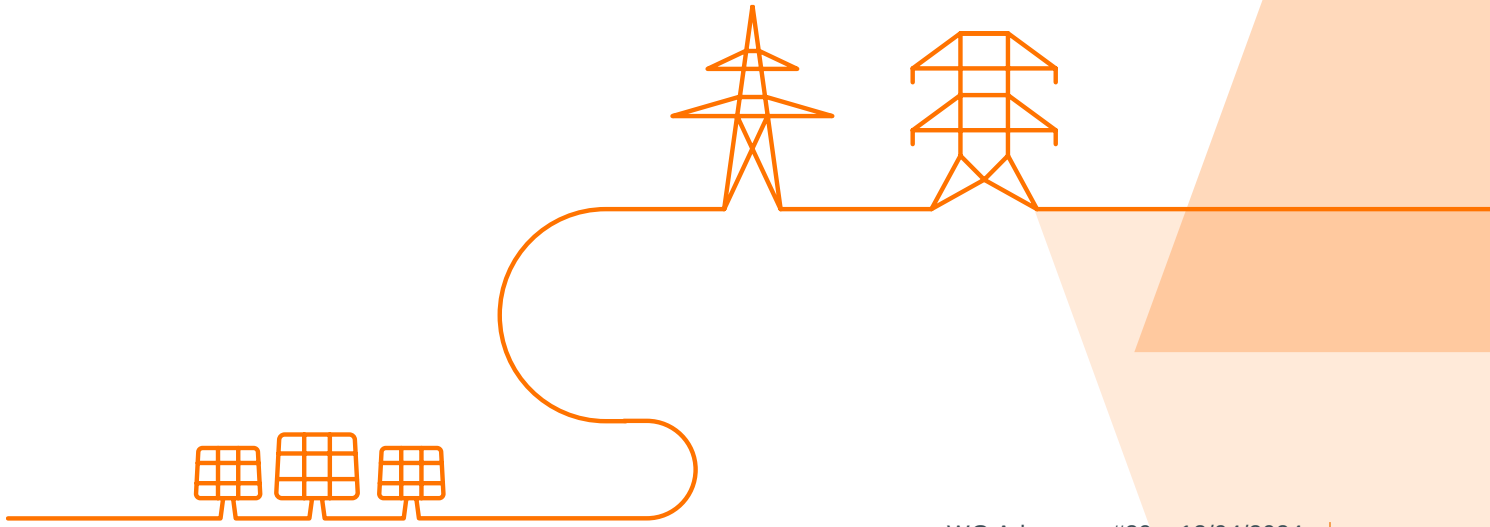
WG Adequacy #29

12/04/2024

Agenda

- Welcome
- Approval of minutes WG adequacy #25 & #26
- CRM calibration
- AOB
- Next meetings



Approval of minutes

Approval of minutes WG adequacy #25 & #26

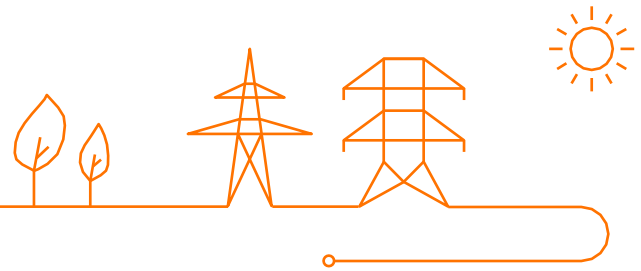
No comments received by email

CRM calibration

Scenario, data and sensitivities for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4

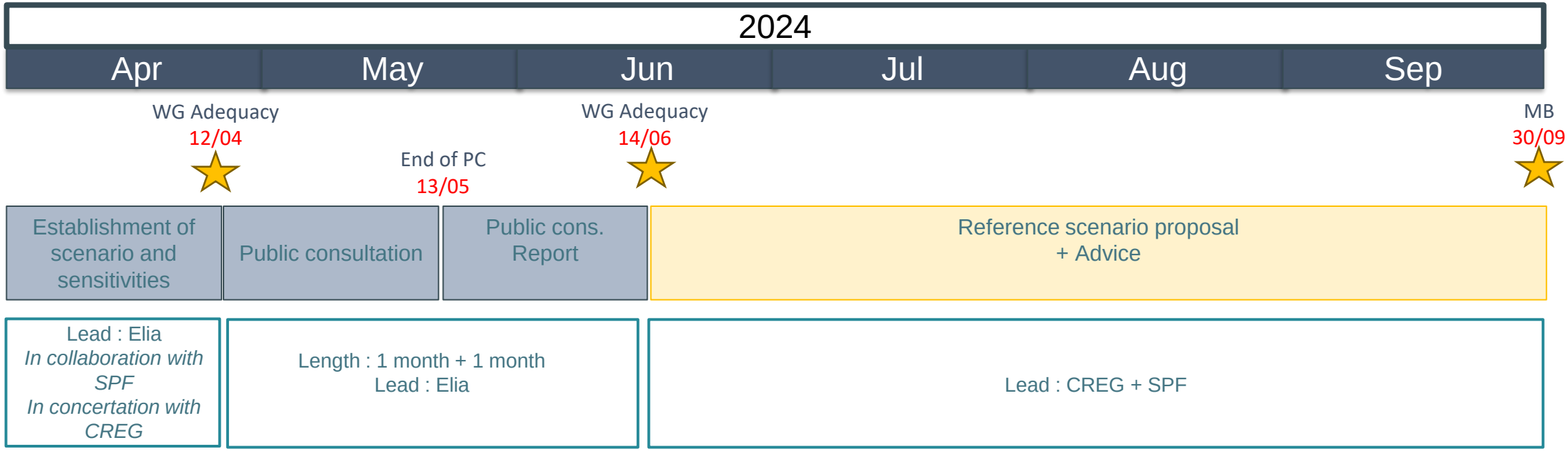
Agenda

1. Planning
2. Public consultation – Royal Decree framework
3. Scenario & sensitivities – How are they constructed ?
4. Scenario dataset
5. Updates for neighboring countries
6. Sensitivities
7. Other parameters to be consulted
8. Synthesis of specific questions to stakeholders



Planning

Indicative Planning for scenario process



- The scenario and sensitivities proposed today have been established by Elia in collaboration/concertation with FPS Economy and CREG.
- The public consultation will start today for a period of 1 month, ending Monday 13th of May included.
- Following the public consultation, a second Working Group Adequacy will take place in order to present the public consultation report and Elia's recommendations.

Public consultation – RD framework

Context : Royal Decree framework

Art. 5. § 1er. Le gestionnaire de réseau organise une ou plusieurs consultations publiques conformément à l'article 7undecies, § 3, alinéa 3, de la loi du 29 avril 1999 durant une période de minimum un mois. Le gestionnaire du réseau informe les acteurs de marché de la tenue de cette (ces) consultation(s). § 2. Au moins les sujets suivants sont soumis à une consultation publique : 1° la mise à jour des données et des hypothèses du scénario ou des scénarios, ainsi que des sensibilités, telles que visées à l'article 3, § 3 ; 2° la pertinence des sensibilités visées à l'article 3, §4, en ce compris les données et hypothèses à partir desquelles elles ont été établies ; 3° le type de capacité supplémentaire visé à l'article 6, § 1er ; 4° les sources publiques des scénarios pour les années postérieures à l'année de livraison à partir desquelles les données d'entrée sont utilisées pour le calcul des rentes inframarginales annuelles visées à l'article 10, §6 ; 5° la liste réduite des technologies existantes qui seront raisonnablement disponibles et qui sont éligibles pour la détermination du prix maximal intermédiaire visé à l'article 18, §1er.	Art. 5. § 1. De netbeheerder organiseert een of meerdere openbare raadpleging(en) met het oog op de opmaak van zijn verslag en zijn voorstel bedoeld in artikel 7undecies, § 3, derde lid van de wet van 29 april 1999, gedurende een periode van ten minste één maand. De netbeheerder informeert de marktdeelnemers over het houden van deze raadpleging(en). § 2. De volgende onderwerpen worden ten minste aan openbare raadpleging onderworpen: 1° de actualisatie van de gegevens en hypothesen van het scenario of de scenario's en de gevoeligheden zoals bedoeld in artikel 3, § 3; 2° de relevantie van de gevoeligheden bedoeld in artikel 3, § 4, inclusief de gegevens en hypothesen waaruit ze zijn opgebouwd; 3° het type bijkomende capaciteit bedoeld in artikel 6, § 1; 4° de publieke bronnen van de scenario's voor de jaren na het leveringsjaar waaruit de invoergegevens gebruikt worden voor de berekening van de jaarlijkse inframarginale inkomsten, bedoeld in artikel 10, § 6; 5° de beperkte lijst van bestaande technologieën die redelijkerwijs beschikbaar zullen zijn, en die in aanmerking komen voor de bepaling van de intermediaire maximumprijs, bedoeld in artikel 18, §1.

Context : Royal Decree framework

The first part of this presentation will introduce the **data and assumptions associated with the scenario**, as mentioned in article 3, §2 of the RD.

The second part of this presentation will introduce the **proposed updates according to latest relevant information**, as mentioned in article 3, §3 of the RD.

The third part of this presentation will present the **proposed sensitivities, their source and the impact on the input data**, as mentioned in article 3, §4 of the RD.

The last part of this presentation is dedicated to three other parameters that will be part of the public consultation :

- **Preselected capacity types** (in order to make the reference scenario adequate)
- The **sources of the scenarios** for the determination of market revenues **after the delivery period**
- The **IPC parameters**

Consideration of the Y-2 auction and update of the regulatory framework

- The law relating to the introduction of a Y-2 auction is currently being debated in Parliament (Parliamentary Paper 55k3937)
- In view of the discussions held in the *Comité de Suivi* CRM, Elia has been asked to take the necessary steps to prepare a Y-2 auction. Therefore, data and assumptions are also included for 2027-28/Y-2.
- The final decision for performing a Y-2 auction is conditional to the relevant law changes entering into effect.
- It should also be noted that the new regulatory framework assumed that the scenario would be selected by the Minister by the 30th of September and the CRM calibration report would be published by the 1st of December 2024.

Scenario & Sensitivities – How are they constructed ?

The reference scenario for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 is constructed based the most recent ERAA complemented with additional events to be selected by Belgian authorities after public consultation

Art. 3. § 1er. Le gestionnaire de réseau effectue, en collaboration avec la Direction générale de l'Energie et en concertation avec la commission, une sélection d'un ou de plusieurs scénarios et sensibilités selon les étapes décrites à l'article 3, §§2 à 4 inclus.

ERAA 23

Data for Belgium comes from the Adequacy & Flexibility 2024-34 study and updates according to the most recent available information.

Data for the other countries will be updated based on the most recent national/regional adequacy studies and taking into account the latest European methodologies as described in the Adequacy & Flexibility 2024-34 study

Flow based domains are constructed for the CORE region (as performed in the Adequacy & Flexibility 2024-34 study).

Price projections will be updated based on latest projections and on the latest 'World Energy Outlook' published end of 2023.

Scenario components

For Belgium and 27 other countries

§ 2. A partir de l'évaluation européenne, visée à l'article 23 du Règlement (UE) 2019/943, et / ou de l'évaluation nationale visée à l'article 24 du Règlement (UE) 2019/943, les plus récemment disponibles au moment de la sélection, un ou plusieurs scénarios et sensibilités sont sélectionnés. Cette sélection comprend au moins le scénario de référence central européen visé à l'article 23, 1er alinéa, 5, b) du Règlement (UE) 2019/943. Tant que lesdites évaluations ne sont pas encore disponibles, une sélection est effectuée à partir d'autres études disponibles.

§ 3. Les données et hypothèses à partir desquelles lesdits scénarios et sensibilités ont été établis, sont mises à jour sur la base des informations pertinentes les plus récentes.

The reference scenario for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 is constructed based the most recent ERAA complemented with additional events to be selected by Belgian authorities after public consultation

Following Article 3, §2-3

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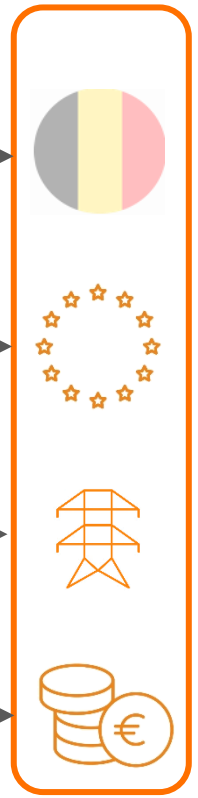
Scenario components



For Belgium and 27 other countries

Following Article 3, §4

Additional sensitivities to be included

- Sens. 1
- Sens. 2
- Sens. 3
- Sens. 4
- Sens. 5
- Sens. 6

List of sensitivities on all scenario components are possible

§ 4. En outre, d'autres sensibilités peuvent être définies, lesquelles peuvent avoir un impact sur la sécurité d'approvisionnement de la Belgique, notamment des évènements en dehors de la zone de réglage belge.

The reference scenario for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 is constructed based the most recent ERAA complemented with additional events to be selected by Belgian authorities after public consultation

Following Article 3, §2-3

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Scenario components

For Belgium and 27 other countries

Following Article 3, §4

Additional sensitivities to be included

+

- Sens. 1
- Sens. 2
- Sens. 3
- Sens. 4
- Sens. 5
- Sens. 6

List of sensitivities on all scenario components are possible

Following Article 3, §6-7

Sensitivity(ies) to be included in the reference scenario

EXAMPLE

Sens. 2

Sens. 4

The choice of the sensitivities to be included in the reference scenario is made following the process described in the RD and after public consultation.

