press (e.g. about historical data or installations during the course of 2022) were considered if the data from ERAA2022 were found to be outdated and if no official updated data were available so far, as for PV in Poland. Elia takes note of Febeliec's comment and will consider it for the scenario quantification of future studies. Regarding the dataset related to other European countries, as mentioned in Elia's recommendation, Elia proposes to consider in the reference scenario any further national announcement or relevant study to be published before the decision of the Minister.

In order to include as much as possible up-to-date information, Elia proposes to update the demand of Italy for Delivery Period 2028-29. This value comes from the Terna report 'Rapporto di identificazione delle capacità obiettivo' published in June 2023⁴¹. In addition to this update, Elia invites the relevant authorities to consider potential forthcoming updates to the data for other countries if any relevant official studies are published prior to the Minister's final decision on the scenarios.

The Figure 8 shows the electricity consumption trends in Belgium and in several other significant European countries. It is worth noting that the figures exclude electrolysis. The information depicted in the figure is derived from the latest national studies and the ERAA 2022 dataset with adjustments made to account for the energy crisis. Upon analysing Figure 8, it becomes apparent that Belgium's projected increase in electricity demand aligns well with other major countries (and interconnected countries) such as Germany, the Netherlands, and the UK.

⁴¹ https://download.terna.it/terna/Terna_Rapporto_Capacita%CC%80_Obiettivo_2023_8db6776a1f286f1.pdf

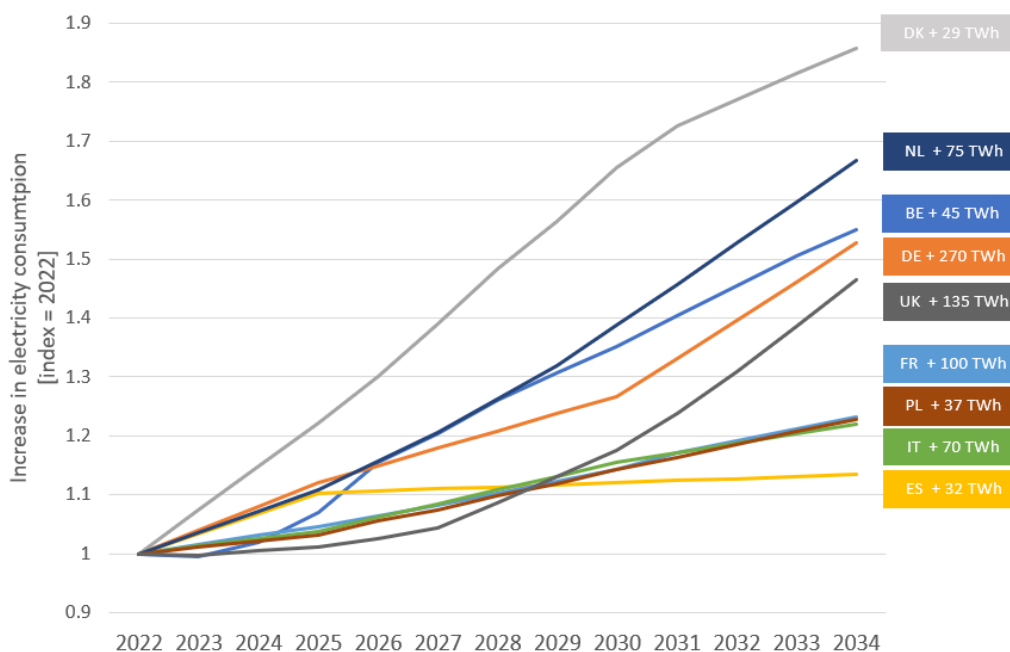


Figure 8 : Load evolution assumed in Belgium and other countries normalised to 2022 (excluding electrolysis)

3.3 Reactions on proposed sensitivities

In the framework of the public consultation, Elia submitted a set of sensitivities to stakeholders, including the source of the data and assumptions used. The purpose is to potentially include in the reference scenario one or multiple sensitivities that can have an impact on the Belgian security of supply and are located inside or outside the Belgian market zone, as described in article 3, §4 of the Royal Decree. These sensitivities can be integrated in the reference scenario (i.e. only one scenario will therefore be constructed). The Minister will decide on the data and assumptions that will be selected as reference scenario, including the potentially selected sensitivities, based on a proposal from the CREG, the advice from the FPS on this proposal and Elia’s recommendations.

The set of sensitivities proposed during the public consultation for the Y-1 auction with Delivery Period 2025-26 is presented on Figure 9.

Sensitivities proposed for DY 2025-26	
French nuclear availability 1	Decreased French nuclear availability based on historical figures Lower availability during winter compared to REMIT Calculated as the difference with the high EDF forecast on the winter only
French nuclear availability 2	Decreased French nuclear availability based on historical figures Lower availability during winter compared to REMIT Calculated as the difference with the average EDF forecast on the winter only
French nuclear availability 3	Decreased French nuclear availability based on historical figures Lower availability during winter compared to REMIT Calculated as the difference with the minimum EDF forecast on the winter only
French nuclear availability 4	Decreased French nuclear availability based on historical figures Lower availability during winter compared to REMIT Calculated as the difference with the minimum EDF forecast on the whole year
FB CEP rules	Non achievements of the CEP rules to reflect the uncertainty on capacity calculation. Fixed RAM 70% instead of 70% min RAM
Export restrictions in Norway	Norway blocking export of electricity due to low hydro production Export restrictions in Norway during periods of low hydro production
UK nuclear availability	Nuclear extension in UK delayed The nuclear units for which an extension was announced in the UK are not available
High prices	Higher prices in Europe Higher fuel costs
Low prices	Lower prices in Europe Lower fuel costs
Lower demand	Lower demand in Belgium Lower yearly consumption due to economic developments
Higher demand	Higher demand in Belgium Higher yearly consumption due to economic developments
Higher DSR	Higher existing DSR capacity in Belgium Additional 50 % of potential DSR capacity considered as existing before calibration
Higher storage	Higher existing large-scale battery capacity in Belgium Additional 50 % of potential large-scale battery capacity considered as existing before calibration

Figure 9: Sensitivities menu, as proposed during the public consultation

The set of sensitivities proposed during the public consultation for the Y-4 auction with Delivery Period 2028-29 is presented on Figure 10.

