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# Regional Coordination to Enhance Security in Europe

## The SEleNe CC in Thessaloniki

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13th SE Europe Energy Dialogue | IENE

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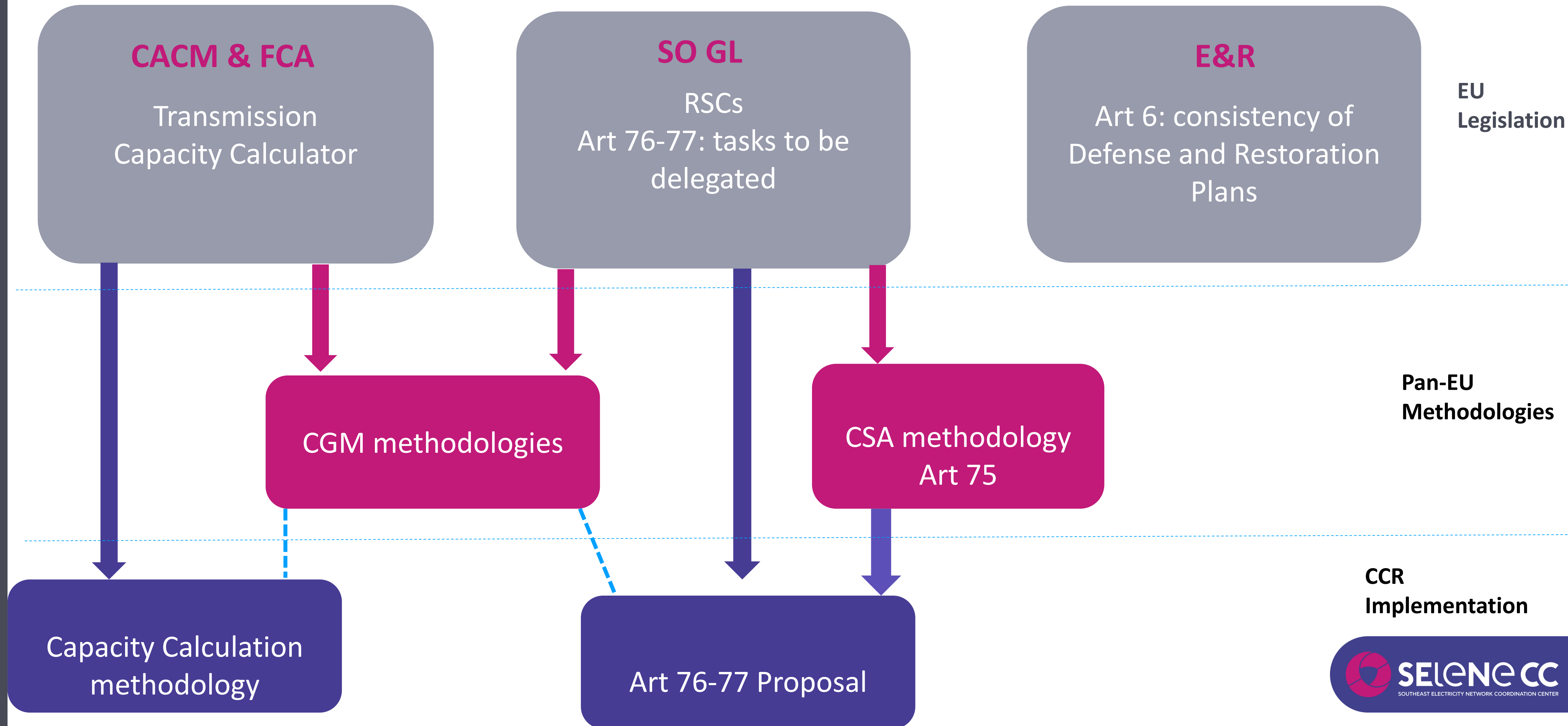