§ 7. Compte tenu de la proposition de la commission, des recommandations du gestionnaire du réseau et de l'avis de la Direction générale de l'Energie, le Ministre décide, par arrêté délibéré en Conseil des ministres depuis la décision prise en 2021, au plus tard le 15 septembre de l'année précédant les enchères, de l'ensemble des données et des hypothèses qui doit être sélectionné comme scénario de référence. Le Ministre peut déroger à la proposition de la commission moyennant motivation adéquate.

What elements of the reference scenario will be submitted to public consultation ?

Details for each scenario component will be provided in an Excel file complemented with an explanatory note

- Generation and storage capacities per type (including a list of all thermal units with daily schedule)
- Forced outage rates per technology
- Yearly total electricity final consumption
- Demand-side response volume (including additional DSR linked to electrification)
- Balancing reserves volume

- A reference to the ERAA 23 dataset for other countries will be given (detailed Excel with all information as published by ENTSO-e targeting 2025, 2028, 2030 and 2033, no data for other time horizon are available)
- Updates based on latest publications

- A reference to the ERAA 23 dataset will be given with the NTCs used (outside of the FB zone)
- In addition, FB domains parameters and underlying assumptions will be provided

- Fuel and CO_2 prices

- Proposal of sensitivities

§5. Les scénarios et sensibilités sélectionnés, en ce compris les données et hypothèses à partir desquelles ils ont été établis, sont soumis à une consultation publique telle que visée à l'article 5.

Explanatory note

Assumptions Workbook with all data

Other parameters will also be consulted upon:
- *technology list and costs by technology for the IPC, including efficiency and VOM ranges for the marginal cost calculation;*
- *scenario choice for delivery period after the delivery period;*
- *pre-selected capacity types (to be used to 'calibrate' the country's adequacy if needed), including CAPEX, FOM & economic lifetime.*

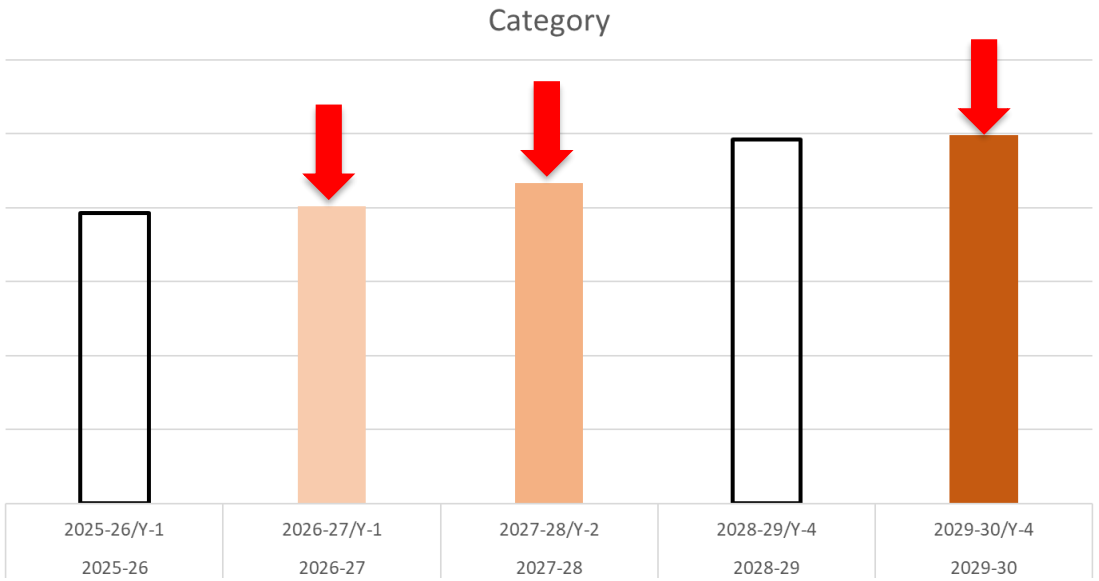
Scenario dataset

Information regarding following slides

- Sensitivities will be mentioned in the document this way:

Sensitivity XXX - xxxxxxxxxxxxxxxxxxxxxxxxx

- Dataset will be presented and compared to the previous auctions this way



Dataset for the proposed scenario for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 will be compared with the scenario determined for 2025-26/Y-1 and 2028-29/Y-4 defined by the Minister in Sep. 2023

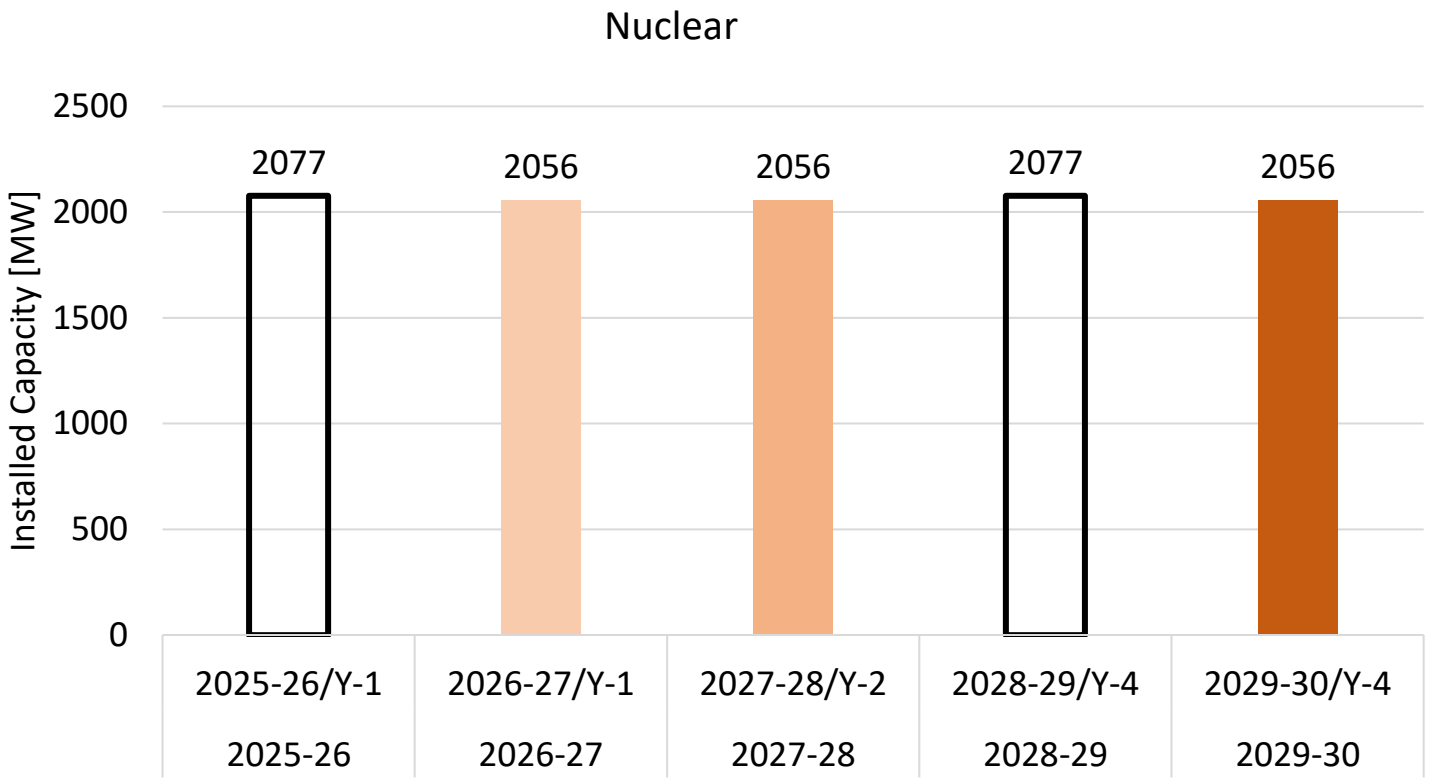
Arrows indicate the value proposed for scenario to be used in the next calibration report

Scenario components

Overview of nuclear generation installed capacities

Update of the nominal reference power of extended nuclear units:

- **Doel 4**: 1039 to 1026 MW
- **Tihange 3**: 1038 to 1030 MW

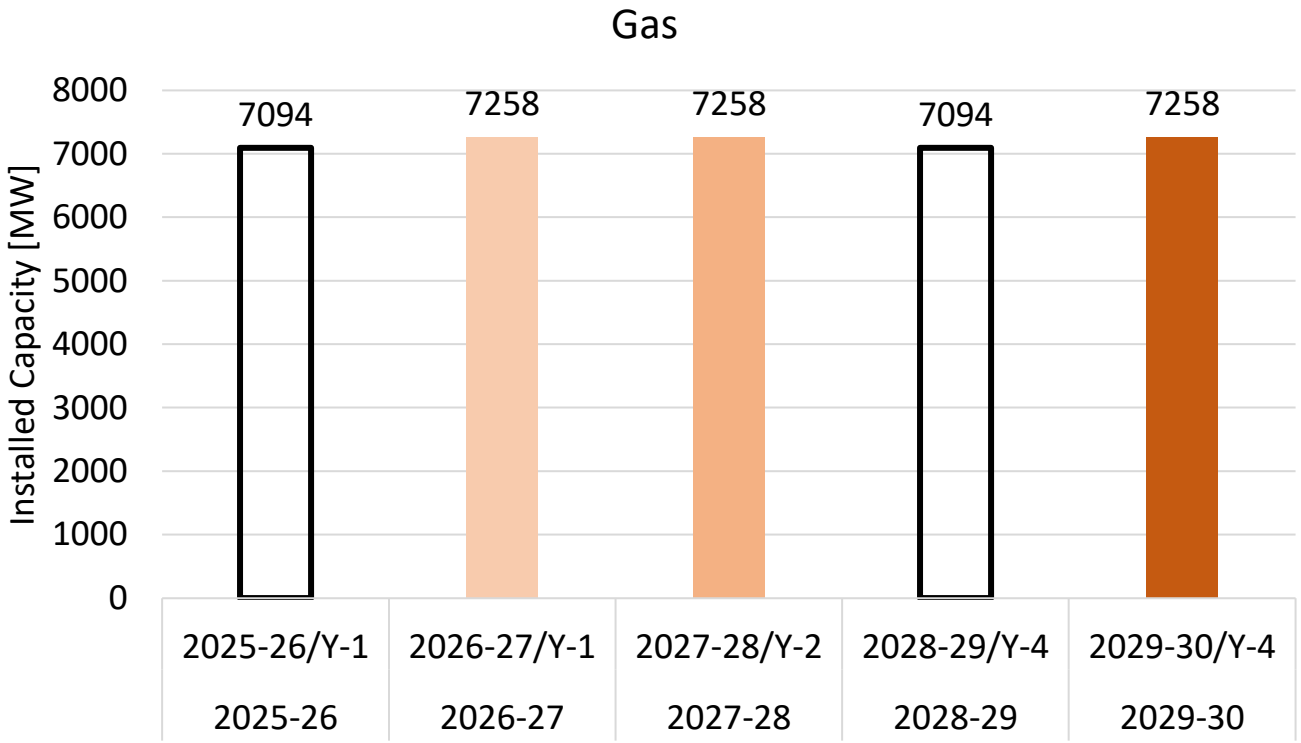


Article 3, §2 & 3

Scenario components

Overview of gas generation installed capacities

- **Art. 4 bis**
  - SAPPI LANAKEN GT (43 MW)
  - Zwijndrecht Lanxess ST (15 MW)
  - Fluxys Zeebrugge (40 MW)
- **Vilvoorde GT**
  - Available as from the 1st of November 2025 according to information published on NordPool
- **Saint-Ghislain**
  - 378 MW -> 385 MW
  - Update based on the information published on NordPool

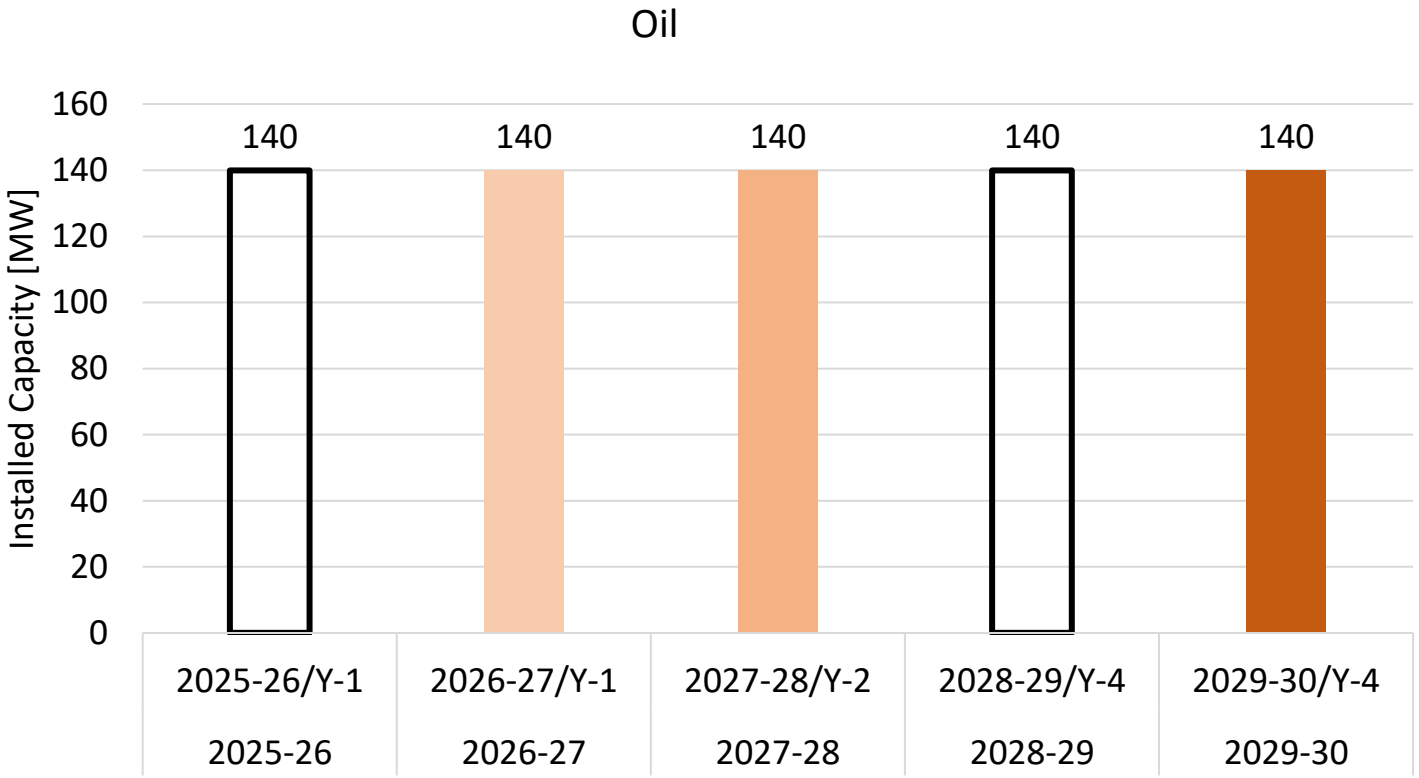


Article 3, §2 & 3

Scenario components

Overview of oil generation installed capacities

No update foreseen



A sensitivity is foreseen on uncertainties regarding closure of TJ due to the CO_2 threshold.

