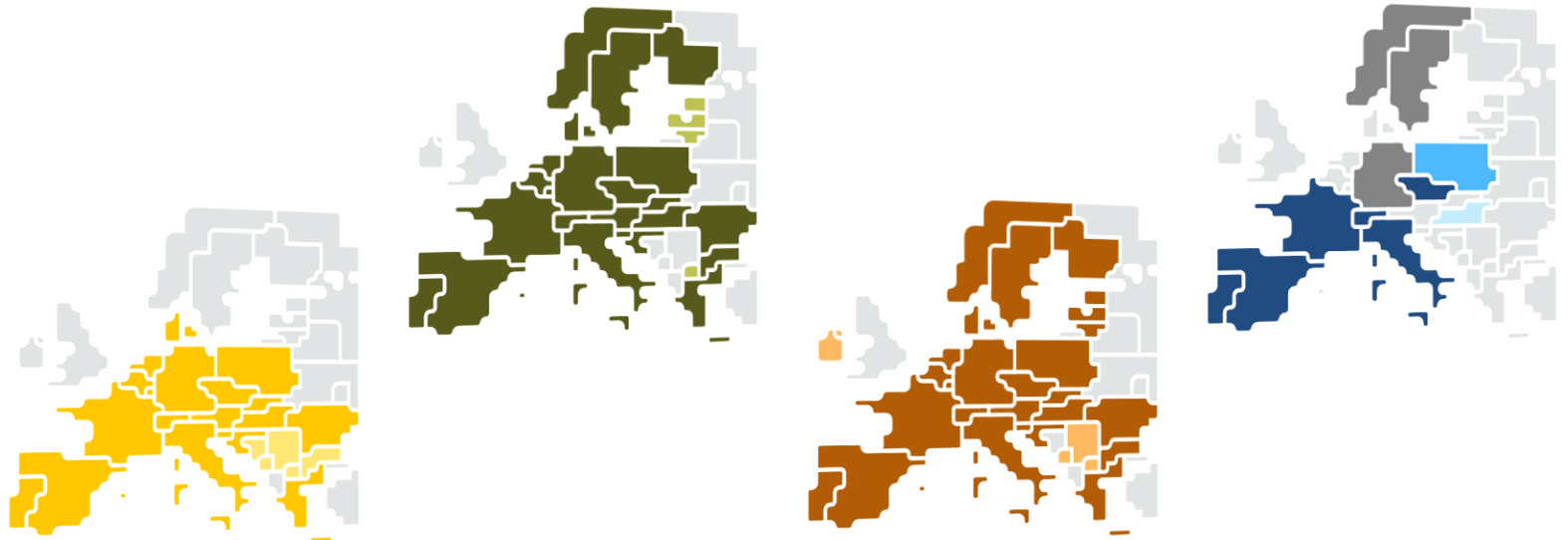




# Update on Balancing Platforms


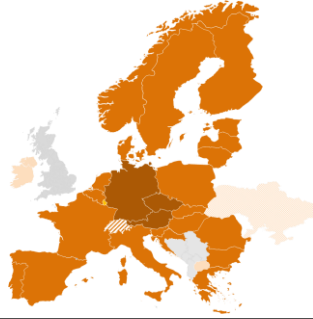
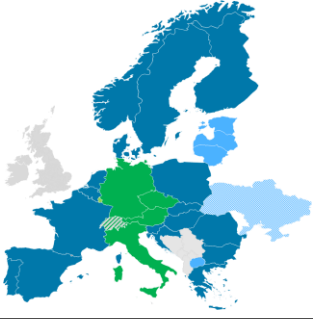
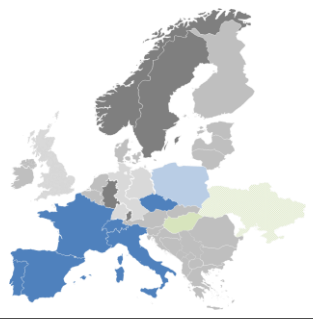
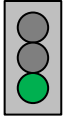
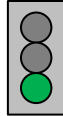
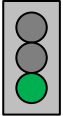
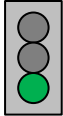
December 7<sup>th</sup>, 2023

