

Subject: FEBEG's comments on ELIA's public consultation on the methodology, data and scenarios for the AdFlex study for the period 2026 – 2036

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Contact: Chris Celis

Phone: +32 492 258 722

Mail: Chris.celis@febeg.be

FEBEG thanks ELIA for having the opportunity to answer ELIA's Public consultation on the methodology, the basis data and scenarios used for the study regarding the adequacy and flexibility needs of the Belgian power system for the period 2026–2036.

The study regarding the *adequacy and flexibility needs of the Belgian power system* is hereafter referred to as AdFlex.

The comments and suggestions of FEBEG are not confidential.

General comments

FEBEG acknowledges and welcome the important efforts made by ELIA in order to document the sources and assumptions used by ELIA for the determination of the parameters it intends to use in the frame of the upcoming AdFlex study.

FEBEG would like to highlight that no comment provided on a specific topic should not be considered as an approval.

Preliminary remarks regarding adequacy

FEBEG is convinced that the existing thermal fleet will continue to play a crucial role for the security of supply of Belgium for the coming decades. For this reason, FEBEG considers of utmost importance to keep a stable and favourable investment framework for those assets to remain on the market in the transition phase towards a fully decarbonized world. In this respect, FEBEG appreciates the efforts of Elia to continue improving the CRM design but would like to remind that, for the moment, **there are still some important uncertainties or problematic elements that may impact the future of the existing thermal fleet in Belgium**, and in particular:

- **Not all thermal capacities are contracted for the delivery period 2025–2026.** Some capacities have not been offered in the capacity auction: they are considered as 'opt-out IN', meaning they are considered to contribute to security of supply without being

contracted. This is a rather bold assumption: some of these power plants are rather old and might be less reliable. They will not necessarily be repaired when they break down. Other capacities have been offered but are not selected: as they are not needed for security of supply and don't receive a capacity remuneration, they might leave the market jeopardizing security of supply in the following delivery periods.

- **The requested volumes were not offered in the latest Y-4 auction for the year '28-'29.** Correspondingly, the transferred capacity to the Y-2 and Y-1 volumes is higher than should be and leaves uncertainty regarding the security of supply for winter '28-'29. It is important to keep in mind that the CRM is primarily meant to ensure security of supply and must therefore be able to attract sufficient capacity (new and existing). Which we do not see in the latest auction results where 630 MW less was offered than there was requested. FEBEG wants to point out that the Y-4 auction is the main auction to ensure this and should bring certainty regarding security of supply in year Y. In fact, with the outcome of this auction, security of supply for winter '28 - '29 is not assured until the Y-2 and/or Y-1 auctions prove to be successful enough. Even when assuming the requested capacities will be attracted in the next auctions, which is not certain at this moment, it is questionable to only then provide assurance on something fundamentally crucial as our energy supply. FEBEG repeats that we believe that stability and long-term security of supply should be achieved with the CRM and that the framework and conditions should assure this.
- **Uncertainty on CO2 emissions.** Firstly, FEBEG regrets that the CO2 emission limits for participation to the CRM are more strict than the European rules that aim for harmonization. Secondly, as for Investments in new capacities, investments in existing capacities (lifetime extension, repowering, ...) are very capital intensive and require a long lead time. For this reason, the lack of visibility on the CO2 emission limits beyond 2032 is hampering the investments in existing capacities. Thirdly, strict CO2 emission limits will simply exclude thermal capacities from participation to the CRM, while this would lead to value destruction. Their limited running hours in the future, combined with increased RES and batteries, will contribute to an overall reduction of CO2 emissions of the power sector while ensuring the Security of Supply. Fourthly, regional environmental permits can also foresee constraints or stricter rules preventing a further operation of a thermal power plant.

FEBEG therefore thinks that Elia should assume some uncertainties and at least include some sensitivities regarding these capacities in the AdFlex study, e.g. sensitivity on unexpected closure of non-contracted capacities and sensitivity on consequences of stricter CO2 emission limits.

- Finally, **the increased pressure on the T-4 with participation or opt-out (IN) of DSM, could potentially at some point exclude some existing gas plants**, while their participation in the T-4 would actually be required to unlock an investment decisions.

We also recommend Elia and the Belgian authorities to review the split between volumes open in the T-4 and the T-1 auctions.