Article 3, §2 & 3

Scenario components

Storage

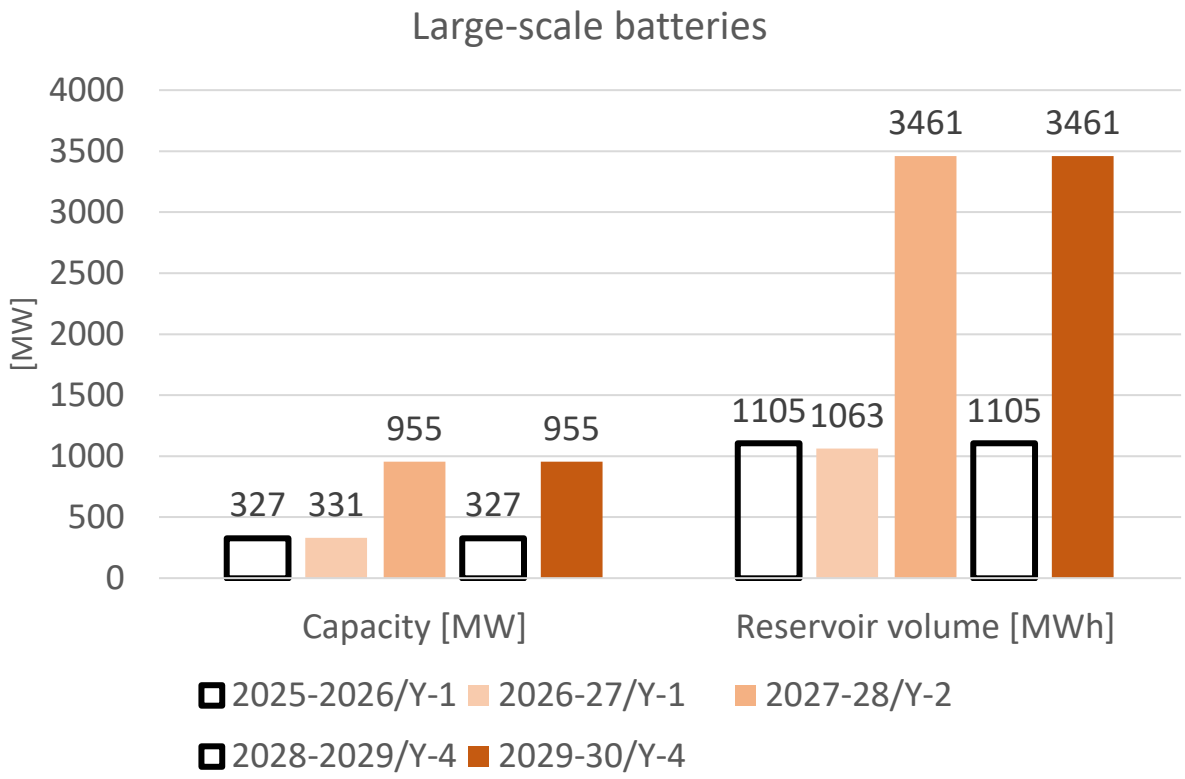
Pumped-storage

Assumptions regarding PSP don't change compared to last year and include extension works.
Turbining capacity = 1161 MW (Coo) + 144 MW (Platte-Taille)
Reservoir volume = 5600 MWh (Coo) – 500 MWh (black-start services) + 700 MWh (Platte-Taille)

Large-scale Batteries

Volume is equal to the sum of:

- existing batteries
- batteries contracted in past CRM auctions:
  - 174 MW contracted in 2025-26/Y-4
  - 624 MW contracted in 2027-28/Y-4



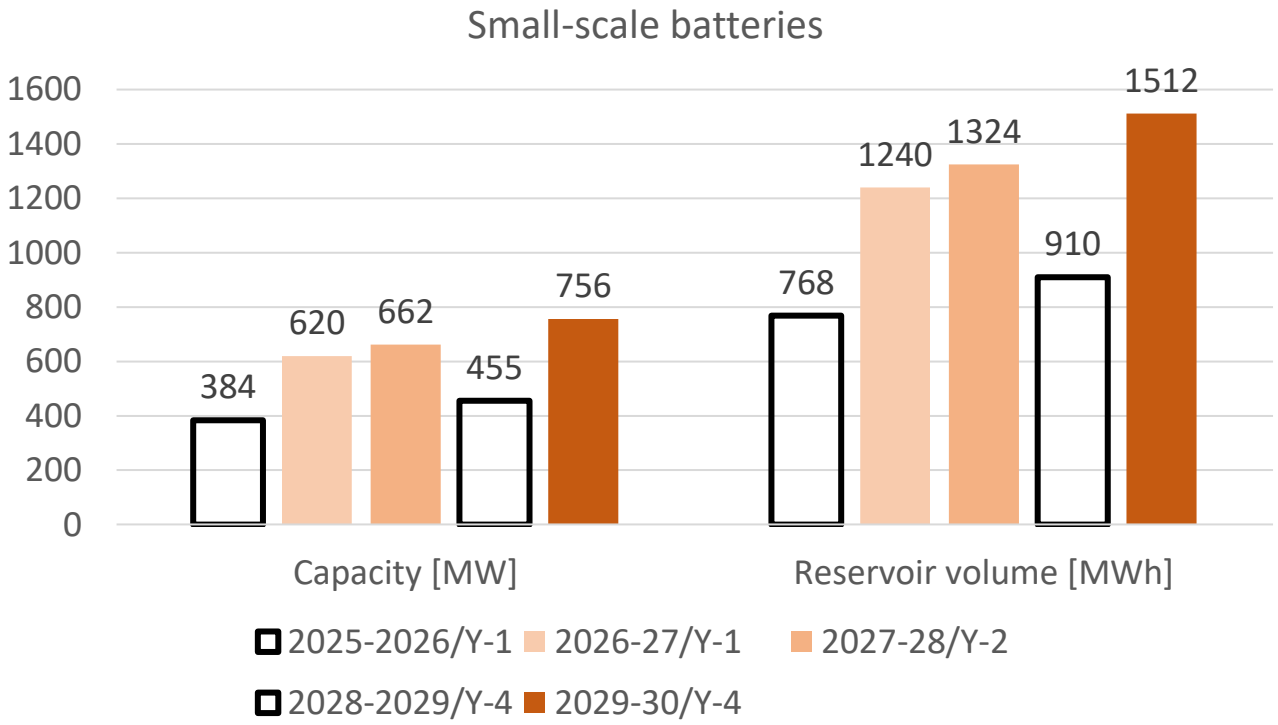
Article 3, §2 & 3

Scenario components

Storage

Small-scale batteries

- Trajectory is updated with the latest numbers from Fluvius for 2023
- For later years: additional capacity = 0.3% of total installed PV capacity (compared to 0.2% in AdeqFlex'23)
- Split between "out-of-market" and "in-the-market" is based on AdeqFlex'23



	Proportion of small-scale batteries per category		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
"in-the-market"	**60%**	**70%**	**90%**
"out-of-market"	**40%**	**30%**	**10%**

Article 3, §2 & 3

Scenario components

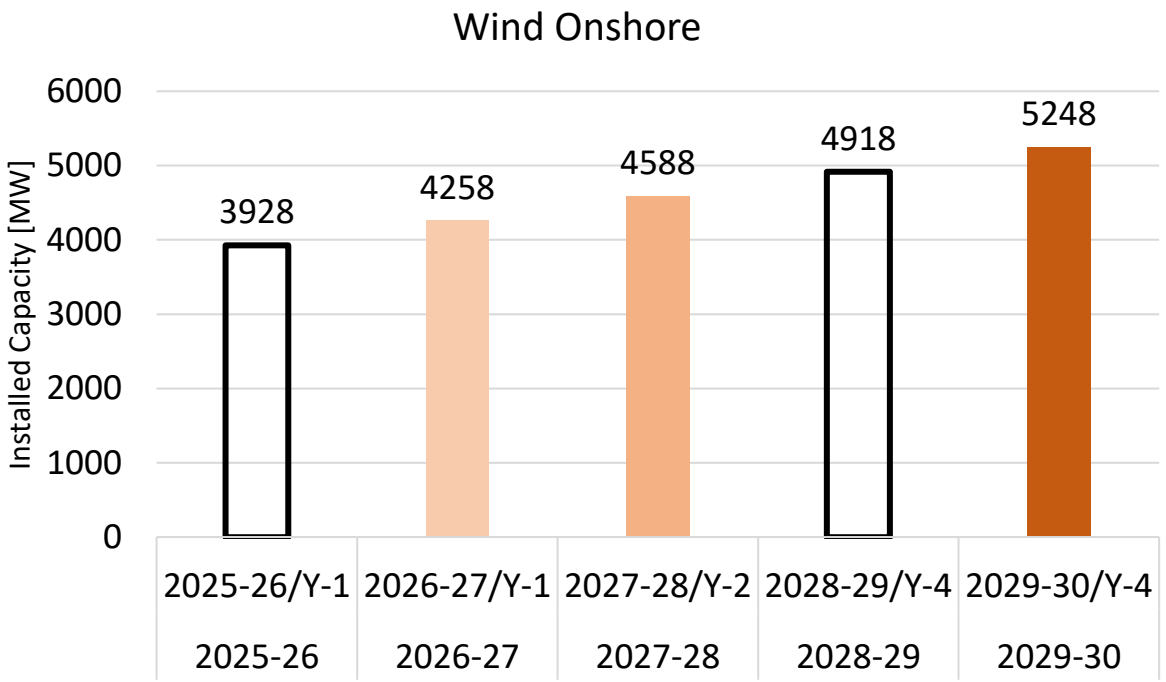
Overview of wind generation installed capacities

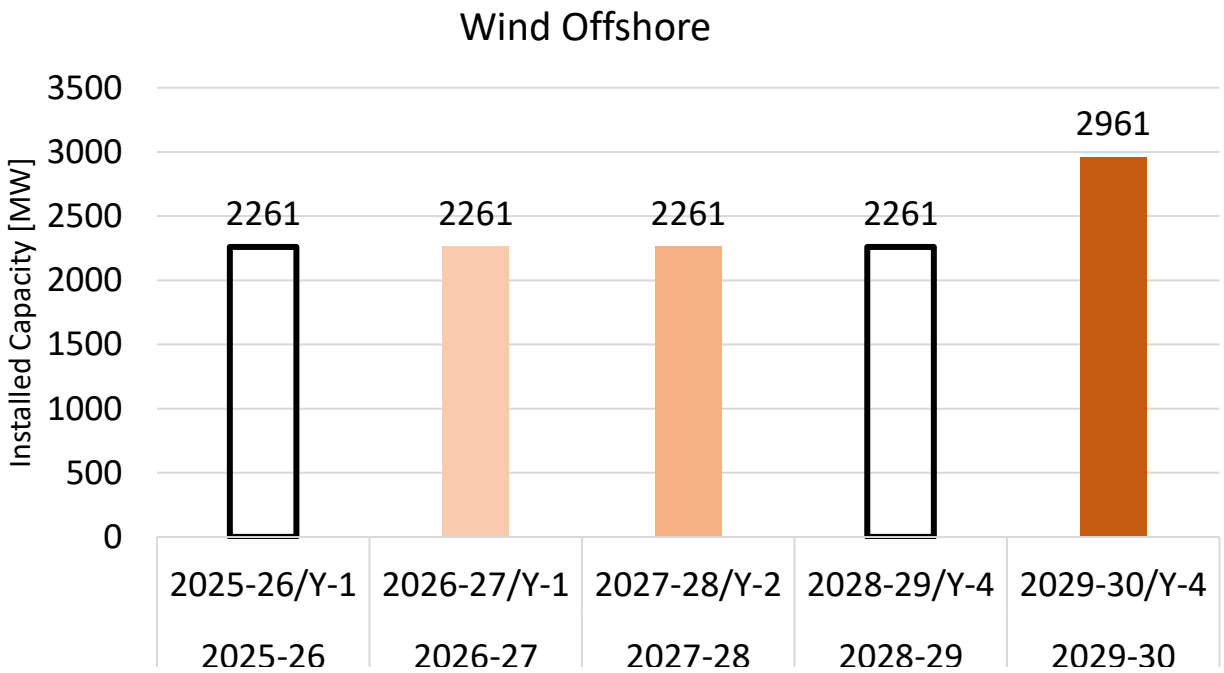
Wind onshore

- Same trajectory as AdeqFlex'23
- Current installed capacity in line with the expected value