MESC



# Introduction

## Overview on current status of European Balancing Platforms

	IGCC	MARI	PICASSO	TERRE
Balancing service	IN	mFRR	aFRR	RR
Participants				
Target area	Continental Europe	Europe	≥ Continental Europe	≥ RR TSOs
Go-live	24/06/2021 & operational since 01/10/2011	05/10/2022*	22/06/2022*	29/09/2020*
Status				
Highlights	Economic surplus of around ~280 Mio. € in first half 2023	Economic surplus of 7.1 Mio. € until July 2023	Economic surplus of more than 100 Mio. € in 2023 (Q1-Q3)	Economic surplus of more than 240 million € from January to October 2023

\* Date as of when cross-border exchanges were possible due to neighboring TSO joining. Technical go-live of platform was earlier.

- » European domestic market (at least) for balancing energy has been established in 2022.
- » European market design has significantly changed the local procurement rules.

# Market Results

## Important achievements in IGCC

- All TSOs with the obligation to connect as a result of the EB Regulation are connected to IGCC\*.
- IGCC is the first Balancing Platform to achieve this objective.



- IGCC has 27 members in total, out of which
  - 24 are operational members and
  - 3 are observers.
- With the go-live of ESO in March, all EU-TSOs are connected and can net their imbalances.
- Historical evolution (starting in 2010):



- Outlook 2024: planning of the accession of the Baltic TSOs to IGCC

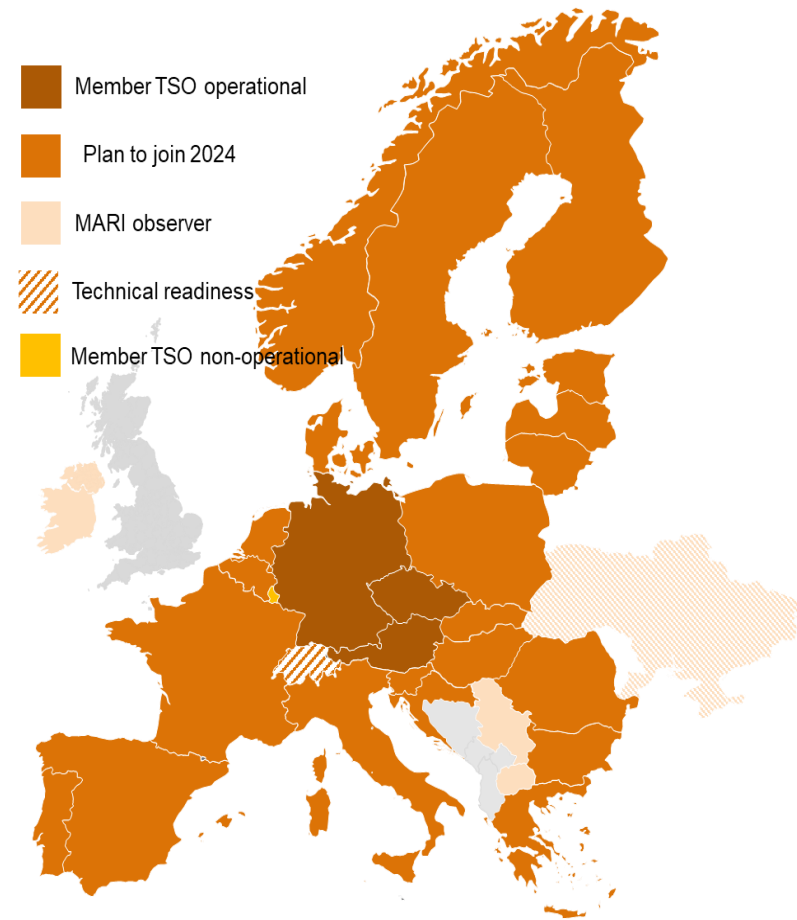
# Manually Activated Reserves Initiative (MARI)

## Overview

- Project “Manually Activated Reserves Initiative” (MARI) has been set up already in 2017 to provide the basis for a European mFRR platform.
  - Currently, 29 TSOs from 26 countries have joined the project (Creos as non-operational member only).
- Start of dry-run (CEPS) on 2022/07/18
- Technical go-live on 2022/09/15
- First TSOs (CEPS and German TSOs) joined on 2022/10/05.