Sensitivities proposed for DY 2028-29	
French nuclear availability 1	Decreased French nuclear availability in continuity of last year's references scenario Lower availability by 2 units on average during winter compared to ERAA
French nuclear availability 2	Decreased French nuclear availability based on historical figures Lower availability by 4 units on average during winter compared to ERAA
French nuclear availability 3	Decreased French nuclear availability based on historical figures Lower availability by 6 units on average during winter compared to ERAA
French nuclear availability 4	Decreased French nuclear availability based on historical figures Lower availability by 8 units on average during winter compared to ERAA
TJ closure	Closure of turbojets due to possible CO2 threshold -140 MW
FB CEP rules	Non achievements of the CEP rules to reflect the uncertainty on capacity calculation. Fixed RAM 70% instead of 70% minRAM
Export restrictions in Norway	Norway blocking export of electricity due to low hydro production Export restrictions in Norway during periods of low hydro production
High prices	Higher prices in Europe Higher fuel costs
Low prices	Lower prices in Europe Lower fuel costs
Lower demand	Lower demand in Belgium Lower yearly consumption due to economic developments
Higher demand	Higher demand in Belgium Lower yearly consumption due to economic developments
Higher DSR	Higher existing DSR capacity in Belgium Additional 50 % of potential DSR capacity considered as existing before calibration
Higher storage	Higher existing large-scale battery capacity in Belgium Additional 50 % of potential large-scale battery capacity considered as existing before calibration

Figure 10 – Sensitivities menu, as proposed during the public consultation

3.3.1 General Remark

FEBELIEC	On sensitivities, Febeliec strongly regrets that Elia only calculates one single configuration of the base scenario and a combination (or one single) sensitivities. This approach does not provide for additional meaningful insights by comparing different constellations, which would however be very useful.
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Elia takes note of Febeliec’s comment. Elia follows the Royal Decree on this matter, which consider only one reference scenario to be selected by the Minister after a clear process including a collaboration and concertation phase with the FPS and the CREG, this public consultation, including a complete consultation report integrating Elia’s recommendations, a reference scenario proposal from the CREG and an advice from the FPS on this latest proposal.

However, Elia will perform a wide range of scenarios and sensitivities and quantify their impact on Belgium’s adequacy in the framework of the upcoming AdeqFlex’23.

3.3.2 French nuclear availability

FEBEG	<p>FEBEG firmly supports the need to include a sensitivity regarding the French nuclear availability in the reference scenario: in fact, based on past unavailability of the French nuclear these last years, it is clear that for SoS reasons and as a matter of precaution principle for Belgium, 8 units should be considered as unavailable for the Y-4 auction of 2028-29 on top of the installed capacity referred to in the ERAA 2022.</p> <p>For Y-1 auction of 2025-26, the French nuclear availability should be based on the Lower availability during winter compared to REMIT, calculated as the difference with the minimum EDF forecast on the winter only (as minimum scenario).</p> <p>As stated at numerous occasions, FEBEG considers that the French nuclear availability constitutes a major risk for the Belgian Security of Supply. The recent low availability of the French nuclear due to abnormal corrosion phenomena and its possible impact on the upcoming winters clearly demonstrates that this risk should be taken very seriously. Clearly, the past months/year have been a real stress test case for Belgium (in a generation landscape with still important contribution of the Belgian nuclear units). Such “extreme” scenario needs, to a certain extent, be taken into account when calibrating the demand curve, also considering that other factors/situations outside of the control of Belgian authorities may occur in the future.</p>
FEBELIEC	On the sensitivities on UK and French nuclear availability, and as already discussed in the past, Febeliec remains surprised that this is even included, as UK and France already have a CRM in place, guaranteeing the adequacy of the

	<p>UK and France and according to the ERAA methodology, NRAAs can only take into account national impacts and not those cross border. Febeliec is also surprised that Elia now includes lower availability of up to 8 nuclear units in France even until 2028-2029, while also adding an additional one for the UK. Febeliec wonders to which extent Elia is creating scenarios where it excludes so much capacity in the European system as to create a self-fulfilling prophecy of adequacy concerns</p>
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In the framework of the CRM calibration, Elia is only looking at what capacity would be available in France for the Delivery Periods 2025-26 and 2028-29. For the Delivery Period 2025-26, the availability is based on the information published on REMIT. For the Delivery Period 2028-29, this availability is based on the data and assumptions provided by RTE in the dataset of the European Resource & Adequacy Assessment 2022, as presented in the explanatory note, in line with article 3, §2 of the Royal Decree.

This sensitivity on the nuclear availability in France is proposed in order for the Belgian authorities to cover themselves against lower nuclear availabilities in France compared to REMIT and ERAA2022. Such reasoning is compliant as it is justified and quantified as described in the explanatory note, in line with article 3, §4 of the Royal Decree.

This sensitivity is based on multiple arguments:

- over the past decade, nuclear unavailability in France has increased significantly, reaching unprecedented levels for winter 2022-23. Analysis of REMIT availability data from the past 8 years reveals consistent underestimation of unavailability rates when published a few months before winter (see Figure 11);
- the French nuclear fleet is going through major overhauls to extend the lifetime of its ageing fleet beyond 40 years;
- the recent crisis linked to the problems of stress corrosion cracking has had a major impact on the availability of nuclear units in 2022, and will continue to do so at least for the three next years⁴²;
- in addition, the ageing nuclear fleet in France could be subject to similar events in the future (other than the stress corrosion discoveries) as the fleet is very vulnerable to generic issues given the same technological conception used in the reactors (a similar situation was already experienced during winter 2016-17);
- in its latest intermediary report published in June 2023, RTE is planning to include sensitivities and stress-tests on the amount of outages in the framework of security of supply analysis.

⁴² <https://assets.rte-france.com/prod/public/2023-06/2023-06-07-bilan-previsionnel-points-etape.pdf>

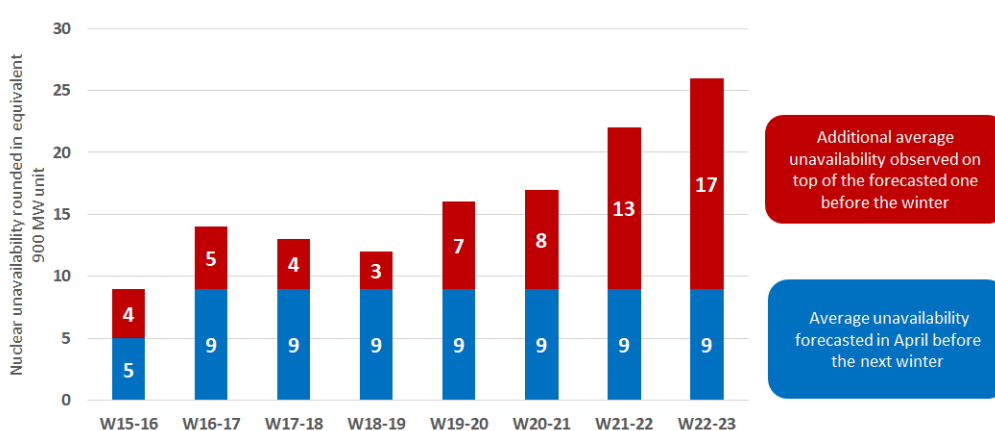


Figure 11 : Difference between the forecasted and realised unavailability of the French nuclear during winter expressed in number of units

Regarding French nuclear, Elia takes note of FEBEG's argument to consider 8 units unavailable on top of the ERAA 22 unavailability.