Wind offshore

- Same trajectory as AdeqFlex'23
- 700 MW of PEZ offshore wind (phase 1) fully operational by the winter of 2029-30





Article 3, §2 & 3

Scenario components

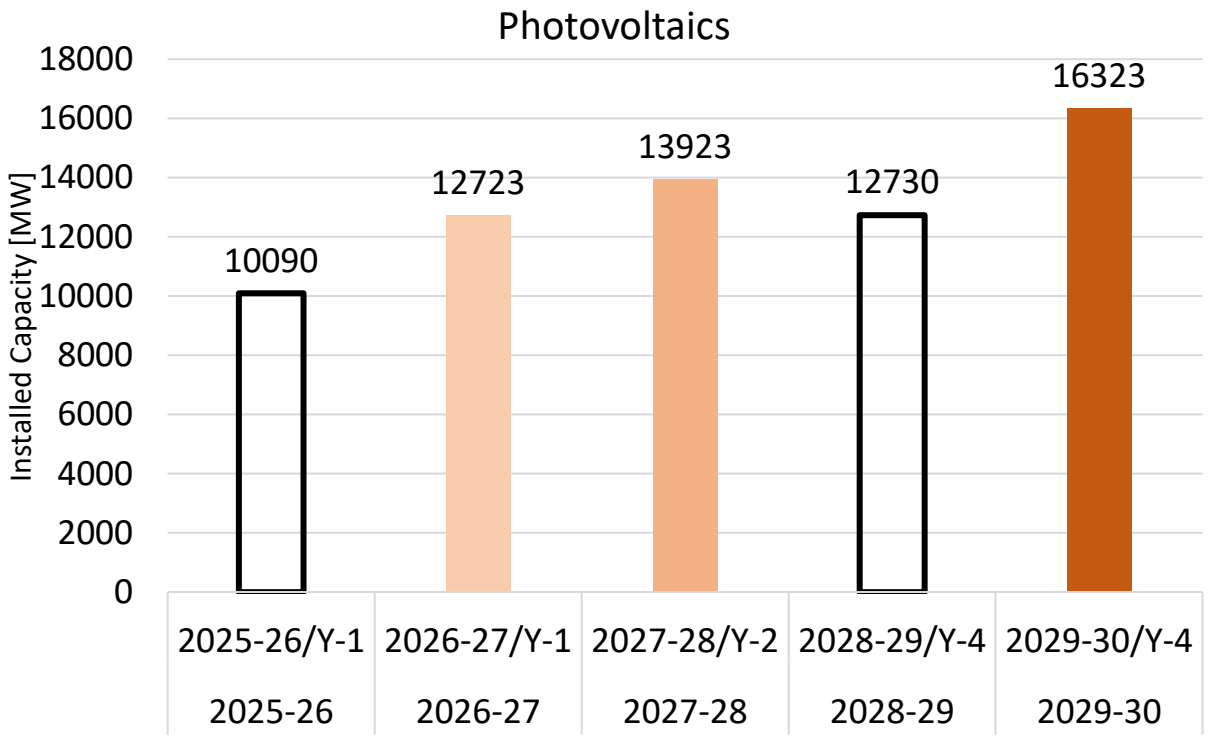
Overview of solar and Hydro Run of River generation installed capacities

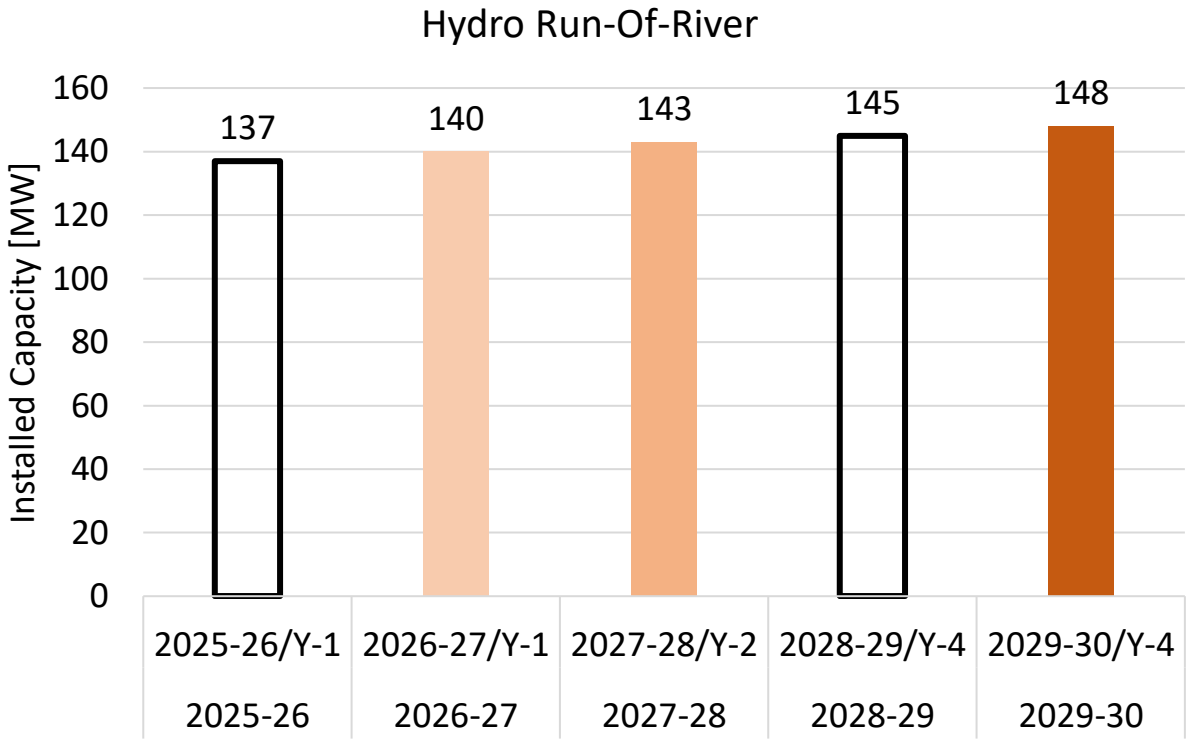
Photovoltaics

- Higher installed capacity than expected for 2023 (9123 MW vs 8330 MW)
- Proposed to consider the installation rate of 1200 MW/y (average of the last 3 years)

Hydro Run of River

- Same trajectories as AdeqFlex'23





Article 3, §2 & 3

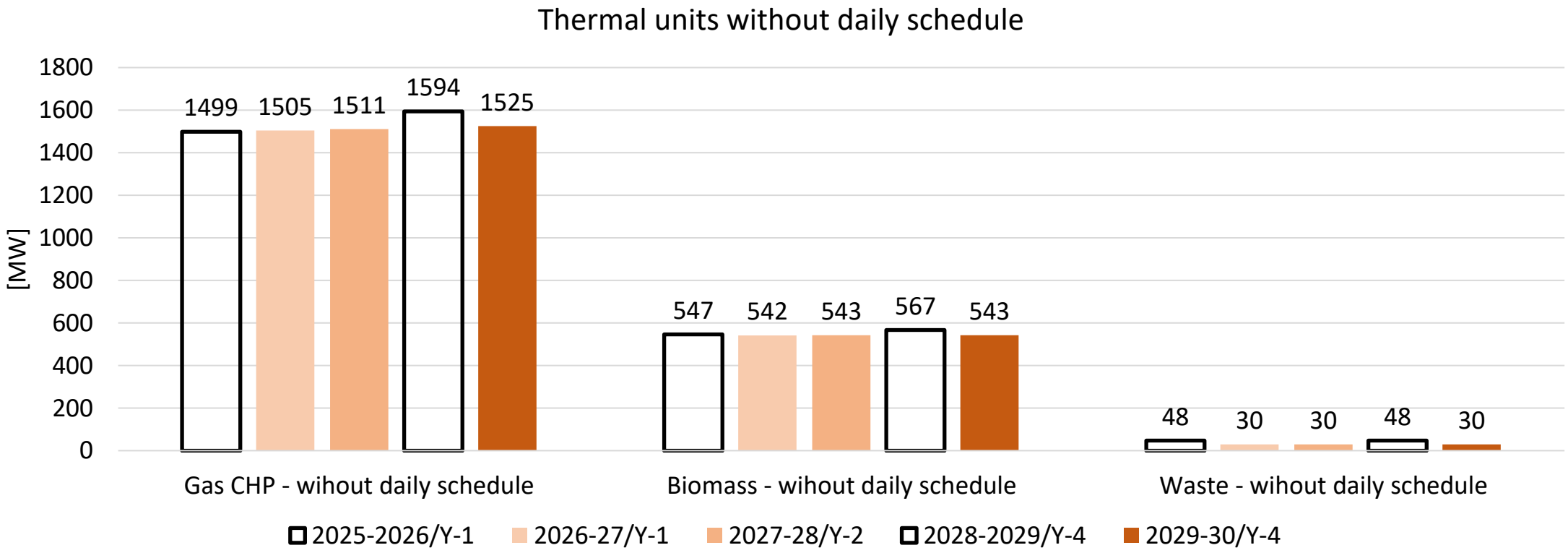
Scenario components

Overview of thermal units without daily schedule

Thermal units without daily schedule

Based on Elia's internal database, taking into account last available information

- Drop of ~70 MW from 2028-29/Y-4 to 2029-30/Y-4 observed
- Dependence on DSO data quality