FEBEG has always pleaded for a strong base of flexible and steerable capacities located in Belgium to ensure the security of supply in the long run. In this respect, FEBEG also has and continues to plead to have sufficient “local” margin allowing the country to face events limiting its import capabilities such as unavailability of capacities abroad, minRAM 70% not reached, change in foreign policies, Indeed, when it comes to power generation capacity, there are not so many short-term solutions bringing significant MW’s to palliate complex problems. The structural issues impacting the availability of the French nuclear fleet and the consequences of the war in Ukraine demonstrate that having sufficient national capacity is actually beneficial for the country.

Security of supply is a serious matter and implies the implementation of robust, fair and long-term solutions for market parties. FEBEG calls on authorities to anticipate future capacity needs by (i) reviewing the volume split between the T-4 and T-1 auction, allowing to secure more new capacity in the T-4, (ii) taking realistic hypotheses in terms of contribution of foreign capacity to secure sufficient margin on the Belgium territory and (iii) by avoiding to take rely on ‘ad-hoc’ last-minute palliative measures in the Y-2 and Y-1 auctions.

In conclusion, the electricity sector is characterized by high capital investments with a lifetime of more than 20 years. FEBEG once again underlines the need to have a stable long-term investment framework in order to give investors the necessary confidence that will result in maintaining and attracting capacity to ensure security of supply.

Comments and suggestions regarding the input data

Thermal fleet

FEBEG refers to the general remarks above and the perceived risks for the existing fleet in the framework of the CRM. Taking into account the ageing fleet and risks regarding CO₂ emissions limits, **we recommend Elia to at least consider a sensitivity where some gas-fired power plants are excluded from the assumed capacity** so that authorities can correctly assess the possible impacts on the adequacy.

Cogeneration capacity

Regarding cogeneration capacity, Elia already states that the assumption is rather optimistic. FEBEG sees little reason for this optimistic assumption since support for these installations is being lowered and reformed and the Flemish Agriculture minister has recently stated that the growing emissions of the agriculture sector are mainly caused by the adoption of CHPs and should decline in the future. On top of that, the electrification is starting to pick up in for example the greenhouse horticulture sector, traditionally a sector that has a significant share of CHPs. The same goes for CHPs in industry, there is no real growth to be expected, which makes a decline more feasible due to ageing installations and difficult economic circumstances for Belgian industry. Since CHPs often take part in the CRM, a lower installed capacity will have a direct impact on the security of supply.

Methanization of biogas is also growing in popularity, this leads to less electricity production from biogas because the methane will be used in other sectors.

Because of the above reasons, FEBEG believes it is better to assume a decline in CHP capacity rather than a small increase or steady capacity up to 2036. If not considered in the base scenario, this is at least another sensitivity that should be taken into account.

Use of federal and regional climate and energy plans

FEBEG wants to emphasize that the use of the federal and regional climate plans in fact is a snapshot that poses the risk of being outdated very soon. After all, these plans are expected to be revised upwards to comply with the higher European ambition level. Keeping in mind that the electrification of transport and heating (residential as well as industry) are expected to be the main drivers of an increased electricity use, increased ambition levels and accompanying measures mean that the expected growth in demand in the AdFlex could be a significant underestimation. FEBEG believes that this should be taken into account in the study.

Renewable energy

The objectives for renewable energy sources are ambitious, but the NIMBY-effect and the delaying effects of appeal procedures should not be underestimated. For offshore wind growth, the timely execution of the Ventilus project and the energy island is crucial. Experience has shown that large-scale projects face significant challenges before realization,

as illustrated by the opposition to the Boucle du Hainaut. Therefore, in the base case scenario, Elia should consider a postponement of at least a part of the additional offshore capacities.

Regarding onshore wind, FEBEG wants to stress that the policy targets used in the AdFlex study will not be reached with the current regulatory and investment framework. The assumption of a yearly growth of 400 MW is unrealistic based on past and current capacity growth. Although FEBEG urges governments to provide the right investment framework and permitting conditions, there are no strong indications of additional measures that will speed up the rollout of onshore wind to align with stated ambitions. The AdFlex study should at least compare the expectations to see if they match the ambition levels since these form the basis for assessing the security of supply in the coming decade.

FEBEG wants to repeat that boosting the development of renewables (on- offshore wind and PV) is a no-regret measure that brings many benefits to society. However, in light of the adequacy and flexibility study, FEBEG expects the assumptions to be based on realistic expectations rather than policy ambitions that are not sufficiently supported by policy measures that ensure the realization of the ambitions. A more prudent approach seems in its' place here, since the results from the AdFlex study form the basis for assessing future security of supply.