The latest 'Bilan Prévisionnel' of RTE published in 2021 (see Figure 3 from the document "Enseignements principaux")⁴³ has identified in its reference scenario that the system would not be adequate according to their reliability standard for the 3 upcoming winters. Such results indicate that even though the country has put in place a mechanism to guarantee a certain level of reliability, it is not always guaranteed that the system will be able to cover it. There might be externalities that are not covered by the design of the mechanism or the development of new capacities might not be feasible in the required timeframe. Note that the 'Bilan Prévisionnel' was published before the announcement regarding corrosion on French nuclear power plants which further decreased the nuclear availability in France.

Furthermore, the sensitivity considering 4 more unavailable nuclear units during winter compared to the ERAA profile is in line with the conservative variants proposed by RTE in its intermediary report regarding the 'Bilan prévisionnel 2023'. RTE even considers scenarios with lower availability levels in order to assess France security of supply.

In conclusion for the Y-1 auction with Delivery Period 2025-26, Elia believes that considering the lower availability during winter compared to REMIT should be taken into account and integrates this sensitivity in its recommendation to the Minister. The reduction is calculated as described in the Explanatory note and based on the minimum EDF forecast on the winter only.

In conclusion for the Y-4 auction with Delivery Period 2028-29, Elia believes that considering the sensitivity with 4 units unavailable for the reference scenario should be taken into account and integrates this sensitivity in its recommendation to the Minister.

⁴³<https://www.rte-france.com/analyses-tendances-et-prospectives/les-bilans-previsionnels#Lesdocuments>

3.3.3 Flow-based CEP rules

<p>FEBEG</p>	<p>As mentioned in the section commenting the input data, FEBEG considers that there remain high uncertainties on whether the ambition of minRAM 70% will really be achieved by 2025 and by 2028 in all countries. For delivery year 2025-26, we highly consider this improbable as for instance, we observe that derogations are still claimed by some countries, while for others action plans are put in place to reach the minRAM70% target.</p> <p>We therefore consider it justified to embed this risk in the reference scenario for delivery 2025-26 and to have a prudent approach for delivery year 2028-29, also because the assumption that the transmission grid will be fully available in the winter period is ambitious as mentioned by ELIA in the report.</p> <p>These elements show that even a fixed RAM70% will be optimistic for some countries. We reiterate our view that a country-per-country approach could be applied to better capture the uncertainty. If this is not possible, a prudent approach should be considered and therefore the minRAM70% hypothesis should not be included in the reference scenario.</p>
<p>FEBELIEC</p>	<p>On the flow-based CEP rules sensitivity, Febeliec opposes the inclusion of any sensitivity which would reduce the minRAM below 70% as this the minimum threshold. Febeliec already considers the fixed RAM 70% a very conservative approach by Elia.</p>

Elia takes note of FEBEG’s and Febeliec’s feedback regarding the sensitivity on the flow-based CEP rules. From 31/12/2025 onwards, the 70% minRAM requirement has to be applied rigorously to all CNECs. Elia agrees that there is a risk for delivery period 2025-26 that this requirement is not met by some countries, but does not consider this as the most probable outcome. For the Delivery Period 2028-2029, 3 years after the legal requirement is applicable, Elia acknowledges that there can also be a risk.

3.3.4 Uncertainties on Belgian thermal units

FEBEG	FEBEG suggests Elia to integrate, in the reference scenario, a reduction of the MW compared to table 1.2 (excel sheet) to account for some Belgian thermal plants (TJs, CHPs, ...) leaving the market for various reasons: no access to CRM, obsolescence, reduced steam need within the industry, ...
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Elia takes note of FEBEG’s feedback regarding the sensitivities to be integrated in the reference. During the WG Adequacy of 23 March 2023⁴⁴, the FPS Economy proposed to use more strict CO₂ emissions limits for units participating in the CRM. These are set in the functioning rules and are:

- All units below the specific emission threshold of 550 gCO₂/kWh are allowed to participate;
- For units commissioned before the 04/07/2019: a maximum specific emission threshold of 600 gCO₂/kWh is allowed if the annual emission threshold of 306 kgCO₂/kWe/year is met. This means that a unit emitting exactly 600gCO₂/kWh cannot run more than 510 hours per year;

Elia thinks that the new CO₂ thresholds which will be applicable for the Y-4 auction with Delivery Period 2028-29 will result in a high probability of capacities that do not comply to the threshold leaving the market (as they will not be able to participate in the CRM) As such Elia proposes to include a sensitivity on the closure of all Belgian thermal units with CO₂ emissions above the 600 gCO₂/kWh threshold. Based on the information that Elia has, this would consist of all turbojet units and old OCGTs not complying with the thresholds for a total of 190 MW.

⁴⁴ <https://www.elia.be/en/users-group/adequacy-working-group/20230323-meeting>

3.3.5 Higher DSR /storage

FEBELIEC	On the sensitivities for higher demand side response and higher large-scale battery capacity, Febeliec would at least add also higher small-scale battery capacity
FEBEG	We are of the opinion that the sensitivities of higher batteries and higher DSR should not be retained in the final scenario choice for the reasons explained in the section commenting the input data.

Elia takes note of FEBEG’s and Febeliec’s feedback regarding DSR capacity. Elia sees no specific reasons to divert from its base assumptions on DSR or storage capacity. Elia will therefore not include a sensitivity on DSR or storage capacity in its recommendation. On the comment from Febeliec on a sensitivity on small-scale batteries, as mentioned in 3.2.6, Elia sees its proposed capacity confirmed by recent developments and therefore will not include a sensitivity on small-scale batteries in its recommendation.

3.3.6 Price and demand uncertainties

FEBEG	<p>FEBEG fully agrees with ELIA’s statement that the high prices and volatility observed on the energy markets in recent years make it very difficult to provide accurate estimates of fuel prices for the Y-1 DY2025-26 and especially Y-4 DY2028-29. The current uncertain geopolitical and economic context could impact fuel prices both upwards and downwards.</p> <p>FEBEG recommends a prudent approach regarding this.</p>
FEBELIEC	Febeliec strongly supports one or even several sensitivities on lower demand in Belgium, as it considers, as described above, Elia’s forecasts completely excessive, also compared with most other European countries.
FEBELIEC	<p>On a sensitivity of higher demand in Belgium due to high prices, Febeliec does not at all understand the rationale of Elia, as high prices have clearly shown lower demand in Belgium. Moreover, Febeliec already considers Elia’s demand forecast completely excessive and does not see how demand could reach even higher, never-before seen, levels and especially not with high prices.</p> <p>On the lower demand due to high prices, Febeliec supports, as mentioned above, such approach yet the explanatory note lacks any content to evaluate what Elia is actually proposing as methodology to determine such lower demand (and peak demand?) levels. Moreover, it is unclear what Elia intends with “due to economic developments” as lower demand will more directly be linked to high prices rather than an abstract notion of economic development.</p>

FEBELIEC	On the sensitivity on the uncertainty on prices of gas and coal (and oil?), while Febeliec supports such sensitivities (and regrets, as mentioned above that only one single scenario will be modelled and calculated by Elia, thus not providing additional insights from these sensitivities), it remains unclear which price levels Elia would then analyse.
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Elia agrees with FEBEG’s comment on a prudent approach. As mentioned by FEBELIEC, one scenario will be simulated for each Delivery Period. As such, Elia currently sees no reason to assume a higher or lower price than the proposed base case and will not include a price sensitivity in its recommendation.