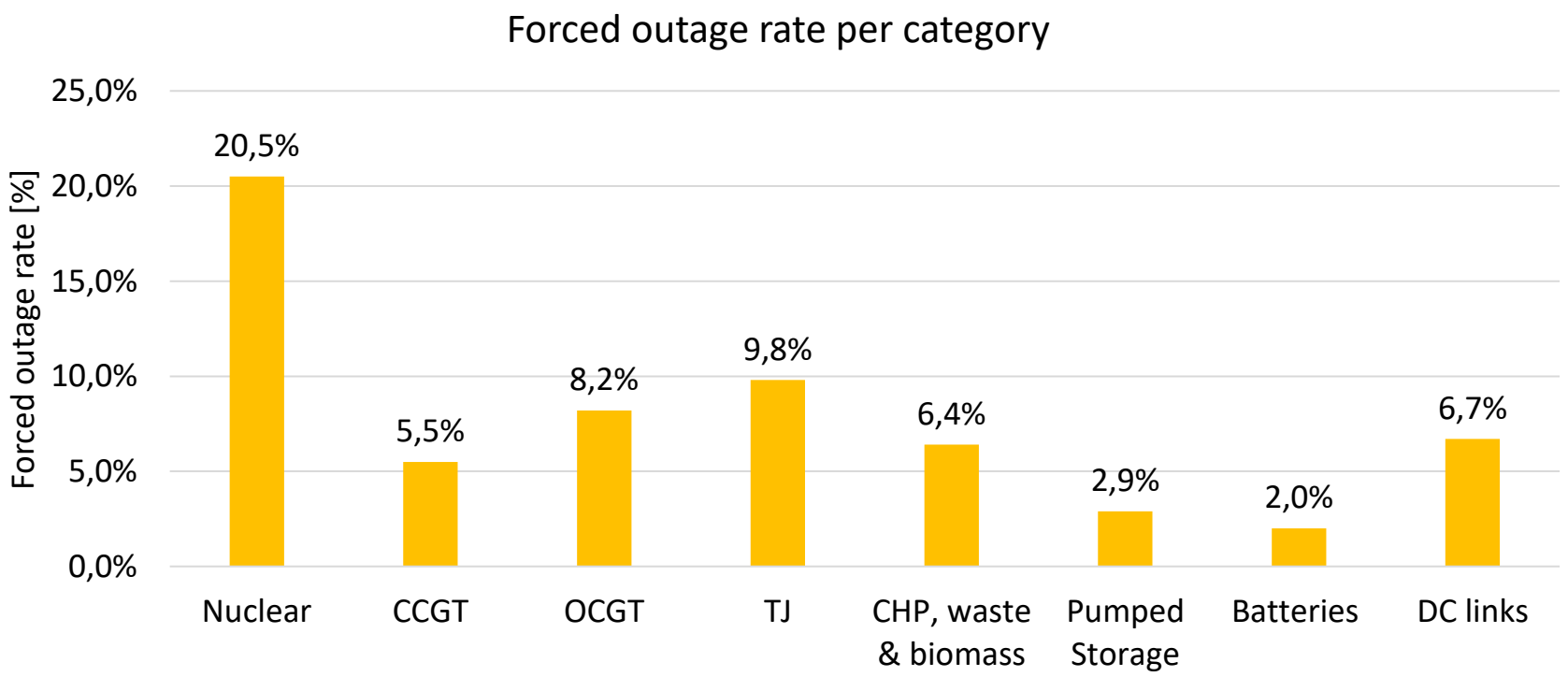


Article 3, §2 & 3

Scenario components

Forced-outage rates

The forced outages rates were calculated for AdeqFlex'23



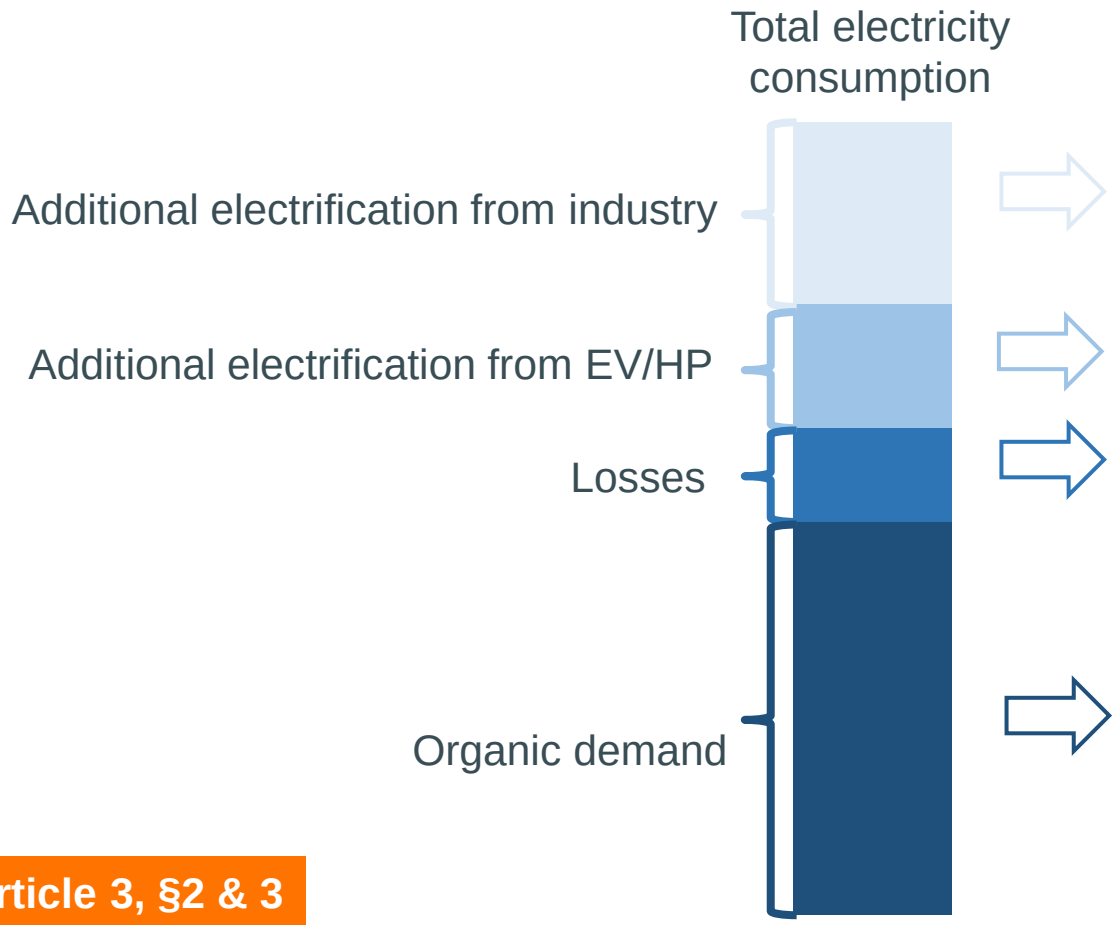
A sensitivity is foreseen on the forced outage rate considered for the Belgian nuclear units.

Article 3, §2 & 3

Scenario components

Electricity consumption in Belgium

Update of total electricity consumption trajectories by Climact ongoing. The update of the proposed trajectories along with all the different components will be presented in the WG Adequacy of August



Elia is updating the electrification assumptions in close collaboration with its clients

Part of public consultation

Input Elia

Will be updated in summer 2024 based on:
- Normalized load for 2023
- Electricity prices
- Macro economic trajectories from Federal Planning Bureau (June, 2024)

Article 3, §2 & 3

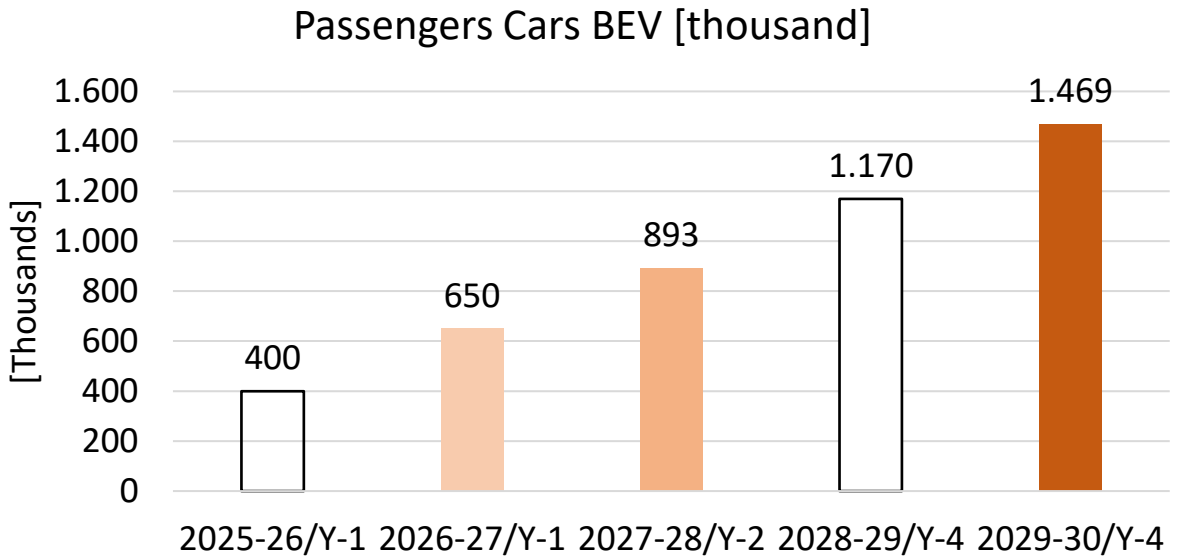
Scenario components

Electricity consumption – Electric vehicles

Electric vehicles

- Updated based on FEBIAC sales data for 2023
- The end-user flexibility associated with EV's is in line with the methodology applied in AdeqFlex'23

Electric Vehicles	2025-26 Y-1	2026-27 Y-1	2027-28 Y-2	2028-29 Y-4	2029-30 Y-4
Passengers Cars BEV [thousand]	400	650	893	1,170	1,469
Passengers Cars PHEV [thousand]	430	460	450	400	373
LDV freight BEV [thousand]	28	43	63	90	123
LDV freight PHEV [thousand]	10	15	19	24	28
HDV freight BEV [thousand]	0	0	0	1	2
Busses BEV [thousand]	2	3	3	4	4



Article 3, §2 & 3

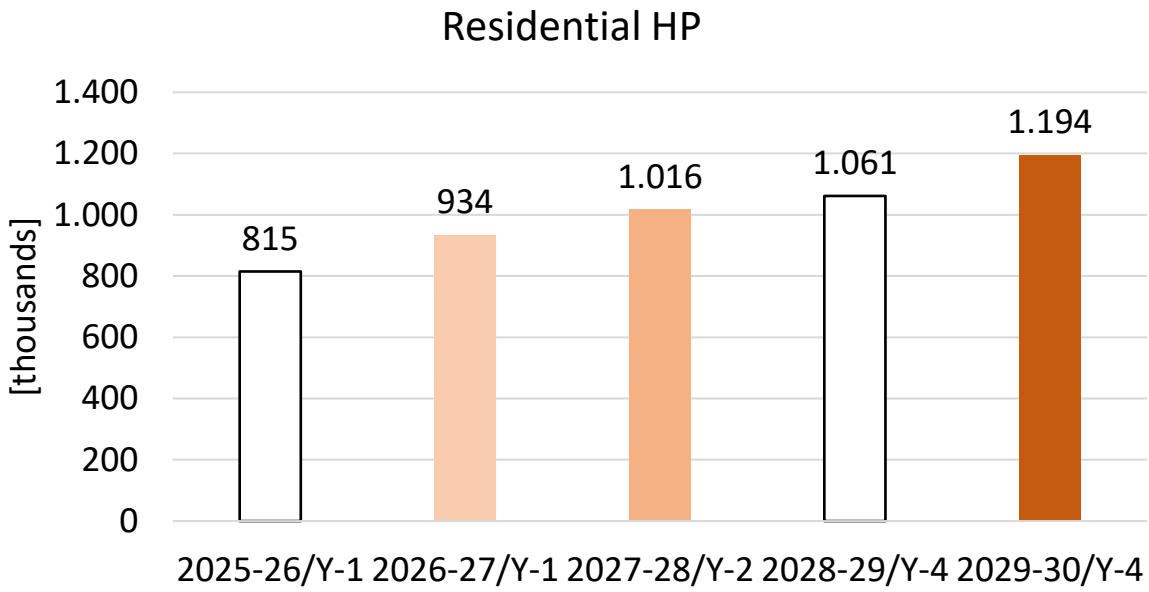
Scenario components

Electricity consumption – Heat pumps

Heat pumps

- Updated based on ATTB sales data for 2023
- The end-user flexibility associated with HP is in line with the methodology applied in AdeqFlex'23

Heat Pumps	2025-26 Y-1	2026-27 Y-1	2027-28 Y-2	2028-29 Y-4	2029-30 Y-4
Residential HP [thousand]	815	934	1,016	1,061	1,194
Tertiary HP [thousand]	70	88	103	114	136



Article 3, §2 & 3

Scenario components

Demand-Side Response

Elia identifies 3 types of Demand-Side Response

1. **DSR from existing usages**
   - Update of study performed by E-Cube on historical volumes to be presented during WG Adequacy of August
   - DSR from existing usages was equal to 1843 MW in previous scenarios selected by the Minister.
2. **End-user flexibility**
   - Same flexibility assumptions for EV, HP and residential batteries as in AdeqFlex'23
3. **DSR volumes from newly electrified industry or new usages**
   - Flexibility associated with electrification assumptions from industrial heat-pumps, e-boilers, steel, CCS or datacenters

Additional DSR from industry electrification (shedding capacity)	% of the additional electrification by industry considered flexible		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
P2H - HP	80		
P2H - eBoiler	100		
DRI-EAF (Steel)	75		
CCS	0		
Data centers	50		