## Relevant Features

- Counter activation of mFRR balancing energy for economic optimization
  - mFRR balancing energy bids can be activated either for balancing or (locally) for system constraints purposes
  - Direct and scheduled activation
  - 100 % availability since go-live
- » Road to individual TSOs go-live will also continue in 2023.

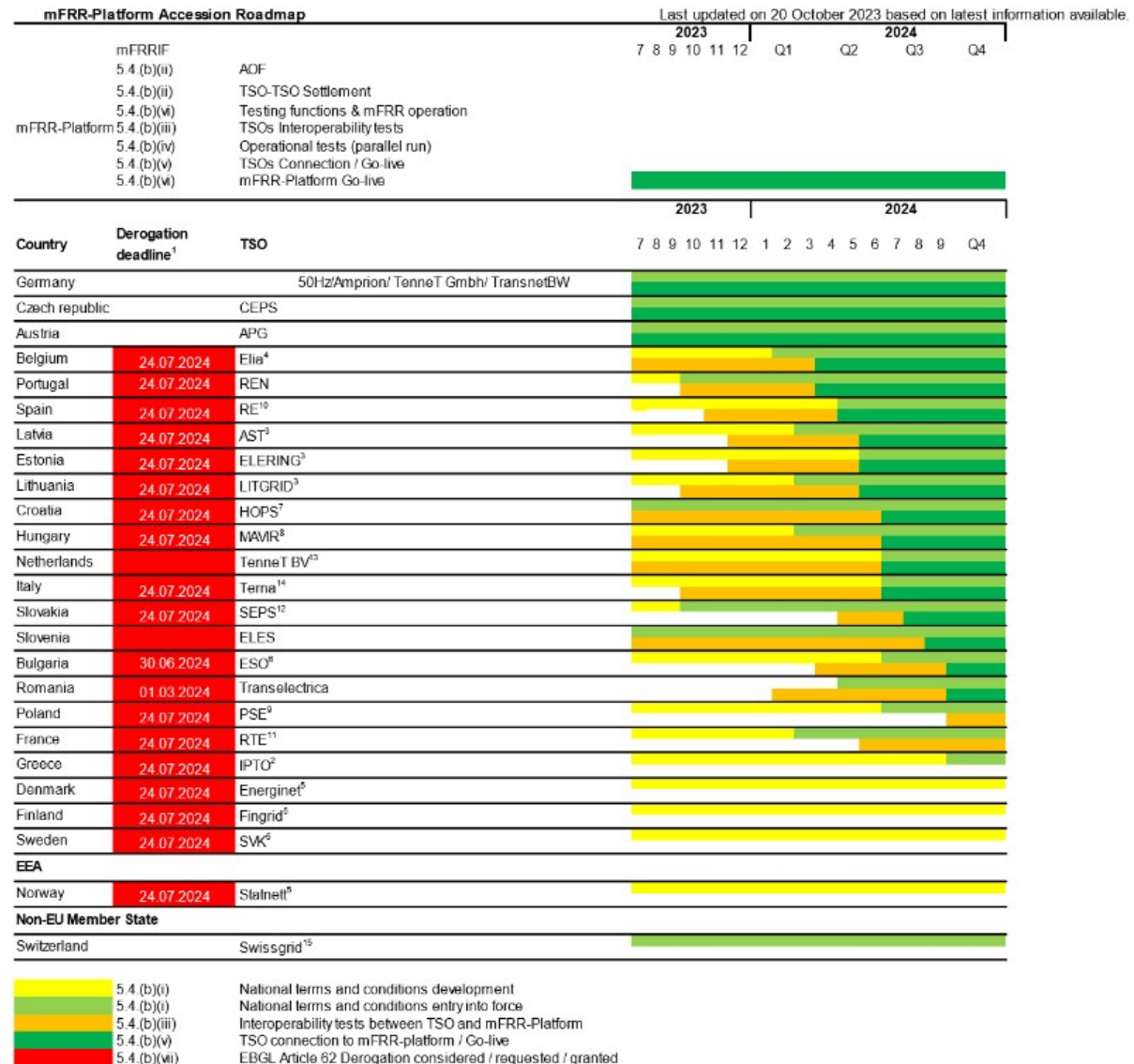


\* based on the current accession roadmap which includes additional information and risks on the planning

# MARI

## Accession Roadmap (October 2023)

- The accession of member TSOs to mFRR-Platform (MARI) is planned in accordance with the following accession roadmap.
- MARI member TSOs and ENTSO-E share this accession roadmap for informative purposes only and does not, in any case, represent a firm, binding or definitive position of MARI on the content.
- The content is subject to change as the implementation progresses and new information becomes available.
- In particular, feasibility of the present accession roadmap may depend on final detailed accession planning and possible operational and/or technical constraints that would result in the maximum number of parallel accessions.