Electricity demand

FEBEG noticed that Elia adjusted downward the expectations regarding electrification and the related increase of demand in the coming years compared to the former AdFlex study. Although the past few years show a declined electricity use, FEBEG wants to point out that the electrification is only starting to pick up. The sale of BEVs is high in Belgium and can be assumed to grow further since on top of the company cars, cheaper models will reach the market in the coming years, which will drive the growth in the private car segment. **Combined with evermore professional BEVs coming on the market, the assumptions could be on the lower end.**

FEBEG wants to point out that while Elia looks at the developments regarding the electrification of the industry on the TSO grid, we see that e-boilers and heatpumps are already being installed in different industries across lower voltage levels. On top of that, investment decisions are often taken faster in SMEs than in large companies thus increasing the likelihood of faster electrification in these companies if taxes on electricity are lowered as is taken up in the Flemish coalition agreement. **FEBEG therefore wonders if the growth in demand coming from lower voltage levels is sufficiently taken into consideration.**

Green molecules will have their role in decarbonizing our society, the level to which is uncertain at this moment and expectations differ (Elia vs. Fluxys study). Although there are multiple paths with different levels of impact on the electricity demand, green molecules production uses electricity, which to our opinion cannot be assumed to be fully flexible.

Storage & Demand response

Storage

FEBEG also observes high expectations in terms of large-scale storage capacities. We understand that these assumptions are based on expressed ambitions and plans based on projects known today at Elia. FEBEG wants to point out that while important amounts of battery capacities are in the pipeline we note that the connection to the grid might be more challenging than initially anticipated (we also refer to the on-going discussions regarding flex access and the EOS/EDS processes).

Most importantly, next to the economic viability analysis, **it is crucial to check the connection possibilities to the grid in the short and medium term** for this important volume of expected large-scale batteries and the impact that this can have on the business case and thus realization of the projects.

Demand Side response

Despite being adjusted downwards by 200 MW since the previous AdFlex study, FEBEG observes very optimistic assumptions on both existing capacity the evolution of market response capacity in Belgium. We wonder if this rapid growth in DSR will in fact be realized taking.

Consequently, **we consider that Elia should be more prudent when extrapolating future DSM volumes. A too-optimistic view on these volumes could undermine perceived risks in terms of security of supply.**

Economic and technical variables

Investment costs

FEBEG supports the assumptions taken in terms of price evolutions (consideration of the inflation based on IPP) but will let its members comment on the CAPEX level considered for the different technologies.

WACC

FEBEG wants to clearly state that the **proposed WACC's are not acceptable and not matching at all the current market conditions.**

Firstly, the **gearing proposed by CREG – i.e. a debt-to-capital ratio of the project – of 75 % is way too ambitious.** A gearing between 60 to 70 % would be more in line with reality, and this for the following reasons:

- The market conditions have evolved, and in particular the interest rates have increased. As banks typically ask for a DSCR (debt service coverage ratio) of a certain level – for instance around 140% for projects that bear a market risk/with low cash-flow predictions, meaning that the project's cash flows are supposed to be 140% of the yearly debt service – it is difficult to reach a gearing of 75%, and especially now that the interest rates have increased significantly (which results in a higher debt service).
- It was easier to get these gearings of 75–80% in periods of low interest rates, but now with the higher interest rates, such a gearing would generally not allow to reach 140% of DSCR. Hence, 2 solutions:
 - o decrease the DSCR, which – of course – banks are not willing to do and certainly not for merchant risk-bearing projects
 - o decrease the gearing to have a lower debt service each year, which will result in a higher WACC.

Secondly, **the 7.2% cost of equity used by the CREG is too low:**

- As the interest rates have increased, the risk-free rate (which is a component of the cost of equity) did as well.
- FEBEG observes that higher cost of equity is generally used in the market, e.g. by CWaPE. This is also the conclusion in studies and benchmarks, e.g. IESE Business School (Pablo Fernandez, Diego Garcia and Lucia F. Acin), 'Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in2024', 11 March 2024.