   - Update of capacity assumptions regarding these technologies ongoing

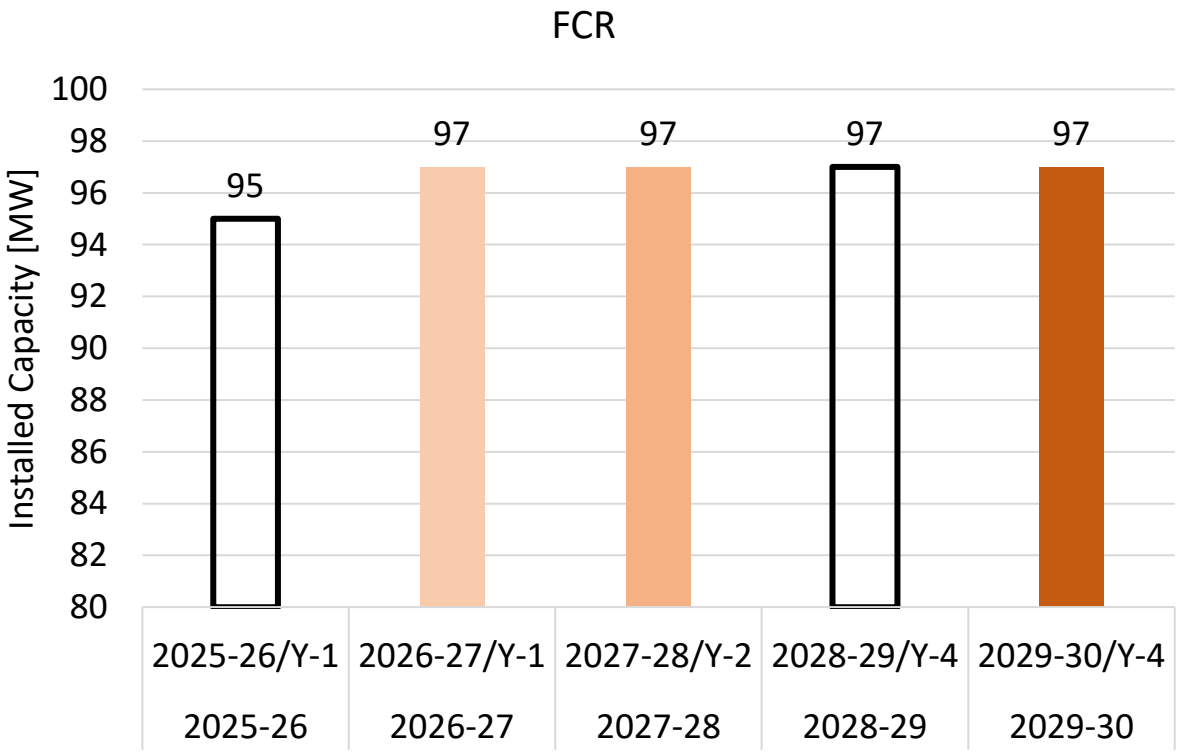
Article 3, §2 & 3

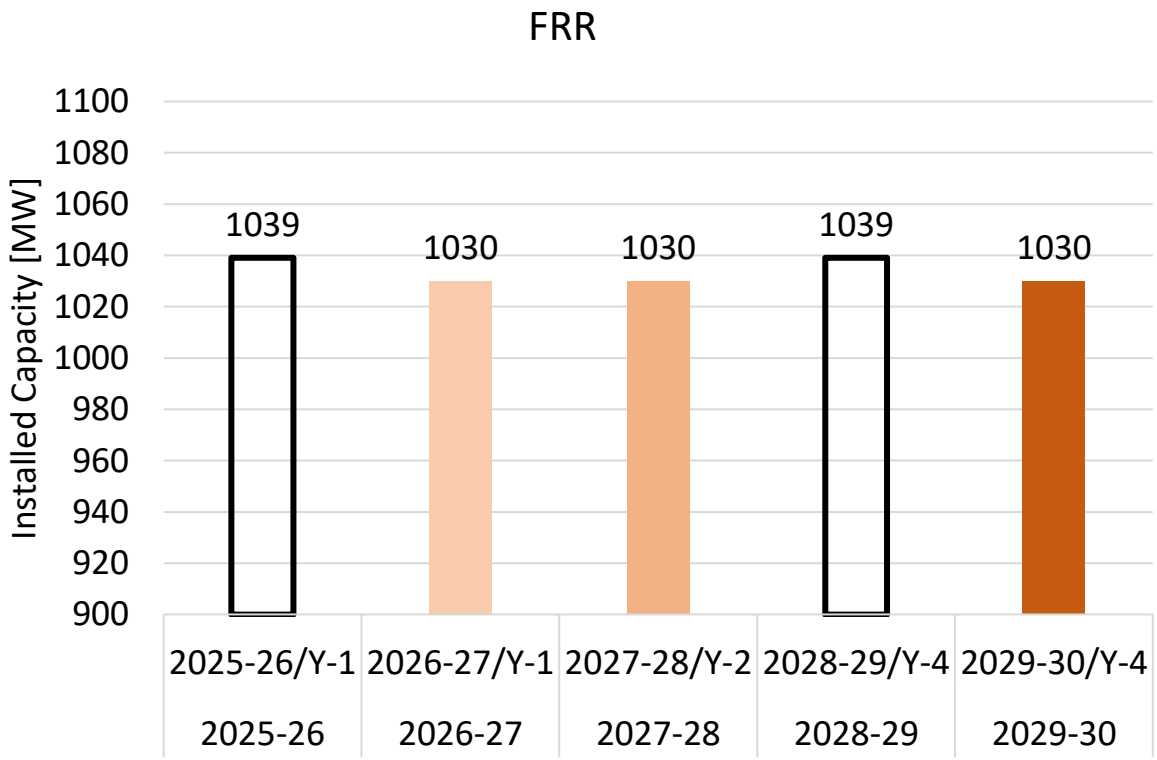
Scenario components

Overview of balancing capacities

Reduction of the FRR needs :

- Update of the nominal capacity of the extended nuclear power plants
- New dimensioning incident is based on the installed capacity of Tihange 3 (1030 MW)





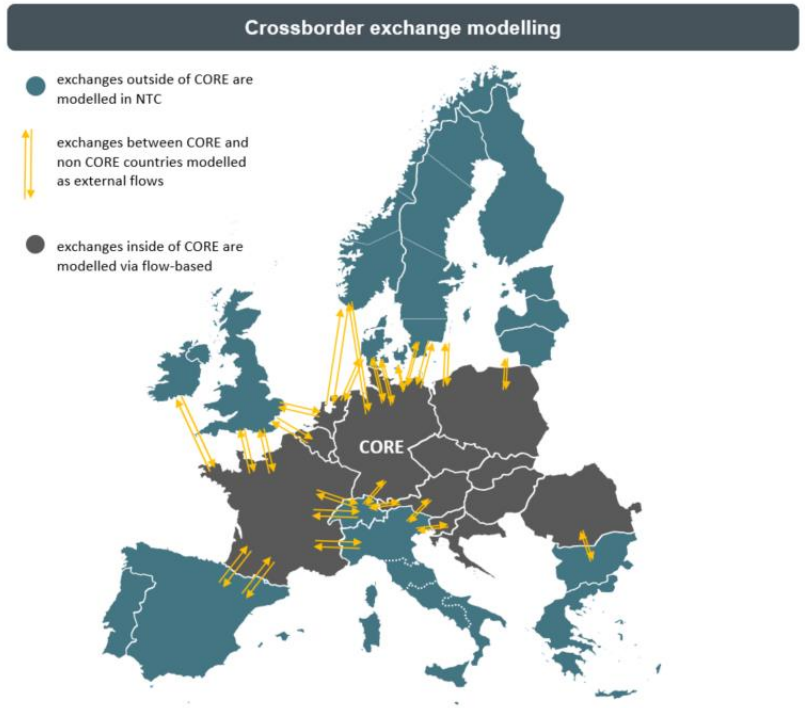
Article 3, §2 & 3

Flow-based perimeter and bidding zone definition

- This approach is identical to the one used for the Adequacy and Flexibility study 2023
- The bidding zones are assumed to be the same than the current one for all future time horizons.

	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
FB CCR	Core		
minRAM	70 %		
CNEC	Only XB CNECs		

A sensitivity is foreseen on the RAM assumption for the flow-based



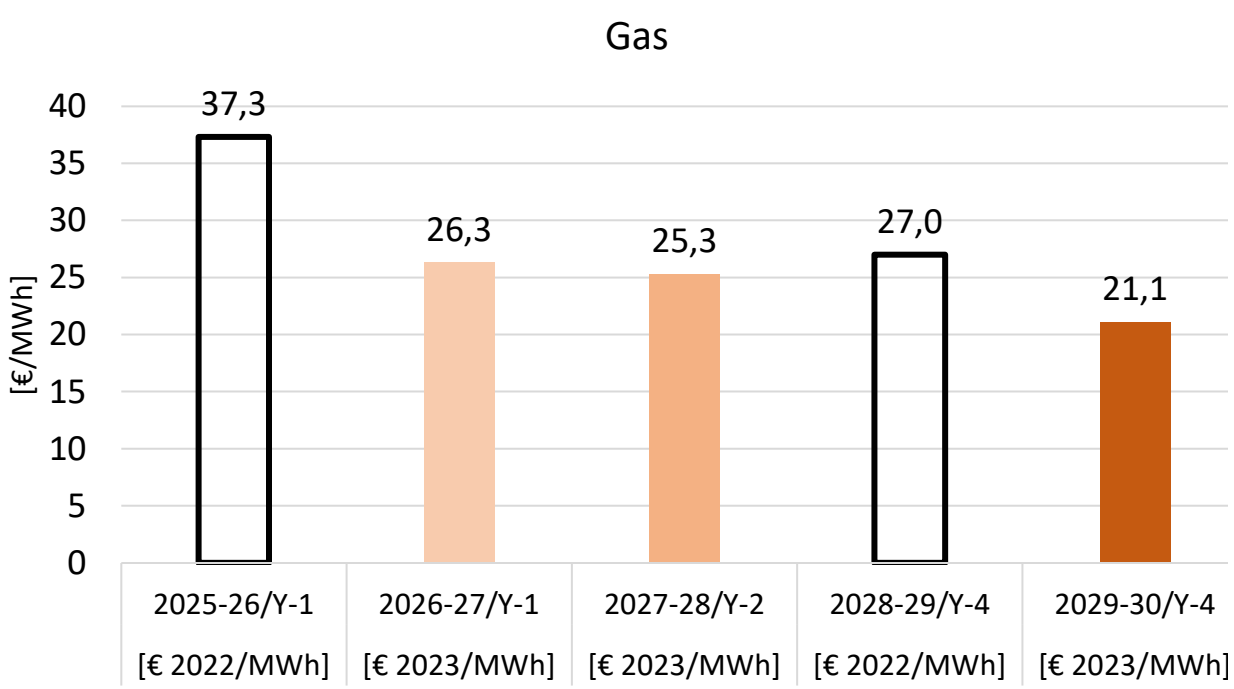
Article 3, §2 & 3

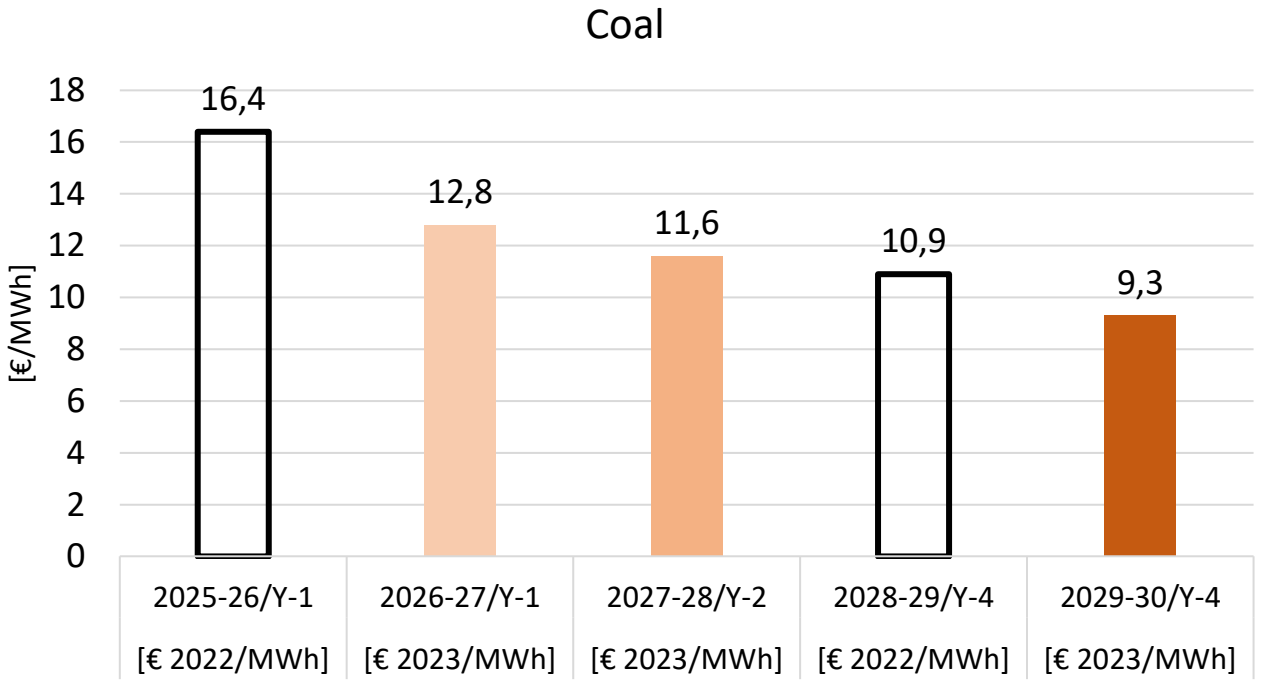
Scenario components

Fuel and CO_2 prices

Fuel prices

- Proposed methodology: Prices are based on futures when available. For years where futures are not available, an interpolation between the last available future and the WEO 2023 is applied.
- The prices for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 are expressed in €2023
- If future prices change significantly before the Minister's decision on the scenario, prices could be updated





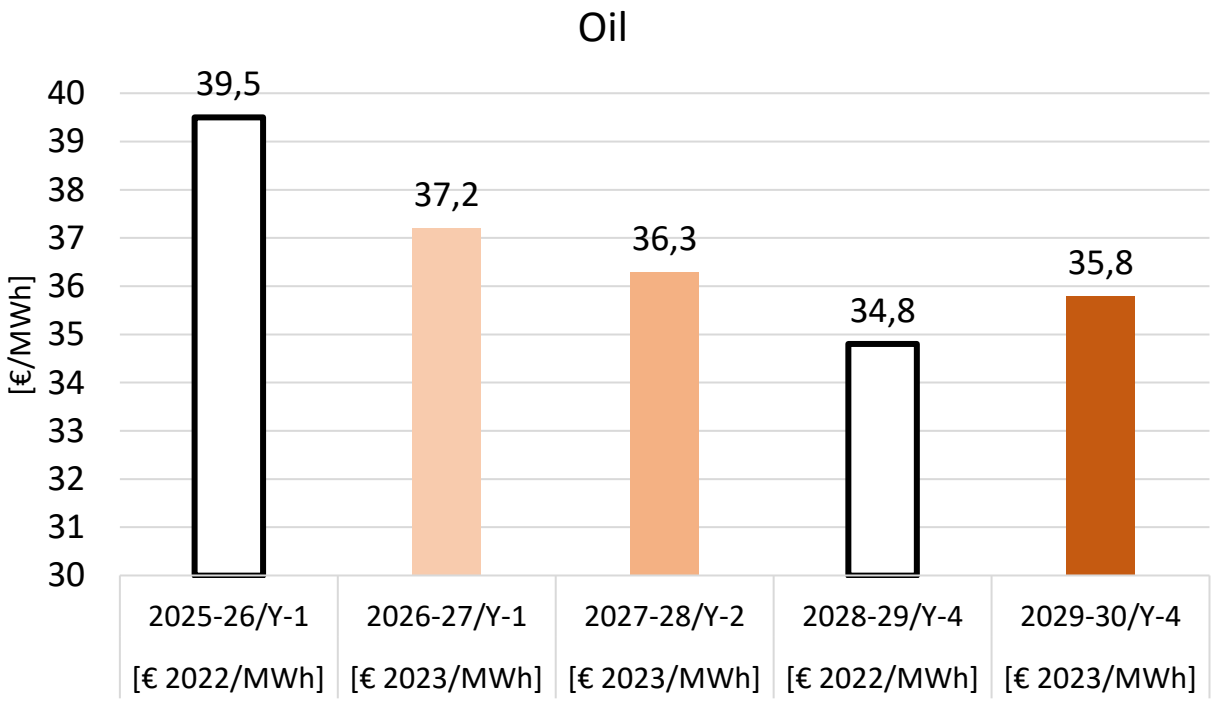
** Scenario selected from WEO : Announced pledges*