# MARI

## Accession Roadmap (Brand new – publication next week)

- The accession of member TSOs to mFRR-Platform (MARI) is planned in accordance with the following accession roadmap.
- MARI member TSOs and ENTSO-E share this accession roadmap for informative purposes only and does not, in any case, represent a firm, binding or definitive position of MARI on the content.
- The content is subject to change as the implementation progresses and new information becomes available.
- In particular, feasibility of the present accession roadmap may depend on final detailed accession planning and possible operational and/or technical constraints that would result in the maximum number of parallel accessions.

<sup>2</sup> IPTO was granted a derogation by the NRA until 24.07.2024. However, IPTO expects to connect to the mFRR-platform within 2026. IPTO has recently informed the Greek NRA regarding the delay.

<sup>3</sup> Derogation request submitted by Baltic TSOs is approved by the Baltic NRAs. According to the NRAs decision, the planned connection time will not be later than 24.07.2024.

<sup>4</sup> Elia was granted a derogation by the NRA until 24.07.2024.

<sup>5</sup> The plan presented in this roadmap shall be regarded as a preliminary, non-binding estimate. The planned connection time is expected in 2026.

<sup>6</sup> ESO - derogation was granted by local NRA until 30.06.2024.

<sup>7</sup> HOPS - derogation was granted by local NRA until 24.07.2024.

<sup>8</sup> MAVIR - derogation was granted by local NRA until 24.07.2024.

<sup>9</sup> PSE preliminary expect to connect to the platform on Q4 2024/Q1 2025.

<sup>10</sup> RE derogation has been granted by the NRA until 24.07.2024.

<sup>11</sup> RTE was granted a derogation by the French NRA until 24/07/24. However, at least one additional year will be required for RTE to connect to the MARI platform in order to ensure the operational security of the French electrical system. RTE will make its best effort to share its ATC before 24/07/24.

<sup>12</sup> SEPS - derogation was granted by local NRA until 24.07.2024.

<sup>13</sup> TenneT NL aims for implementation and go-live by July 2024 and has requested a derogation until then. However, there is a real risk that the final derogation will take place even later than the requested derogation period. If TenneT takes these risks into account, TenneT expects to participate in the summer of 2025 to participate in the mFRR platform and TenneT will enter into discussions with relevant stakeholders if it becomes clear that the risks already in the planning manifest themselves.

<sup>14</sup> TERNA – derogation was granted by local NRA until 24.07.2024.

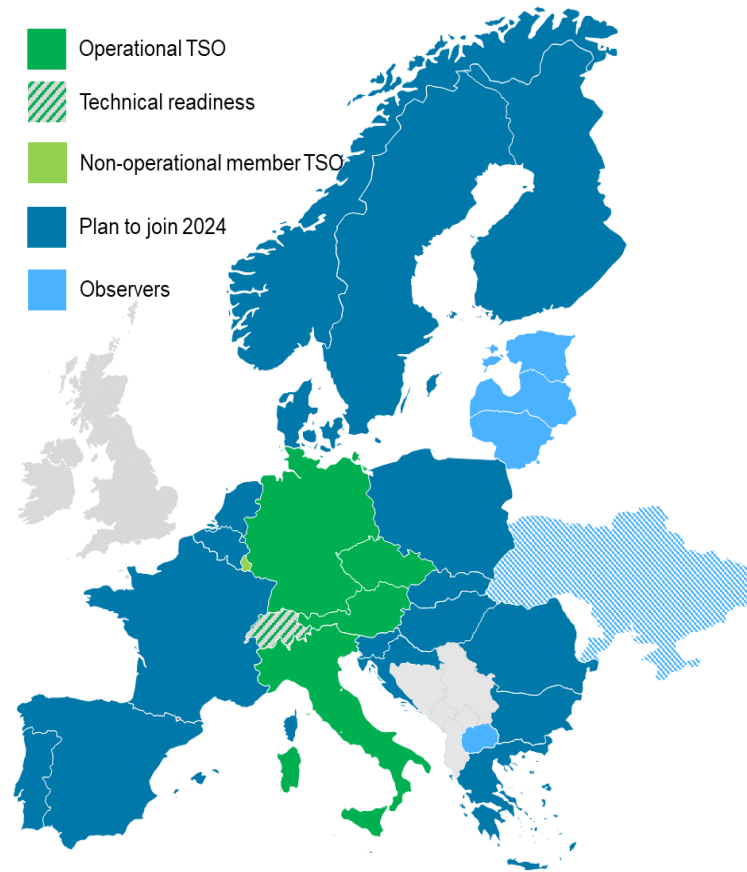
<sup>15</sup> The technical readiness of Swissgrid has been acknowledged. The participation of Switzerland in the mFRR-Platform is regulated based on article 1.6 and 1.7 of the EB Regulation and currently the subject of litigation by Swissgrid at the Court of Justice of the European Union.