The demand for electricity is another scenario component which could be heavily impacted by economic developments. The demand will be estimated based on the latest economic forecasts from the Federal Planning Bureau, which according to Elia is the most reliable source of data on the Belgian economy. Price sensitivity from both industry and residential consumers is taken into account in the Climact model. The methodology to calculate the impact of electricity price levels on the load as presented in the public consultation and applied in AdeqFlex’23 was developed by Climact and presented to the Adequacy Working Group on 25 August 2022 ⁴⁵. It consists of 4 steps:

- STEP1: future electricity prices are estimated based on futures and assumed fuel and carbon prices;
- STEP 2: a price elasticity associated with electricity is considered (as described in a paper published by the CREG ⁴⁶) and, taking 2020 electricity price levels as a reference, a theoretical load reduction can be computed;
- STEP 3: the load reduction is different for each sector and a cap on the reduction is applied; for instance, the load reduction for hot water use, lighting and cooking are not the same as these energy uses do not fulfil the same basic needs. A reduction of electricity consumed by industry is also accounted for since this was observed in the second half of 2022.
- STEP 4: the corresponding reduction is applied for each Delivery Period, across each sector with their corresponding caps.

Climact is currently investigating how to further improve the methodology to take into account the impact of electricity prices on the demand in its upcoming update. This will be explained in a report and discussed with stakeholders in a WG Adequacy.

⁴⁵ <https://www.elia.be/en/users-group/adequacy-working-group/20220825-meeting>

⁴⁶ <https://www.sciencedirect.com/science/article/abs/pii/S0167718721001016>

As mentioned by Febeliec, high fuel prices do not lead to a higher but a lower demand. This was incorrectly written in the public consultation Excel.

The electrification rate is another important factor impacting the electricity consumption. As mentioned in 3.2.7. recent observations on EV and HP sales confirm the values proposed by Elia. For additional electrification coming from the industry, Elia sees no reason to divert from the base assumption which is based on the “Powering industry towards Net Zero” study performed by Elia and provides a bottom-up approach. As such Elia will not include a demand sensitivity in its recommendation.

Elia acknowledges that price and demand are difficult to forecast, and that various unexpected developments can have big consequences. Elia does however see its base assumptions for both fuel prices and demand as the most probable outcomes. Elia invites the relevant authorities to take into account updated price information after publication of this report if relevant price changes occur before the final decision of the scenarios by the Minister. Elia refers to the upcoming AdeqFlex’23 which will be published on the 29th of June where price and demand sensitivities will be analyzed. Ultimately it is the Minister who decides on the reference scenarios and this could include fuel price and/or sensitivities analyzed in AdeqFlex’23.

3.3.7 UK nuclear fleet

FEBEG	<p>Concerning the extension of the Heysham 1 and Hartepool nuclear units, FEBEG is of the opinion that assuming these as available in the dataset of Great Britain is too optimistic. Past experiences have demonstrated that making the necessary investments in nuclear plants to guarantee safety and the safety operations usually last much longer than initially expected.</p> <p>Since the extension of the plants is pending approval, FEBEG fully supports a sensitivity on the aforementioned units not being extended, and strongly recommends this sensitivity to be retained in the final scenario.</p>
FEBELIEC	<p>On the sensitivities on UK and French nuclear availability, and as already discussed in the past, Febeliec remains surprised that this is even included, as UK and France already have a CRM in place, guaranteeing the adequacy of the UK and France and according to the ERAA methodology, NRAAs can only take into account national impacts and not those cross border. Febeliec is also surprised that Elia now includes lower availability of up to 8 nuclear units in France even until 2028-2029, while also adding an additional one for the UK. Febeliec wonders to which extent Elia is creating scenarios where it excludes so much capacity in the European system as to create a self-fulfilling prophecy of adequacy concerns.</p>

Elia agrees with FEBEG's comment regarding the potential risks associated with including the nuclear units Heysham 1 and Hartlepool in the dataset for Great Britain. However, Elia proposes to consider them available unless a national publication confirms a delay prior to the Minister's publication of the reference scenario.

Regarding the Febeliec's comment regarding the unavailability of the nuclear units Heysham 1 and Hartlepool, Elia proposes to consider them available unless a national publication confirms a delay prior to the Minister's publication of the reference scenario.

3.3.8 Norway export limitation

FEBEG	FEBEG considers that the risk on Norway hydro and its (indirect) impact for Belgium should be clearly monitored by Elia as it could increase in the future. The impact on Belgium could materialize given that UK and German, with interconnections with Belgium are important importers of electricity from Norway. This risk should be, at minimum, included in a general sensitivity on x-border capacity. Indeed, more largely speaking, Elia should consider a sensitivity on other x-border risks than the risk of on reduced availability French nuclear units (considering the risks on minRAM 70%, impact Norway or from other countries, ...).
FEBELIEC	On the export restrictions in Norway, Febeliec considers this not a reasonable sensitivity as such approach would be in breach with legislation and the single European market of which Norway is an integral part. Moreover, such a unilateral approach by Norway would result presumably in other measures being taken against Norway, which makes such approach very unlikely.

Elia agrees with FEBEG comment that export restrictions in Norway could indirectly affect Belgium through the contribution of Germany and the UK to Belgian adequacy. On the other hand, Elia agrees with FEBELIEC comment that such a restriction would be in breach with the legislation of the single European market. Quantitative export restrictions or measures with equivalent effect may, on certain conditions, be permitted if they are introduced to safeguard security of supply⁴⁷. However, the European Commission is currently investigating the measure and neighboring countries have announced they might be forced to take similar measures⁴⁸, weakening local electricity security.

⁴⁷ <https://www.regjeringen.no/en/aktuelt/norwegian-control-mechanism-to-improve-security-of-electricity-supply/id2960788/>

⁴⁸ <https://www.euractiv.com/section/electricity/news/norway-may-tax-power-exports-to-keep-domestic-prices-down/>

3.3.9 Conclusion

<p>FEBEG</p>	<p>In conclusion FEBEG considers that at least following sensitivity should be selected for the CRM parameter calculation:</p> <ul style="list-style-type: none"> • for the Y-1 Auction for Delivery Period 2025-2026: <ol style="list-style-type: none"> 1. French nuclear availability should be the Lower availability during winter compared to REMIT, calculated as the difference with the minimum EDF forecast on the winter only (minimum scenario). 2. Unavailability of the announced UK nuclear extension 3. MinRAM 70% rule not reached • for the Y-4 Auction for Delivery Period 2028-2029: <ol style="list-style-type: none"> 1. An additional unavailability of at least 8 nuclear units in France (compared to ERAA), as minimum scenario 2. MinRAM 70% rule not reached 3. The closure of some thermal capacity in Belgium
<p>FEBELIEC</p>	<p>Febeliec as always remains available to discuss its comments to this consultation and the input data, but also still remains available to discuss the methodology. Febeliec is looking forward to the qualitative and especially quantitative results of the adequacy study from Elia and hopes that these will be presented and discussed.</p>

Elia takes note of FEBEG’s proposal regarding the sensitivities to be included in the reference scenario and considered them to provide its recommendation.