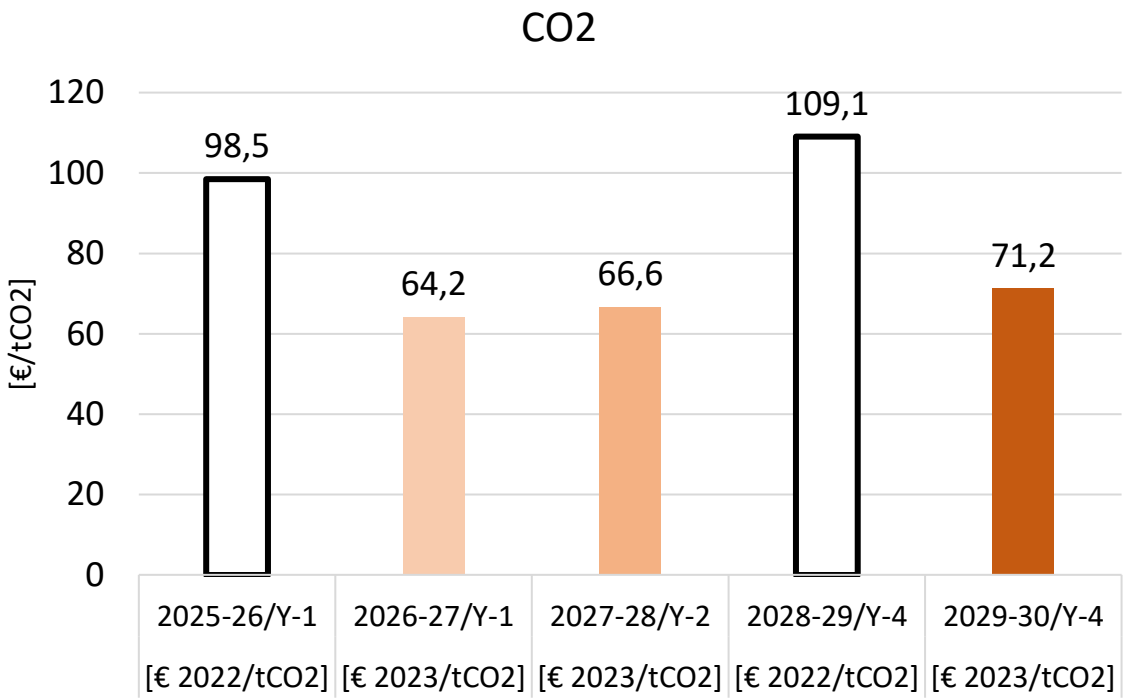
Article 3, §2 & 3

Scenario components

Fuel and CO_2 prices

Fuel prices





Article 3, §2 & 3

Updates proposed based on latest policies/published studies

For neighboring countries

Updates proposed based on latest policies/published studies

The proposed data for the other countries is based on the ERAA 23 and updated based on the most recent national/regional adequacy studies and taking into account the latest European methodologies as described in the Adequacy and Flexibility 2024-2034 study.

- ERAA 23 is used as main data source for all parameters and for all delivery periods
- Some adaptations could be done after the publishing of the Monitoring Leveringszekerheid by Tennet

- ERAA 23 is used as main data source for all parameters and for all delivery periods
- Some adaptations could be done if official announcements/publications are available before the Ministerial Decree

- The “Future Energy Scenarios” (FES23 – CT) published by National Grid in 2023 is used for all the data except for the nuclear capacity
- Nuclear capacity based on the latest information of the plant operators

2 sensitivities on the nuclear capacity in Great Britain are foreseen

Updates proposed based on latest policies/published studies

- The Bilan Prévisionnel 2023-2035 published on 20th of September 2023 by RTE is used as main data source:
  - To validate the assumptions regarding the solar and wind offshore capacity
  - To align the assumptions regarding the availability of Cordemais
  - To update the demand trajectory
  - To update the onshore capacity considering the projection is based on the current installation rate
- EDF open data is used for the nuclear capacity
- REMIT and EDF publication are used to determine the unavailability of nuclear units
  - the forecast of the French producer as published in REMIT for 2026-27/Y-1, calibrated to an estimated yearly generation output of 365 TWh
  - the maintenance profiles used in the ERAA 2023 as a basis for 2027-28/Y-2 and 2029-30/Y-4

Several sensitivities on the nuclear availability in France are foreseen

A sensitivity on Cordemais available is also included

Updates proposed based on latest policies/published studies

Overview of the proposed values for the main countries. More information about the sources is available in the explanatory note.

2026-27/Y-1	France	Germany	Netherlands	United Kingdom	Spain	Italy	Poland	Denmark
Demand [TWh]	480	590	134	294	260	335	173	46
Onshore Wind [GW]	26	86	8	21	36	15	12	6
Offshore Wind [GW]	3	13	6	28	0	5	4	4
Solar [GW]	27	132	47	23	40	53	22	8
Coal [GW]	1	19	3	0	0	0	24	1
Nuclear [GW]	62,9	0,0	0,5	3,6	7,1	0,0	0,0	0,0
Gas [GW]	7,2	32,8	13,6	41,9	24,5	42,6	5,8	1,2

2027-28/Y-2	France	Germany	Netherlands	United Kingdom	Spain	Italy	Poland	Denmark
Demand [TWh]	490	610	139	300	264	340	177	49
Onshore Wind [GW]	27	93	8	23	37	16	12	7
Offshore Wind [GW]	3	18	8	30	0	6	6	4
Solar [GW]	32	152	51	25	46	60	23	11
Coal [GW]	1	14	3	0	0	0	23	1
Nuclear [GW]	62,9	0,0	0,5	3,6	6,1	0,0	0,0	0,0
Gas [GW]	7,2	32,8	13,6	42,1	24,5	42,6	5,8	1,2

2029-30/Y-4	France	Germany	Netherlands	United Kingdom	Spain	Italy	Poland	Denmark
Demand [TWh]	509	652	156	325	269	351	185	55
Onshore Wind [GW]	30	107	9	27	44	19	14	7
Offshore Wind [GW]	4	26	15	45	3	10	6	5
Solar [GW]	42	194	59	31	59	75	27	18
Coal [GW]	1	0	0	0	0	0	22	0
Nuclear [GW]	62,9	0,0	0,5	1,2	5,1	0,0	0,0	0,0
Gas [GW]	7,2	25,7	12,7	37,7	24,5	42,6	5,8	0,8

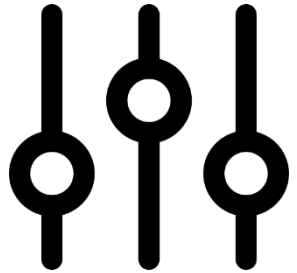
Definition of sensitivities

Nuclear FO rate in Belgium

Applicable for: 2026-27/Y-1 | 2027-28/Y-2 | 2029-30/Y-4

Sensitivity:

Better Belgian nuclear availability: FO rate of 10 % instead of 20,5 %



Justification:

- Potential defects would be detected by the needed LTO-works and deal with during the foreseen summer planned outages
- In line with the ‘LowNuFO’ sensitivity from the Adequacy and Flexibility study 2024-34
- /!\ LTO works that will be performed over the course of several years entail many risks that could cause additional unavailabilities (feedback from Tihange 1).

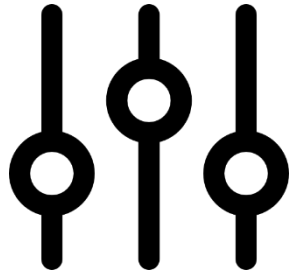
Article 3, §4

TJ Closure

Applicable for: 2026-27/Y-1 | 2027-28/Y-2 | **2029-30/Y-4**

Sensitivity:

Closure of turbojets due to CO_2 threshold (-140 MW)



Justification:

- High specific CO_2 emissions, not being eligible for CRM auctions
- In line with the ‘Low TJ’ sensitivity from the Adequacy and Flexibility study 2024-34

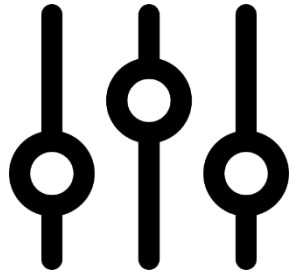
Article 3, §4

GB nuclear capacity 1

Applicable for: ~~2026-27/Y-1~~ | 2027-28/Y-2 | 2029-30/Y-4

Sensitivity:

Extension of AGR nuclear plants by 2 years



Justification:

- EDF recently announced a possible extensions for these AGR plants.
- No specific timings or extension periods were communicated as of yet
- Extension needs to be approved by the nuclear regulator in Great-Britain.

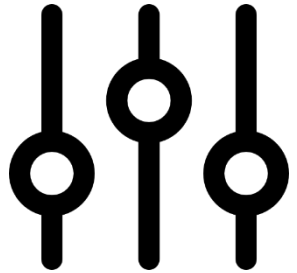
Article 3, §4

GB nuclear capacity 2

Applicable for: ~~2024-2028/Y-1~~ ~~2024-2028/Y-2~~ **2029-30/Y-4**

Sensitivity:

Earlier availability of Hinckley Point C



Justification:

- Hinkley Point C nuclear power plant currently under construction by EDF is expected to be available as from 2030.
- EDF also considers an optimistic and a pessimistic scenario where the unit would be available 1 year earlier and 1 year later respectively
- This sensitivity reflects the optimistic scenario from EDF.

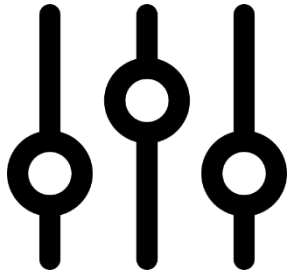
Article 3, §4

French nuclear availability

Applicable for: 2026-27/Y-1 | 2027-28/Y-2 | 2029-30/Y-4

Sensitivity:

Decreased French nuclear availability



Justification:

- EDF generation forecasts for the coming years do not match with the sum of unit availability reported on REMIT.
- Aligned with latest ‘Bilan Prévisionnel’ which assumes a best case of 350TWh but also includes low sensitivities (330 TWh) and stress tests, assuming the simultaneous unavailability of 12 nuclear units.
- Major overhauls foreseen to extend the lifetime of its ageing fleet beyond 40 years.
- Nuclear fleet is very vulnerable to generic issues given the same technological conception used in the reactors (eg corrosion defects in some weldings found on nuclear units).
- In line with ‘FR-NUC’ sensitivities from the Adequacy and Flexibility study 2024-34.

Article 3, §4

French nuclear availability

Sensitivity:

Decreased French nuclear availability

	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
Scenario	French nuclear availability based on **REMIT** Lower availability during winter compared to REMIT, calculated as the difference between REMIT and the **maximum EDF forecast** on the **winter only**	French nuclear availability based on the **ERAA 2023** planned outages, given the absence of detailed expected nuclear availability data	
Sensitivity 1	Lower availability during winter compared to **REMIT** Calculated as the difference with the **average** EDF forecast on the **winter** only	Lower availability by **2 units** on average during winter compared to ERAA	
Sensitivity 2	Lower availability during winter compared to **REMIT** Calculated as the difference with the **minimum** EDF forecast on the **winter** only	Lower availability by **4 units** on average during winter compared to ERAA	
Sensitivity 3	Lower availability during winter compared to **REMIT** Calculated as the difference with the **minimum** EDF forecast on the **whole year**	Lower availability by **6 units** on average during winter compared to ERAA	
Sensitivity 4	/	Lower availability by **8 units** on average during winter compared to ERAA	

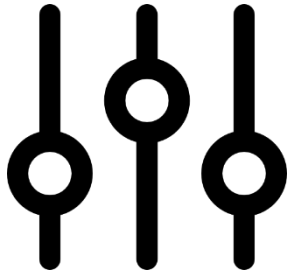
Article 3, §4

Cordemais availability

Applicable for: 2026-27/Y-1 | 2027-28/Y-2 | 2029-30/Y-4

Sensitivity:

Cordemais unavailability



Justification:

- Cordemais closure
- The coal unit Cordemais in not switched to biomass and is closed in 2026

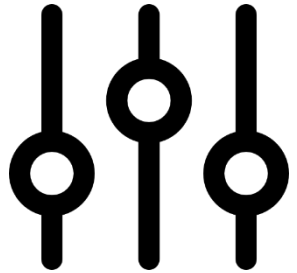
Article 3, §4

Flow-based CEP rules

Applicable for: 2026-27/Y-1 | 2027-28/Y-2 | 2029-30/Y-4

Sensitivity:

Fixed RAM 70% instead of 70% minRAM



Justification:

- Non achievements of the CEP rules to reflect the uncertainty on capacity calculation
- In line with ‘XB-RAM’ sensitivities from the Adequacy and Flexibility study 2024-34

Article 3, §4

Other parameters to be consulted upon

Preselected capacity types

Royal Decree Context

Art. 6. §1er. Le gestionnaire du réseau s'assure que le scénario de référence tel que déterminé selon l'article 3, §7, répond au niveau de la sécurité d'approvisionnement requis par l'article 7undecies, §7, premier et deuxième alinéas, de la loi du 29 avril 1999 en ajoutant, si nécessaire, de la capacité supplémentaire à la zone de réglage belge :

1° provenant des types de capacité présélectionnés selon l'article 10 et proposés par le gestionnaire de réseau dans la consultation publique visée à l'article 5 et ensuite choisis par le gestionnaire de réseau en collaboration avec la Direction générale de l'Energie et en concertation avec la commission ;

2° d'une manière itérative sur la base d'une boucle d'optimisation économique avec un incrément à la hauteur de celui appliqué dans l'évaluation la plus récemment disponible de l'adéquation des ressources à l'échelle européenne ou nationale visée aux articles 23 et 24 du Règlement (UE) 2019/943, et de maximum 100 MW.