# Platform for the International Coordination of automated Frequency Restoration and Stable System Operation (PICASSO)

- The “Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation” (PICASSO) has been endorsed by all TSOs in 2017 as implementation project for the European aFRR platform pursuant to GL EB.
- Currently, 26 TSOs from 23 countries have joined the project. 4 TSOs and ENTSO-E are observers.
- Successful go-live on June 1<sup>st</sup>, 2022 with CEPS as first operational member, earlier than required by the regulation
- First exchange of energy on June 22<sup>nd</sup>, 2022, after APG and the 4 German TSOs joined the platform, on 19<sup>th</sup> July TERNA joined
- The remaining Member TSOs will gradually join the platform

## Relevant Features

- The PICASSO Platform establishes a European domestic energy market for aFRR energy, based on a common standard product.
- PICASSO fosters operational stability by coordinating the activation of aFRR.
- Using a market time unit of 4 seconds. The PICASSO optimizer has performed more than 7.8 Mio. market clearings per month 100 % availability.
- The PICASSO IT solution is also used for the International Grid Control Cooperation (IGCC), which is closely interacting with the PICASSO Optimization to maximize the economic surplus while ensuring that the netting potential of all IGCC TSOs is used.



\* based on the current accession roadmap which includes additional information and risks on the planning

# PICASSO

## Accession Roadmap (October 2023)

- The accession of member TSOs to aFRR-Platform (PICASSO) is planned in accordance with the following accession roadmap.
- PICASSO member TSOs and ENTSO-E Share this accession roadmap for informative purposes only and it does not, in any case, represent a firm, binding or definitive position of PICASSO on the content.
- The content is subject to change as the implementation progresses and new information becomes available.
- In particular, the feasibility of the present accession roadmap may depend on final detailed accession planning and possible operational and/or technical constraints that would result in the number of parallel accessions.

**aFRR-Platform Accession Roadmap** Last updated on 25/10/2023 based on latest information available.

	2024																	
	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
aFRRIF	[Green bar]																	
5.4.(b)(ii) AOF (done)	[Green bar]																	
5.4.(b)(ii) TSO-TSO settlement (done)	[Green bar]																	
5.4.(b)(vi) Testing functions & aFRR operation (done)	[Green bar]																	
5.4.(b)(iii) TSOs Interoperability test (done)	[Green bar]																	
5.4.(b)(iv) Operational test (parallel run) (done)	[Green bar]																	
5.4.(b)(v) TSOs Connection to aFRR platform / Go-live	[Green bar]																	
5.4.(b)(vi) aFRR-Platform Go-live (done)	[Green bar]																	