Thirdly, FEBEG wants to repeat its comments to the risk premiums by technology and based on the study of Professor Boudts. According to FEBEG, **the study on the risk premiums is incomplete in terms of the evaluation of the risks.** It should be noted that, even in a context of a capacity remuneration mechanism, market actors still bear important risks and that investment boards still require a return on the investment in line with the companies' policies. In addition, the CONE is a theoretic and generic computation and, hence, does not reflect a particular situation with specific challenges, risks and constraints.

- The capacity remuneration does not cover the full revenues: merchant revenues are still considered for most of the technologies in the list.
- So far, the capacity remuneration mechanism does not protect against macro-economic risks (e.g. impact of Ukraine war/energy crisis on value chain and goods and services' cost increase).
- The capacity remuneration mechanism still creates important financial risks in terms of availability obligations, more particularly financial penalties and the risk of termination of the capacity contract.
- Also, pursuant the Royal Decree 'Methodology', Elia uses average market revenues to calculate the net CONE instead of the median revenues (P50), which also increases the risks and should increase the risk premium.

Especially for large scale battery storage, the risk premium is much too low and not in line with the risks linked to market revenues. It is not justified that a battery would have a lower WACC than an OCGT for instance.

CAPEX

The CAPEX is based on the input data used for Elia adequacy and flexibility study of June 2023. CREG concludes that these data are outdated and proposes – based on submitted investment files and recent studies – to apply an overall cost increase of 20 %.

First of all, FEBEG wishes to confirm that – based on recent offers received by market actors – **the CAPEX for the different technologies – including large scale batteries – are substantially higher than the proposed CAPEX, even to that extent that an overall cost increase of 20 % is not sufficient.**

Secondly, FEBEG is of the opinion that the methodology is not transparent. Submitted investment files, based on offers received months ago, are not relevant for the current market circumstances.

Thirdly, FEBEG considers it not realistic that there would be no CAPEX for any category of Demand Side Response, not even when significant volumes would be envisaged.

For information – as FEBEG considers that these technologies should not be included in the limited list of reference technologies :

- Regarding renewables, we like to share some insights as reported by EDORA in its answer to the recent consultation (July 2024) by SPW on the reference values used in the framework of the reform of the green certificates scheme: for onshore wind, CAPEX costs are in the range of 1700–2100 EUR/kW, and thus significantly higher

than the estimations of CREG. For PV, CAPEX can be much higher according to the installation technology.

- CAPEX of IC Gas Engine is underestimated.

FOM

The FOM for the different categories of Demand Side Response – in steps of 25 EUR/kW/year – seems very arbitrary and not backed up with an in-depth analysis.

Assumptions on short-term flexibility

In regards of the availability of flexibility, FEBEG wants to point out that the ongoing discussion on the design of the framework for flexible access agreements and connections bares into it many risks and uncertainties. The current framework proposals, along with the expected implementation and related consequences, jeopardize the development of at least part of the flexibility and storage volumes that Elia relies on in its AdFlex study. Until the market parties and elia agree on a framework that works for both, **FEBEG asks Elia to be prudent in assumptions of the contribution of some of the technologies to fulfill the flexibility needs.** FEBEG therefore asks Elia to take this into consideration in the ongoing discussions about flexible connections since this study, once more shows the importance of a well designed framework to ensure future capacities to contribute to all aspects of a working energy system and the market.

Regarding the means to offer such flexibility, FEBEG has doubts about the assumptions put forward by Elia. While we hope that more flexibility can be unlocked in the coming decade, we are also concerned that there will be many hurdles still to overcome to tap into the flexibility, especially at the level of the household. **We urge Elia to consider scenario's in which flexibility from the DSO grid (from EVs or heat pumps) will not be easily accessible (for example due to limited consumers interest in such services) as this would be a prudent and correct approach. On top of that, we suggest a slower implementation path,** because of forementioned technical and regulatory barriers that still exist. Indeed, to count on such flexibility to be there to balance out many GWs of intermittent wind and solar energy is very optimistic or even dangerous.

Interconnections & Other EU countries

FEBEG also recommends Elia to carefully model the expected available capacity in neighboring countries in the short and medium term considering changing energy policies across Europe. FEBEG therefore firmly supports the need to include a sensitivity regarding the French nuclear availability in the reference scenario

France

Due to Belgium's particular situation, the availability of interconnected capacity will be heavily dependent on the situation abroad, more in particular in France and Germany. We underline that uncertainties regarding the French nuclear units should be taken into consideration. Since France will have to rely more on imports to ensure its security of supply in case of lower nuclear availability, this will lead to higher transit flows on the Belgian network and thus heavily reduce the import possibilities for specific Belgian capacity needs and thus require more domestic capacities within the Belgian balancing zone to be available to guarantee security of supply in such cases.