Art. 6. §1. De netbeheerder verzekert zich ervan dat het referentiescenario zoals bepaald volgens artikel 3 §7 beantwoordt aan het niveau van bevoorradingszekerheid dat worden geëist door artikel 7undecies, § 7, eerste en tweede lid, van de wet van 29 april 1999 door, indien nodig, aan de Belgische regelzone bijkomende capaciteit toe te voegen:

1° afkomstig van de volgens artikel 10 voorgeselecteerde types van capaciteit die voorgesteld worden door de netbeheerder ter openbare raadpleging bedoeld in artikel 5 en daarna door de netbeheerder in samenwerking met de Algemene Directie Energie en in overleg met de commissie gekozen worden;

2° op een iteratieve manier op basis van een economische optimalisatielus op basis van incrementele stappen ten belope van deze zoals toegepast in de meest recent beschikbare Europese of nationale beoordeling van de toereikendheid van de elektriciteitsvoorziening, bedoeld in de artikelen 23 en 24 van Verordening (EU) 2019/943, en van maximaal 100 MW.

Preselected capacity types

Purpose

Reference scenario defined by the Minister

Calibration of the reference scenario

Determination of the CRM volume & parameters

This scenario does not necessarily meet the legal security of supply criteria, as defined in article 7undecies, 3 of the electricity law.

As long as the security of supply criteria is not reached, capacity will be iteratively added based on an economic optimization loop.

The output from the model ensures to be compliant with the legal security of supply criterion.

Preselected capacity types

Purpose

Reference scenario defined by the Minister → Calibration of the reference scenario → Determination of the CRM volume & parameters

→ Preselected capacity types need to be selected for each CRM auction

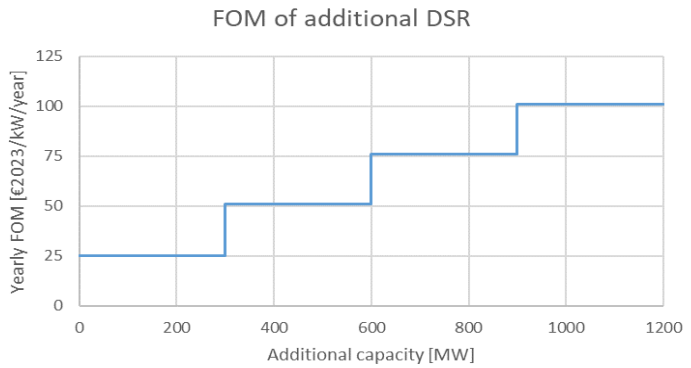
Preselected capacity types

- The preselected capacity types proposed for each auction are selected based on the construction time of the technologies
- FOM costs are taken from the Cost of Capacity study performed by Entras
- The CAPEX costs are taken from AdeqFlex'23 and adjusted for inflation. The values will be aligned with the Intermediate Values selected by the Minster and could take into account the study on CAPEX costs that is being finalized by Entras

Technology	Marginal Price Calculation	CAPEX [€ 2023/kW]	FOM [€ 2023/kW]	Economic lifetime [y]	Applicable in: 2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
CCGT	Marginal price of a new CCGT	709*	32	20	**No**	**No**	**Yes**
OCGT	Marginal price of a new OCGT	557**	26	20	**No**	**No**	**Yes**
Large-scale bat.	Marginal price of a new battery	912	25	15	**Yes**	**Yes**	**Yes**
DSR 24h	Marginal price of 24h DSR	see below			**Yes**	**Yes**	**Yes**

*CAPEX for CCGT >800 MW

**CAPEX for OCGT>100 MW



Scenario choice post delivery period for market revenues calculation

Royal Decree Context

"Article 10, §6 Les rentes inframarginales annuelles estimées de la référence pour chaque technologie sont exprimées en €/MW/an et sont calculées, avec une périodicité annuelle, sur l'ensemble de la durée de vie de la référence pour chaque technologie, en prenant en compte la valeur du coût marginal de la technologie comme seuil inférieur. Ces rentes inframarginales sont déterminées, pour chaque année sur la durée de vie de l'unité de marché de capacité, sur la base de la médiane (P50) des revenus des années de simulation, sur la base du scénario de référence visé à l'article 3, §7 et tiennent compte du niveau du prix d'exercice applicable visé à l'article 26.

Si le scénario de référence n'est pas disponible pour une année sur la durée de vie de la référence pour chaque technologie, une interpolation est réalisée entre les valeurs des années pour lesquelles le scénario de référence existe, éventuellement corrigé par des données disponibles complémentaires. Ces données sont présentées par le gestionnaire de réseau et les sources de celles-ci sont soumises à une consultation publique visée à l'article 6, §2, 4° et sont choisies par le gestionnaire de réseau en collaboration avec la Direction générale de l'Energie et en concertation avec la commission ;

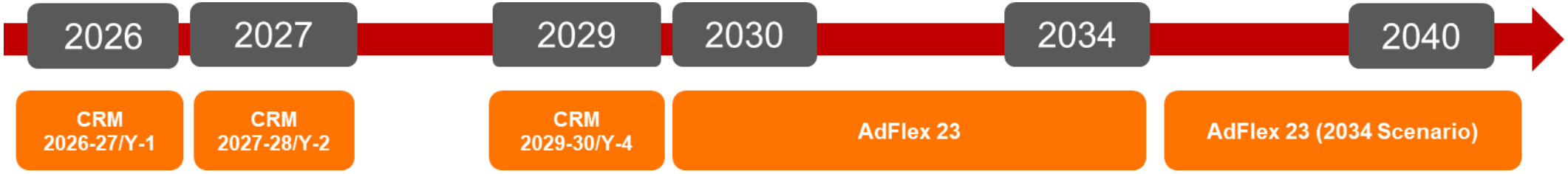
"Artikel 10, §6 De geraamde jaarlijkse inframarginale inkomsten van de referentie voor elke technologie worden uitgedrukt in €/MW/jaar en worden, op jaarlijkse basis, berekend over de volledige levensduur van de referentie voor elke technologie, rekening houdend met de waarde van de marginale kost van de technologie als ondergrens. Deze inframarginale inkomsten worden voor elk jaar over de levensduur van de eenheid in de capaciteitsmarkt bepaald op basis van de mediaan (P50) inkomsten van de simulatiejaren op basis van het referentiescenario bedoeld in artikel 3 §7 en houden rekening met het niveau van de toepasselijke uitoefenprijs bedoeld in artikel 26.

.Indien het referentiescenario niet beschikbaar is voor een jaar uit de levensduur van de referentie voor elke technologie, wordt een interpolatie uitgevoerd tussen de waarden van de jaren waarvoor het referentiescenario bestaat, eventueel bijgestuurd door bijkomende beschikbare gegevens. Deze gegevens worden voorgesteld door de netbeheerder en de bronnen ervan worden ter openbare raadpleging bedoeld in artikel 6, §2, 4° voorgelegd en worden door de netbeheerder in samenwerking met de Algemene Directie Energie en in overleg met de commissie gekozen.

Scenario choice post delivery period for market revenues calculation

The objective is to define the scenarios for periods post-2030, which will be used to calculate the market revenues for technologies with a lifespan exceeding one year :

- AdeqFlex'23 is employed to calculate market revenues beyond 2030.
- For the year 2028, a linear interpolation will be used as no simulation will be conducted for this specific year.



Shortlist of existing technologies for the determination of the Intermediate Price Cap : same shortlist than for in the calibration report related to DP 2027-28

Royal Decree Context

"Article 18, § 1

Le gestionnaire du réseau détermine, sur la base de l'étude visée à l'article 17, après la consultation publique visée à l'article 6, une liste réduite de technologies existantes ou raisonnablement attendues qui seront considérées pour la détermination du prix maximal intermédiaire."

"Artikel 18, § 1

De netbeheerder stelt op basis van de studie bedoeld in artikel 17, na de openbare raadpleging bedoeld in artikel 6, een beperkte lijst op van bestaande of redelijkerwijs te verwachten technologieën die in aanmerking genomen zullen worden voor de bepaling van de intermediaire maximumprijs."

- CCGTs
- OCGTs
- Batteries
- Market Response 4h

Compared to last year, turbojets and PSP are removed whereas batteries are added

Yearly Fixed O&M costs for IPC technologies

	Yearly Fixed O&M [€2023/kW/year]			Source
	Low	**Mid**	**High**	
CCGT	33	35	39	Entras 2023
OCGT	20	23	29	Entras 2023
Batteries	14	20	24	Entras 2023
Market Response 4h	8	13	19	AdeqFlex 2023

Parameters for the calculation of market revenues

	Efficiency [%]			Variable O&M [€2023/MWh]			Source
	Low	Mid	High	Low	Mid	High	
CCGT	50	54	58	0,9	1,2	2,1	Entras 2023
OCGT	35	40	44	2	3	3,6	Entras 2023
Batteries	85	85	85	0,1	0,2	0,4	Entras 2023

Methodology for the calculation of net revenues from ancillary services

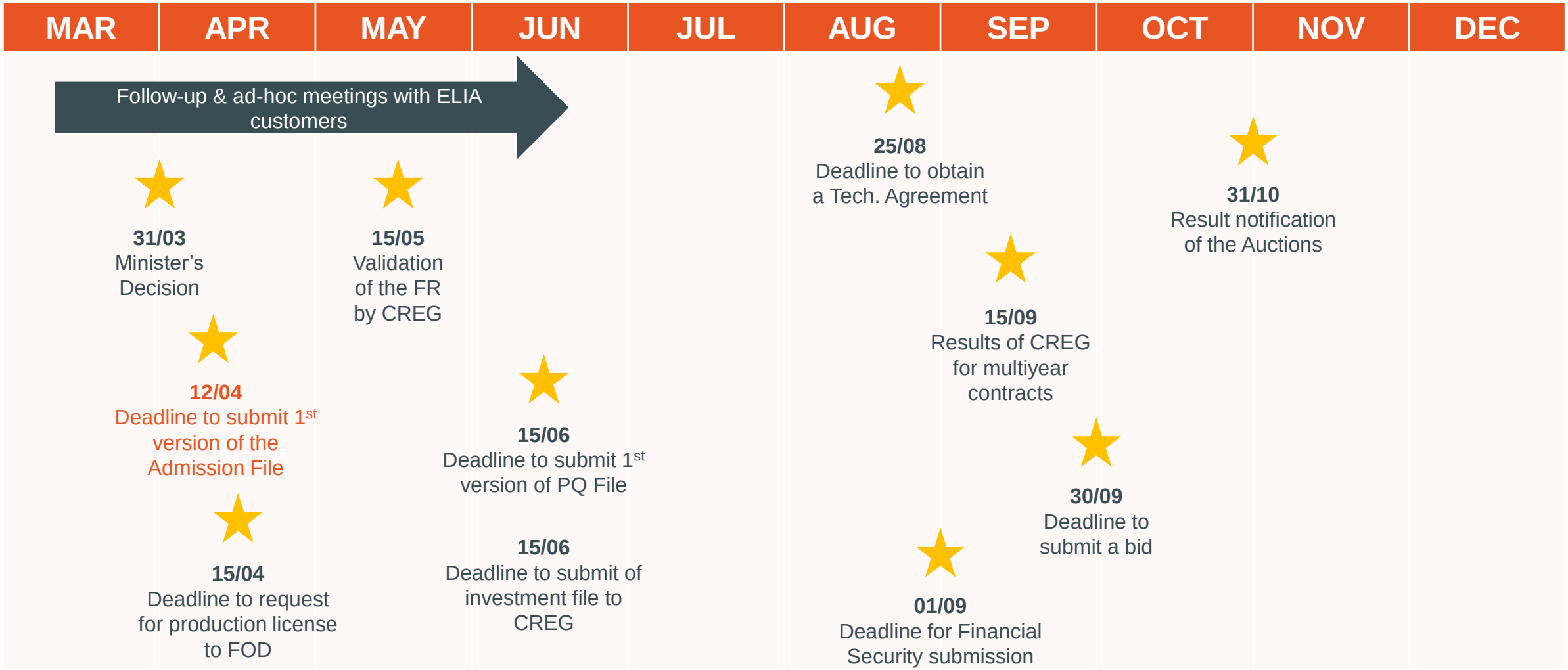
- Methodology based on the Compass Lexecon study of last year. This year, methodological refinements might be introduced. These will be presented in future WGs.

- Net revenues from the provision of balancing services are calculated by looking at historical data (for the latest 36 months), based on the reservation cost of balancing services.

- The study realized by Compass Lexecon to assess net balancing revenues allowed to confirm the hypothesis taken from the past and to update calculations in a robust way.
- The goal is to replicate that study starting with the same assumptions to update calculations again.

AOB

CRM auction - key dates in 2024



Next meetings

Next meetings

WG Adequacy

- **31/05/2024: WG Adequacy**
  - 9:30 AM to 12:30 PM
- **14/06/2024: WG Adequacy**
  - 9:30 AM to 12:30 PM

Please find further information on the next meetings through the [WG Adequacy webpage]

19/04 - Operational Info Session

- Goal of the session?

The goal of the session is to present you the operational processes and the tools developed for the Prequalification, Financial Security and Auction.

- What can you expect?

Participating to these sessions will help you to be up-to-speed and ready to operate the processes that will be presented. More specifically, as an example, the following themes will be presented:

- **Prequalification (PQ):** General timings, New Build CMUs, Renewal process improvement, Low Voltage participation, other improvements/changes, Cross-Border CRM,…
- **Financial Security (FS):** General timings, Updated Required Levels, updated Financial Security Template,…
- **Auction (AUC):** General timings, Improvements linked to Financial Securities, Cross-Border CRM,…
- **Pre-Delivery Monitoring (PDM):** Reminder about the introduction of the Quarterly Reports in the PDM Platform,…

- When?

On 19/04/2023 from 09.30 to 12.00 @Elia Empereur or via Teams.

Your participation is to be confirmed via email to taskforce.crm@elia.be by 16th of April at the latest

Thank you.