Country	Derogation deadline	TSO	2024																	
EU:			7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Czech republic		CEPS	[Green bar]																	
Austria		APG	[Green bar]																	
Germany		50Hz,AMP,TNG,TTG	[Green bar]																	
Italy	24.07.2023	Terna	[Green bar]																	
Romania	01.03.2024	Transelectrica	[Yellow bar]																	
Bulgaria	30.06.2024	ESO	[Yellow bar]																	
Denmark <sup>1</sup>	24.07.2024	Energinet	[Yellow bar]																	
Finland <sup>1</sup>	24.07.2024	Fingrid	[Yellow bar]																	
France <sup>2</sup>	24.07.2024	RTE	[Yellow bar]																	
Slovakia	24.07.2024	SEPS	[Yellow bar]																	
Belgium <sup>3</sup>	24.07.2024	Elia	[Yellow bar]																	
Greece	24.07.2024	ADMIE	[Yellow bar]																	
Slovenia	24.07.2024	ELES	[Yellow bar]																	
Portugal	24.07.2024	REN	[Yellow bar]																	
Croatia	24.07.2024	HOPS	[Yellow bar]																	
Hungary	24.07.2024	MAVIR	[Yellow bar]																	
Netherlands <sup>4</sup>	24.07.2024	Tennet BV	[Yellow bar]																	
Poland	24.07.2024	PSE	[Yellow bar]																	
Spain	24.07.2024	REE	[Yellow bar]																	
Sweden <sup>5</sup>	24.07.2024	SVK	[Yellow bar]																	
EEA:			[Yellow bar]																	
Norway <sup>5</sup>	24.07.2024	Statnett	[Yellow bar]																	
Non-EU:			[Yellow bar]																	
Switzerland <sup>6</sup>		Swissgrid	[Green bar]																	

[Yellow bar]	5.4.(b)(i)	National terms and conditions development
[Light Green bar]	5.4.(b)(ii)	National terms and conditions entry into force
[Yellow bar]	5.4.(b)(iii)	Interoperability tests between TSO and aFRR-Platform
[Green bar]	5.4.(b)(v)	TSO connection to aFRR-platform / Go-live
[Red bar]	5.4.(b)(vi)	EBGL Article 62 Derogation considered/requested/granted (new deadline listed)

1) The plan presented in this roadmap shall be regarded as a preliminary, non-binding estimate. The planned connection time is expected in Q2 2024. 2) RTE aims for implementation and go live by June 2024 provided risks related to balancing energy high prices observed on the PICASSO platforms are mitigated. 3) A first version of the T&C has entered into force early May 2022 when local bidding has been adapted and a second one will enter into force when ELIA will connect to PICASSO. 4) TenneT NL aims for implementation and go-live by July 2024 and has been granted a derogation until then. However, there is a real risk that the final derogation will take place even later than the requested derogation period. If TenneT takes these risks into account, TenneT expects to participate in the summer of 2025 to participate in the aFRR platform and TenneT will enter into discussions with relevant stakeholders if it becomes clear that the risks already in the planning manifest themselves. 5) The plan presented in this roadmap shall be regarded as a preliminary, non-binding estimate. The planned connection time is expected in 2026. 6) The technical readiness of Swissgrid has been acknowledged. The participation of Switzerland in the aFRR-Platform is regulated based on article 1.6 and 1.7 of the EB Regulation and currently the subject of litigation by Swissgrid at the Court of Justice of the European Union.