Elia thanks FEBEG and Febeliec for their constructive feedback on this public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-1 auction with Delivery Period 2025-26 and for the Y-4 auction with Delivery Period 2028-29. All the feedback sent by stakeholders will be provided to the CREG, FPS Economy and the Minister for the next steps of the reference scenario selection process.

3.4 Preselected capacity types

FEBEG	<ul style="list-style-type: none"> • For the Y-1 Auction for Delivery Period 2025-2026 Capex and FOM should be reviewed in the light of the upcoming study on capex and FOM costs to be launched by Elia shortly and on which market parties will be able to provide input. • for the Y-4 Auction for Delivery Period 2028-2029 FEBEG supports that the gas engine is no longer part of the list of preselected capacity. Capex and FOM should be reviewed in the light of the upcoming study on capex and FOM costs to be launched by Elia shortly and on which market parties will be able to provide input.
FEBELIEC	<p>On preselected capacity types, Febeliec does not understand why OCGTs or other generation technologies are excluded for 2025-2026 (e.g. small diesel engines) and why other technologies as small-scale storage are not at all considered. Moreover, Febeliec remains puzzled why only demand side response with a SLA of 4h is considered, where many more categories exist.</p>

Elia refers to the competent authorities for updating the FOM cost components in light of the ongoing “Cost of capacity” study performed by Entrax. The CAPEX is part of a second work package which for which the results are expected after the decision by the Minister.

Regarding Febeliec first comment, the lead time for construction of a new OCGT is longer than 1 year. The preselected capacity types represent new units that would realistically join the market. Elia deems it unrealistic that a new unit of a technology where the expected lead time is longer than 1 year would join the market on time. Regarding the comment on small-scale batteries, Elia would like to note that the impact of selecting small-scale batteries or large-scale batteries for the preselected capacity types is almost the same. Therefore, only considering one type of battery technology is considered as sufficient according to Elia.

Elia agrees with the comment from Febeliec on only considering DSR 4h. Elia proposes to consider DSR 24h instead as this would impact the dispatching of the different DSR categories. Elia agrees with Febeliec’s comment that many more categories of DSR exist.

3.5 Post-delivery scenarios

FEBELIEC	<p>Febeliec regrets that Elia has not foreseen data or an analysis for every year in scope, specifically for 2029 and 2031 but more importantly for none of the years between 2034 and 2040, where merely an intrapolation seems to be used although this according to Febeliec does not provide a sound enough basis for the needs for the CRM, as an auction for the period 2028-2029 (and also 2025-2026) could lead to a very high and unnecessary overprocurement of capacity if only a very limited number of years would be identified with potential adequacy concerns (e.g. also due to the impact of all announcements for additional investments, which could greatly limit the need for assets with long subsidy cycles, which would then erode the business cases of other asset and technology classes).</p>
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It is not foreseen in the CRM calibration framework, to perform a multi-year assessment. For this reason, Elia proposes to take into account the most up-to-date publicly available studies. Therefore, Elia proposes to consider the most suitable scenarios from the upcoming AdeqFlex'23 in order to determine post-delivery year revenues.

However, Elia would like to remind that the post-delivery years are only used to get market revenues for later years. These revenues are then used by the CREG to provide a proposal for the net-CONE, setting point B ordinate of the demand curve. It doesn't impact in any way the volume to be auctioned and cannot therefore lead to any over-procurement.

3.6 IPC

FEBEG	<p>FEBEG fully support the need for an update of the studies used for the determination of the IPC parameters considering the recent evolutions on both Belgian and international energy markets but deplores that the numbers included in the excel come from the most recent update of the AFRY study and serve as a first indication but will be updated based on the input received from the external consultant realizing the study. FEBEG insists on the fact that the updated study must cover all costs that a power plant is supporting, based on the input from market parties.</p> <p>Finally, as mentioned in FEBEG comments on CREG's public consultation on the formal requirements for a request for a derogation from the IPC (dd 21/03/2023), FEBEG asks the authorities for a profound review of the modalities in which existing capacities can participate in the CRM and recover their costs.</p> <p>The review should ensure:</p> <ul style="list-style-type: none"> • an access to 3-year and 8-year contracts for all capitalized investments,
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	<p>not limited to the ‘technical lifetime extensions’, but contributing to</p> <ol style="list-style-type: none"> (1) increasing capacity (through additional MW or reconversion) (2) adding running hours and starts, by maintaining capacity and/or (3) reducing CO2 emissions and complying with stricter environmental norms <ul style="list-style-type: none"> • a correct calibration of the IPC, considering effectively the missing money of the worst performer and all its associated costs • an improved IPC Derogation mechanism to be used as exceptional tool, allowing a motivated “free” bid as for other CRM candidates. <p>In parallel, we ask authorities to review the threshold for 3y & 8y contracts in order to match the real investment cases in the market (e.g. 3y contract for a major overhaul, 8y for an operational lifetime extension, ...). At the very minimum, all capitalized capex that consist of the combination of major overhaul with repairs / upgrade / refurbishment and replacement of parts / conversion / repowering / investments to decarbonize and/or to comply with stricter environmental rules should always be considered as a whole for the investment file, without a distinction between recurring and not recurring.</p>
FEBELIEC	<p>On the intermediate price cap, Febeliec wants to reiterate its comment on the arbitrary and too limiting selection of technologies by Elia , as this excludes many technologies (e.g. large and small scale batteries, demand side response with other SLAs, ...) and insists that the scope is extended to ensure that the CRM does not lead to unwarranted costs, in breach with the legal lowest cost criterion.</p>

Elia would like to thank FEBEG and FEBELIEC for their feedback with regards to the Intermediate Price Cap and wants to draw the steps that have already been taken by Elia to address these concerns.

Firstly, Elia has in the meantime already launched the new “Cost of Capacity”-study. In order to involve market parties and understand their considerations Elia will, in collaboration with the selected consultant, organize bilateral interviews with stakeholders, several of which have already expressed interest. The output of the study will include among others newly calculated FO&M values and its components, and the latter will be used to re-assess the different costs that can be used in the context of the IPC derogation. Following article 17 of the RD methodology, the consultant will also establish a new list of technologies that are relevant for the Intermediate Price Cap.