United Kingdom

Concerning the possible extension for AGR plants, past experiences have demonstrated that making the necessary investments in nuclear plants and guarantee safety and the safety operations usually last much longer than initially expected.

Since the extension of the plants is still uncertain, FEBEG fully supports that they are not considered in the base scenario. Including them is a sensitivity seems according to FEBEG premature and overly optimistic.

Concerning the entry into service of Hinkley Point C nuclear power plant, we consider that the possible realization of the optimistic scenario where the unit would be available 1 year earlier as very unlikely.

Flow-based domains

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.

FEBEG members still observe a difficult and slow process to achieve anything near a dependable and universal application of the 70% as confirmed by ACER's monitoring activities on the evolution of cross-zonal capacities over the last years which has shown that a large share of EU TSOs are still far from fulfilling the minimum 70% requirement.

It should be noted that ACER sees significant difficulties in achieving the structural and efficient fulfilment of the minimum 70% requirement across the whole EU by 2026¹.

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%.

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.

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%.

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We quote Acer's Opinion No 02/2024 (we underline):

"(25) Based on the information currently available, ACER sees significant difficulties in achieving the structural and efficient fulfilment of the minimum 70% requirement across the whole EU by 2026, which would in turn jeopardise the ambitious targets set for renewable energy integration.

(55) ACER's monitoring on the implementation of the minimum 70% requirement over the last years has shown that significant progress is still needed, while already recording a substantial increase in redispatching costs. The delay in implementing key processes, such as the capacity calculation methodologies and redispatching framework, has led to recurring derogations from the legal requirements, while the effects of more structural solutions such as necessary investments in grid reinforcement and potential bidding zone reconfigurations are yet to materialize. Based on the current developments, and without further pursuing such structural solutions, ACER considers that the fulfilment of the minimum 70% requirement across the whole EU by 2026, without massively relying on redispatching, is unlikely"

Suggestions regarding the sensitivities.

Considering the elements above, FEBEG would welcome following sensitivities:

- Closure of gas-fired power plants due to CO₂ emissions' limits in the CRM (current rules – proposed trajectory (if known at the time) – ambitious trajectory)
- Non-availability of several French nuclear reactors (with various levels of unavailability)
- Higher share of low-carbon molecules (e.g. : “blue” hydrogen or locally-produced “green” hydrogen) in the energy mix
- Lower RES development
- Closure of part of the cogeneration capacity due to lowered support and decarbonization targets
- Less DSM and storage capacity (compared to the base-case scenario which for which the values should already be lowered – cf. comment above)
- non/strict achievements of the FB CEP rules

FEBEG would also propose to combine some of these sensitivities to better understand the combined effect of the most likely ones on an highly interconnected such as Belgium.

Finally, considering the past experiences with the revenue-cap at EU and Belgian level, the impact of such cap should duly be considered in the Economic Viability Assessment, either directly or in the form of a sensitivity.

Comments on the methodology

Regarding the climate years

Simulating consistent meteorological risk factors (wind, PV, temperature) over the full geographical scope of a power system is the current state of the art in power system modelling. FEBEG therefore supports this approach. It guarantees that geographical and spatial correlations are correctly reproduced. These correlations have an important impact on adequacy analyses. They help to reproduce events like the Dunkelflaute, hitting multiple European countries, and pushing the power system to its limits.

Among the 4 traditional climate change scenarios, RCP 8.5 is the most aggressive scenario, leading to the highest level of climate change. This scenario has become ever less probable because it implies extreme growth in fossil fuel use and related emissions and does not take into account the lower cost of renewables. A quote from a scientific publication by some of the leading experts in this matter, already from 2020, says the following: “Stop using the worst-case scenario for climate warming as the most likely outcome — more-realistic baselines make for better policy.”² FEBEG considers this scenario could not be sufficiently representative for the longer run and strongly recommends to use RCP 4.5 since there is no scientific argumentation in using the outdated RCP 8.5.

² [Emissions – the ‘business as usual’ story is misleading](#)
[Chapter 4 | Climate Change 2021: The Physical Science Basis](#)