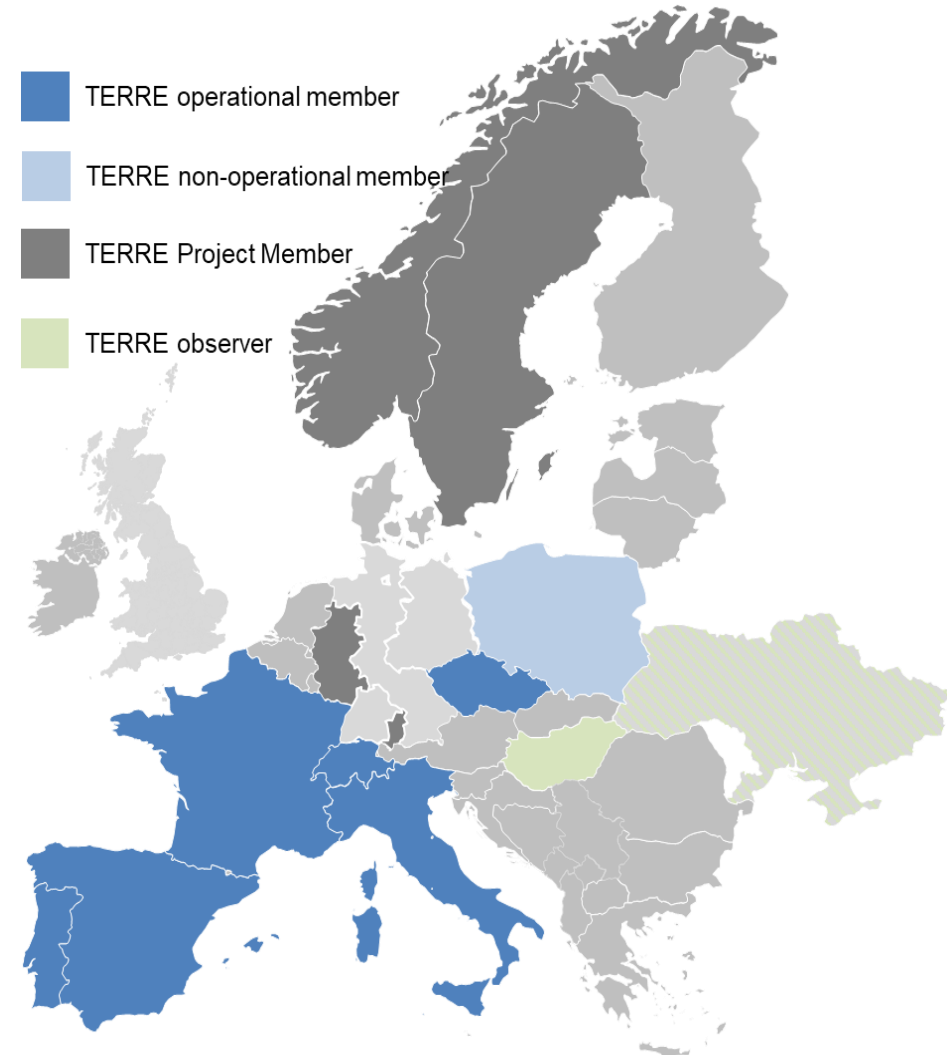
# Trans European Replacement Reserves Exchanges (TERRE)

## Last main milestones

- The “Trans European Replacement Reserves Exchanges” platform include:
  - 6 operational members: REN (Portugal), Red Electrica (Spain), RTE (France), Terna (Italy), Swissgrid (Switzerland), CEPS (Czech Republic)
  - One non-operational member: PSE (Poland) which is expected to connect in 2024.
  - Two observers: Mavir (Hungary) and ENTSO-E

## Relevant update

- TERRE TSOs met RR NRAs twice in October to share the main results of the public survey and possible way forward with the number of clearings. Another meeting will be organized in January. Some updates shall be communicated during the next Balancing Platform Stakeholder Workshop (30/11).
- TERRE TSOs officially approved two new TSOs to become observers:
  - Ukrenergo (27/01)
  - Eirgrid (07/09)



# Conclusions

## Outlook

- European TSOs have implemented MARI and PICASSO since 2017 (i. e. before entry into force of Guideline Electricity Balancing).
  - Several hundred experts from TSOs have contributed to MARI and PICASSO in the last years.
  - Also, cross-platform related topics are addressed under the framework of MARI.
  - During 2022, high CBMP were observed in both platforms (in relation to high day-ahead prices). Some TSOs that are technical ready to connect before their end of the derogation have delayed their go-live also based on these high CBMP. All TSOs and the platforms have investigated several mitigation measures that are at the moment under public consultation.
- PICASSO started operation in June 2022
  - Road to individual TSOs go-live will also continue in 2024
  - Using a market time unit of 4 seconds, the PICASSO optimizer has performed more than 10 Mio. market clearings since go-live with 100 % availability.
- MARI in in operation since October 2022
  - APG joined MARI on 2023/06/20.
  - The platform represents the hinge between TERRE and PICASSO.
- TERRE is in operation since January 2020.
  - Since the go-live 6 TSO connected to the platform (24 daily gates)
  - Ongoing exchanges with RR NRAs to agree on a way forward for the future RR process.
- First market results already show significant economic surplus generated by balancing platforms.
  - IGCC generated an economic surplus in the first half of 2023 of around 280 Mio. €.
  - TERRE generated an economic surplus of around 200 Mio. € from January to July 2023
  - PICASSO generated an economic surplus of more than 100 Mio. € in Q1 - Q3 2023.
  - MARI generated an economic surplus of more than 7 Mio. € from January to July 2023.