Secondly, Elia understands FEBEG’s concerns with regards to different design evolutions such as investment thresholds and the IPC derogation procedure but wishes to highlight that these topics are not solely Elia’s responsibility.

3.7 Availability testing

FEBEG	For the technologies expected to have important reduction of running hours in the coming years, with the increased RES penetration, Elia should consider the cost of an availability testing for the computation of the IPC.
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Elia understands FEBEG’s concern about the potential costs of Availability Testing in the context of increased RES penetration. Be that as it may, Elia does not believe that the increased RES penetration will impact the frequency of Availability Testing for the majority of technologies. Indeed, AMT Hours are characterized by prices that are sufficiently high for units to recover their costs, regardless of the RES penetration in the market..

3.8 Revenue parameters

FEBELIEC	Febeliec continues to have problems with the approach by Elia, as balancing revenues are not taken sufficiently into account. Febeliec, as mentioned above, considers the technology list for the determination of the IPC to be too restrictive and in combination by e.g. not taking into account FCR revenues or aFRR revenues, the business case of storage is largely underestimated and thus also the larger deployment of this technology as compared to Elia’s forecasts in the past.
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Elia thanks FEBELIEC for its input. First, Elia would like to highlight the fact that the shortlist of technologies will be one of the elements considered by ‘Cost of Capacity’ study which will be realized this year.

Regarding the way net revenues are assessed, Elia would like to raise two elements:

- 1) Elia is working on a re- assessment of the net balancing revenues of the concerned technologies for the calibration of the CRM. Such assessment is to be realized by an external party and its findings will be presented in WG Adequacy. Elia will consider these results for the next calibration.
- 2) Elia wants to point out that FCR revenues have already been considered repeatedly for the determination of the missing money of batteries for net-CONE purposes. Elia refers also to the fact that the study mentioned above will provide further insights (among others on revenues) that will be considered for the next calibration.

3.9 Potential improvements to the DSR volume estimation

<p>FEBEG</p>	<p>FEBEG fully shares the concerns of Elia on the current methodology developed by E-Cube used to estimate the volume of DSR active in Belgium. The FEBEG had already highlighted the risk that, with the current methodology, the DSR potential could already be overestimated, given that some generation bids were most likely already integrated in the estimation. Therefore the initial assumptions of the current methodology that (i) the DSR bids are always more expensive than generation bids and (ii) there should not be any generation bids above the initial thresholds already lead to an optimistic view of the DSR volume and were not fully robust. In the current context (high price volatility), this methodology is certainly no longer future-proof and needs to be adapted: else the DSR risks to be overestimated, with the important consequences it may have for the security of supply in the country.</p> <p>FEBEG takes note of the various proposals made by Elia in the consultation document and calls for a dedicated discussion on the topics with experts at Elia and market parties' side.</p> <p>FEBEG could support a new methodology where the price threshold would be calibrated in order to take into account changes in DSR and generation costs (on shorter time intervals to take into account price evolutions):</p> <ul style="list-style-type: none"> ➤ The calibration on the expected DSR marginal cost (based on correlation between marginal cost of DSR and fuel/CO2 prices) needs further investigation to understand the results/impacts. ➤ The calibration on the highest generation marginal cost would be a prudent approach but could indeed risk to underestimate the DSR volume given that we are going towards a more mixed merit order than in the past. ➤ The calibration based on a percentile of the electricity price (e.g. P90) seems arbitrary and would definitely not provide a correct view. <p>In any case, the different approaches to define the threshold should be tested and discussed with market parties. However, it is of utmost importance to still include a second step to avoid miscounting of generation as DSR. This is already relevant today but will even be more relevant in the future with alternative fuels.</p> <p>We believe that filtering out the generation capacity with a marginal cost approach is relevant (based on the fuel/CO2 cost and efficiency of all the plants per technology). However, we are not in favor of an approach that would simply consist of applying a fixed percentage (of over/under estimation of DSR): it would not be future-proof and would totally miss the main objective of updating the new methodology (same issues as with an absolute threshold).</p> <p>Additionally, as already iterated in the past, we strongly recommend adding a second quantitative analysis to this E-Cube exercise (as cross-check), being a yearly survey among industry/BSPs on the capacity they can effectively be</p>
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	<p>reduced (not only offered, considering the limitations in terms of days/hours for this DSR). According to FEBEG, this should be a rather straight-forward exercise given the limited number of industrial players. In case there would be a huge discrepancy between the two results: Elia should further investigate the causes and possibly refine its methodology.</p> <p>Finally, FEBEG would like to conclude on the need to keep a prudent approach when estimating the DSR: overestimating the potential without certainty on the delivery of those capacities could be detrimental for the SoS of the country. This is especially true in the framework of the CRM given the important volume reserved for the T-1 auction.</p> <p>Actually, when determining the reserved volume for the T-1 auction, authorities should make a check with this estimated DSR-potential (being the most likely technology able to be commissioned in less than 1 year) but taking a margin error into account and considering past participation of the DSR in the T-4 auctions (therefore no longer participating to the T- 1 auction). This would avoid reserving too many volumes without guarantee on their availability.</p>
FEBELIEC	<p>On the appendices, Febeliec within the very limited timeframe of this consultation cannot provide a full-fledged overview of comments, but wants to refer to the comments made during the meetings of the WG Adequacy. Moreover, specifically on the E-Cube methodology for the determination of demand side response volumes, Febeliec wants to refer to its comments since the very first discussions on the methodology, that it considers an approach based on market prices for splitting between technologies not the best nor even a good proxy indicator. This fundamental flaw in the design is also the reason why Febeliec explicitly and repeatedly has stated and asked to be recorded that it cannot agree nor support the methodology proposed by E-Cube and that it also is not certain that trying to patch up the initially flawed methodology will deliver any better results as the fundamental flaw remains. Moreover, Febeliec is very worried that the proposed changes will lead to an ever-increasing exclusion of demand response volumes as it will become even more difficult to evaluate the underlying technology and this could lead to undue exclusion of demand response volumes from the analysis. The proposed approaches to avoid miscounting generation as DSR are not robust and could also result in miscounting DSR as generation (an element that is apparently not even considered by E-Cube and Elia).</p> <p>On the Climact analysis, Febeliec wants again to refer to the extensive work done by EnergyVille (see above), with a much more comprehensive and robust methodology.</p>

Elia thanks FEBEG and Febeliec for their input on possible changes to the DSR estimation method. Elia agrees that it should follow a prudent method to avoid over or under counting existing DSR capacities and that the results should be discussed with stakeholders. Elia will provide a report on the results of the E-CUBE study and discuss these with stakeholders in a specific WG Adequacy.

Elia notes that Febeliec cannot accept a methodology if it is based on market prices but proposes to wait for the results. Elia took into account the comments made by Febeliec during the working group i.e. that the opportunity cost of stopping production is a better indicator for DSR cost than production cost and proposes to include ppi indexes for industry sectors with a high electricity consumption in the analysis. Elia also notes the comment from FEBEG to include an interview with the industry and BSPs. Elia will look into the feasibility of performing such interviews for future exercises. DSR is a very complicated matter on which Elia is continuously working to unlock its potential.

Elia takes note of the comment on the methodology for the reserved volume for the Y-1 auction but reminds FEBEG that the approach to reserve a fixed volume for the Y-1 auction that covers at least the capacity corresponding on average with less than 200 running hours, is imposed by the Royal Decree Methodology⁴⁹.

⁴⁹ https://www.ejustice.just.fgov.be/mopdf/2021/04/30_1.pdf#Page65

Appendix: Scenario dataset proposed by Elia

Updates compared to the excel from the public consultation and sensitivities selected in Elia's recommendation are highlighted in yellow.

Generation and Storage

Generation/Storage Type	Capacity [MW]	Capacity [MW]
	2025-26	2028-29
Nuclear	0	2077
Gas	8601	8646
Oil	140	0
Hydro RoR	137	145
PSP	1305	1305
Onshore Wind	3928	4918
Offshore Wind	2261	2261
Solar	10090	12730
Biomass	615	635
Waste	334	334
Large- and small-scale Batteries	711	782

Individually-modelled thermal generation

Owner	Generation unit name	Type	Fuel type	Generation capacity [MW]	2025-26	2028-29
Engie - Electrabel	AALST SYRAL GT	CHP	Gas	43	yes	yes
Engie - Electrabel	AALST SYRAL ST	CHP	Gas	5	yes	yes
Engie - Electrabel	AALTER TJ	TJ	Oil	18	yes	yes
Engie - Electrabel	AMERCOEUR 1 GT	CCGT-GT	Gas	289	yes	yes
Engie - Electrabel	AMERCOEUR 1 ST	CCGT-ST	Gas	162	yes	yes
Luminus	ANGLEUR TG 31	GT	Gas	25	yes	no
Luminus	ANGLEUR TG 32	GT	Gas	25	yes	no
Luminus	ANGLEUR TG 41	GT	Gas	64	yes	yes
Luminus	ANGLEUR TG 42	GT	Gas	64	yes	yes
Engie - Electrabel	BEERSE TJ	TJ	Oil	32	yes	no
Indaver	Beveren 2 Indaver	IS	Waste	21	yes	yes

Indaver	Beveren 3 Indaver	IS	Waste	24	yes	yes
Indaver	Beveren Ineos Phenol Chem	CHP	Gas	25.1	yes	yes
Indaver	Beveren Sleco	IS	Waste	41	yes	yes
Biopower	BIOMASSA OOSTENDE	IS	Biomas ss	18	yes	yes
Biostoom	BIOSTOOM OOSTENDE	IS	Waste	19.4	yes	yes
Borealis	Borealis Kallo Cogen GT_ST	CHP	Gas	32	yes	yes
Engie - Electrabel	CIERREUX TJ	TJ	Oil	18	yes	no
Engie - Electrabel	DOEL 1	NU	Nucle ar	445	no	no
Engie - Electrabel	DOEL 2	NU	Nucle ar	445	no	no
Engie - Electrabel	DOEL 3	NU	Nucle ar	1006	no	no
Engie - Electrabel	DOEL 4	NU	Nucle ar	1039	no	yes
Engie - Electrabel	DROGENBOS GT1	CCGT-GT	Gas	150	yes	yes
Engie - Electrabel	DROGENBOS GT2	CCGT-GT	Gas	150	yes	yes
Engie - Electrabel	DROGENBOS ST	CCGT-ST	Gas	160	yes	yes
Euro-silo	Euro-Silo	CHP	Gas	12.9	yes	yes
Indaver	E-wood	IS	Waste	22	yes	yes
Engie - Electrabel	Flémalle NEW	CCGT	Gas	890	yes	yes
Engie - Electrabel	Fluxys Zeebrugge	GT	Gas	40	yes	yes
Green Power	Greenpower Oostende	IS	Waste	20	yes	yes
Luminus	HAM 31	GT	Gas	58	yes	yes
Luminus	HAM 32	GT	Gas	58	yes	yes
Luminus	HAM Gent-GT	CHP	Gas	39	yes	yes
Luminus	HAM Gent-ST	CHP	Gas	-		
Engie - Electrabel	HERDERSBRUG GT1	CCGT-GT	Gas	157	yes	yes
Engie - Electrabel	HERDERSBRUG GT2	CCGT-GT	Gas	156.3	yes	yes
Engie - Electrabel	HERDERSBRUG ST	CCGT-ST	Gas	167	yes	yes
INEOS	INESCO GT1	CHP	Gas	44.8	yes	yes
INEOS	INESCO GT2	CHP	Gas	44.8	yes	yes
INEOS	INESCO ST	CHP	Gas	48.5	yes	yes
INTRADEL	INTRADEL	IS	Waste	32	yes	yes
IPALLE	Ipalle THUMAIDE	IS	Waste	34	yes	yes
Engie - Electrabel	ISVAG	IS	Waste	12	yes	yes
Lampiris	IVBO	IS	Waste	16	yes	yes
Luminus	IZEGEM	CHP	Gas	20	yes	yes
Inovyn	JEMEPPE-SUR-SAMBRE GT1	CHP	Gas	48	yes	yes
Inovyn	JEMEPPE-SUR-SAMBRE GT2	CHP	Gas	48	yes	yes

Inovyn	JEMEPPE-SUR-SAMBRE ST	CHP	Gas	10	yes	yes
Engie - Electrabel	KNIPPEGROEN STEG	CL	Gas	305	yes	yes
Lillo Energy	Lillo Degussa GT1	CHP	Gas	43	yes	yes
Lillo Energy	Lillo Degussa GT2	CHP	Gas	32	yes	yes
Lillo Energy	Lillo Degussa ST	CHP	Gas	10	yes	yes
Direct Energie	MARCINELLE ENERGIE TGV	CCGT	Gas	413	yes	yes
Engie - Electrabel	MONSANTO LILLO WKK EBL	GT	Gas	43	yes	yes
Engie - Electrabel	NOORDSCHOTE TJ	TJ	Oil	18	yes	no
Engie - Electrabel	Oorderen Bayer	CHP	Gas	43	yes	yes
Luminus	RINGVAART STEG	CCGT	Gas	385	yes	yes
Engie - Electrabel	RODENHUIZE 4	CL	Bioma ss	-	no	no
Engie - Electrabel	SAINT-GHISLAIN STEG	CCGT	Gas	386	yes	yes
Engie - Electrabel	SAPPI LANAKEN GT	CHP	Gas	43	yes	yes
Centre de Tri	Schaerbeek SIOMAB 1	IS	Waste	15	yes	yes
Centre de Tri	Schaerbeek SIOMAB 2	IS	Waste	15	yes	yes
Centre de Tri	Schaerbeek SIOMAB 3	IS	Waste	15	yes	yes
EXXONMOBIL	SCHELDELAAN EXXONMOBIL	CHP	Gas	140	yes	yes
Luminus	SERAING NEW	CCGT	Gas	885	yes	yes
Luminus	SERAING TG1	CCGT-GT	Gas	150	yes	yes
Luminus	SERAING TG2	CCGT-GT	Gas	150	yes	yes
Luminus	SERAING ST	CCGT-ST	Gas	170	no	no
STORA	STORA LANGERBRUGGE CHP 1	CHP	Bioma ss	10	yes	yes
STORA	STORA LANGERBRUGGE CHP 2	CHP	Bioma ss	40	yes	yes
Taminco	TAMINCO GENT CHP	CHP	Gas	6.3	yes	yes
Engie - Electrabel	TIHANGE 1N	NU	Nucle ar	481	no	no
Engie - Electrabel	TIHANGE 1S	NU	Nucle ar	481	no	no
Engie - Electrabel	TIHANGE 2	NU	Nucle ar	1008	no	no
Engie - Electrabel	Tihange 3	NU	Nucle ar	1038	no	yes
T-Power	T-POWER	CCGT	Gas	425	yes	yes
Engie - Electrabel	TURBOJET VOLTA	TJ	Oil	18	no	no
Engie - Electrabel	VILVOORDE GT	CCGT-GT	Gas	255	no	no
Engie - Electrabel	VILVOORDE ST	CCGT-ST	Gas	105	no	no
TOTAL	WILMARSDONK TOTAL GT1	CHP	Gas	43	yes	yes
TOTAL	WILMARSDONK TOTAL GT2	CHP	Gas	43	yes	yes

TOTAL	WILMARSDONK TOTAL GT3	CHP	Gas	43	yes	yes
Zandvliet Power NV	ZANDVLIET POWER	CCGT	Gas	419	yes	yes
Engie - Electrabel	ZEDELGEM TJ	TJ	Oil	18	yes	no
Engie - Electrabel	ZEEBRUGGE TJ	TJ	Oil	18	yes	no
Engie - Electrabel	ZELZATE TJ	TJ	Oil	18	yes	no
Engie - Electrabel	Zwijndrecht Lanxess GT	CHP	Gas	43	yes	yes
Engie - Electrabel	Zwijndrecht Lanxess ST	CHP	Gas	15	yes	yes

<u>Legend Unit-Type</u>	
CCGT	Combined Cycle
CL	Classic
GT	Gas Turbine
ST	Steam Turbine
IS	Incineration Station
NU	Nuclear
TJ	TurboJet
CHP	Cogeneration Unit

Storage

Pumped-storage facilities:

Reservoir Volume [MWh]	2025-2026	2028-2029
Storage reservoir	6300	6300
Storage reservoir derating (black-start services)	500	500
Available storage for economical dispatch	5800	5800

Turbinning capacity [MW]	2025-2026	2028-2029
Total capacity	1305	1305
Coo 1-6	1161	1161
Platte Taille 1-4	144	144

Batteries:

Batteries - Capacity in reference scenario	Capacity [MW]	
	2025-2026	2028-2029
Total	711	782
Small scale storage ("out-of-market")	192	91
Small scale storage ("in-the-market")	192	364
Large scale storage ("in-the-market")	327	327

Batteries - Reservoir volume in reference scenario	Reservoir volume [MWh]	
	2025-2026	2028-2029
Total	1873	2015
Small scale storage ("out-of-market")	384	182
Small scale storage ("in-the-market")	384	728
Large scale storage ("in-the-market")	1105	1105

Large scale batteries - Potentially added during calibration	2025-2026	2028-2029
Large scale storage ("in-the-market") - Capacity [MW]	626	1868
Large scale storage ("in-the-market") - Reservoir volume [MWh]	2504	7472

Profiled thermal without daily schedule

Profiled thermal without daily schedule units	2025-2026	2028-2029
Gas CHP - without daily schedule	1499	1594
Biomass - without daily schedule	547	567
Waste - without daily schedule	48	48

Forced Outage Rates

Category	Average FO rate [%]
Nuclear	20.5%
CCGT	5.5%
OCGT	8.2%
TJ	9.8%
CHP, waste, biomass	6.4%
Pumped Storage	2.9%
Batteries	2.0%
DC links	6.7%

Demand

Regarding demand data, Elia proposes to take into account the latest Plan Bureau economic forecasts that will be published end of June 2023 and integrate the effect of price sensitivity on the electricity demand.

Assumptions associated to the electrification of heat, transport and industry to be integrated in the demand forecasts. Note that the flexibility associated to the heat pumps and the electric vehicles is described in the explanatory note.

Electric Vehicles	2025-26	2028-29
Passengers Cars BEV [thousand]	400	1,170
Passengers Cars PHEV [thousand]	430	400
LDV freight BEV [thousand]	28	90
LDV freight PHEV [thousand]	10	24
HDV freight BEV [thousand]	0	1
Busses BEV [thousand]	2	4

Heat Pumps	2025-26	2028-29
Residential HP [thousand]	815	1,061
Tertiary HP [thousand]	70	114

Electrification*	2025-26	2028-29
Additional electrification in industry [TWh]	2.3	9.2
Additional electrification due to data centers [TWh]	0.8	2.0

*The final values depend on the market model. Large part of the industrial load is assumed flexible and is therefore dependent on the simulation results.

Balancing need

	Volume [MW]	
	2025-2026	2028-2029
Total FCR	95	97
Total FRR	1221	1353
Total reserve capacity	1316	1450
Total FCR during scarcity	95	97
Total FRR during scarcity	1039	1039
Total reserve capacity in scarcity periods	1134	1136

Neighboring countries

The dataset is based on ERAA 2022 dataset and updated with the following values:

2025-2026	France	Germany	Netherlands	Great Britain	Spain	Italy	Poland	Denmark
Demand [TWh]	480	574	124	295	259	329	167	41
Onshore Wind [GW]	25	77	10	20	37	14	11	6
Offshore Wind [GW]	2	11	6	23	0	3	0.6	3
Solar [GW]	24	108	34	21	34	43	20	8
Coal [GW]	1.1	25.1	2.7	0.0	0.0	0.5	21	0.4
Nuclear [GW]	63	0.0	0.5	6	7.1	0.0	0.0	0.0

2028-2029	France	Germany	Netherlands	Great Britain	Spain	Italy	Poland	Denmark
Demand [TWh]	506	619	141	31	261	351	178	50
Onshore Wind [GW]	27	99	11	27	45	17	11	7
Offshore Wind [GW]	3	15	12	36	0	6	6	5
Solar [GW]	40	172	43	29	50	62	25	15
Coal [GW]	0.0	7	2.7	0.0	0.0	0.0	20	0.4
Nuclear [GW]	63	0.0	0.5	4.4	5.1	0.0	0.0	0.0