# Towards the Integration of Electricity Market in EU

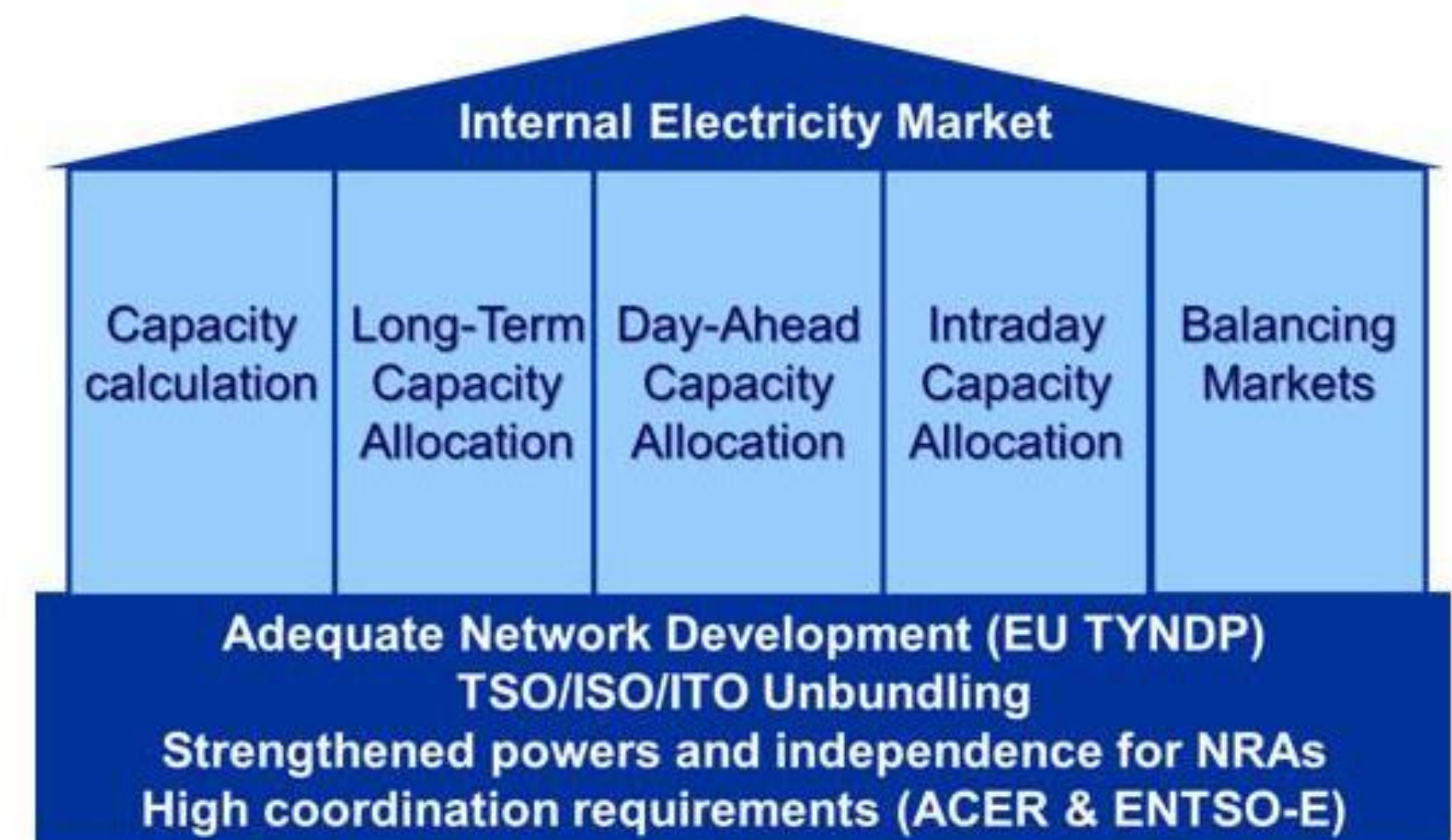
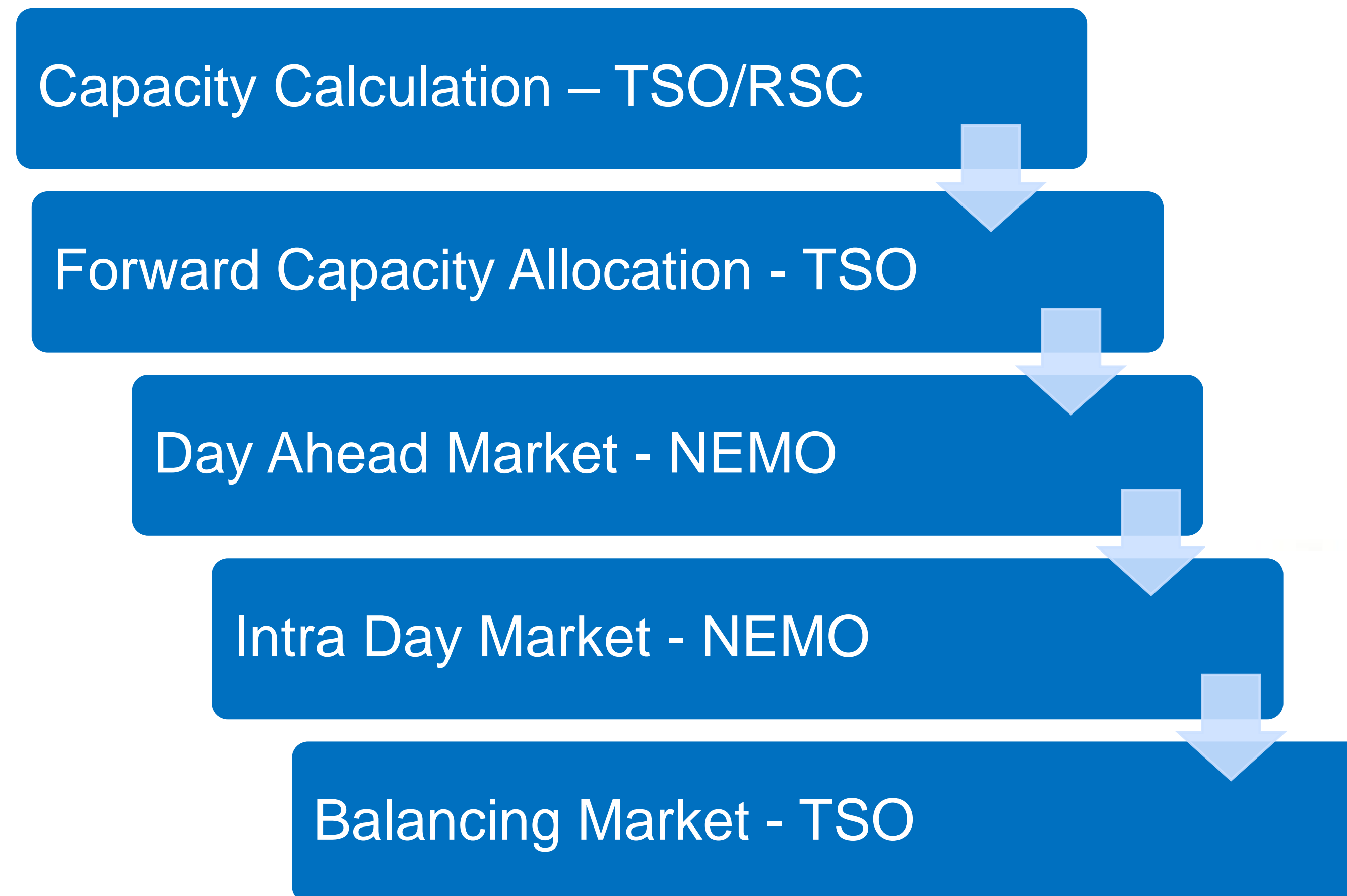
- ▶ Environmental targets, RES exploitation and Integration of an Internal Electricity Market consist the Main and stable policy lines for Europe last decades;
- ▶ Harmonization of legislation through energy policy “Packages” (Regulations adopted by the European Parliament);
- ▶ Specific targets for Emissions, Renewables, Energy conservation and **Interconnectivity** have been set;
- ▶ Common market structure (Target Model) to allow for Market coupling – the crucial role of interconnectors;
- ▶ High degree of harmonization already (Grid Codes, Market rules, common capacity auctions etc.);
- ▶ **Increased risks due to high RES, market behavior, bulk power transfers** etc;
- ▶ The crucial role of TSOs and ENTSO-E; ENTSO-E is the crucial facilitator of the implementations to ensure and improve security;
- ▶ Pan-European Legislation on Security and transmission capacities;
- ▶ **The 3<sup>rd</sup> package led to market coupling in all EU and started to treat security as a global manner;**
- ▶ The **Clean Energy Package (CEP)** is the next important implementation.

# Relevant Regulations and secondary Legislation

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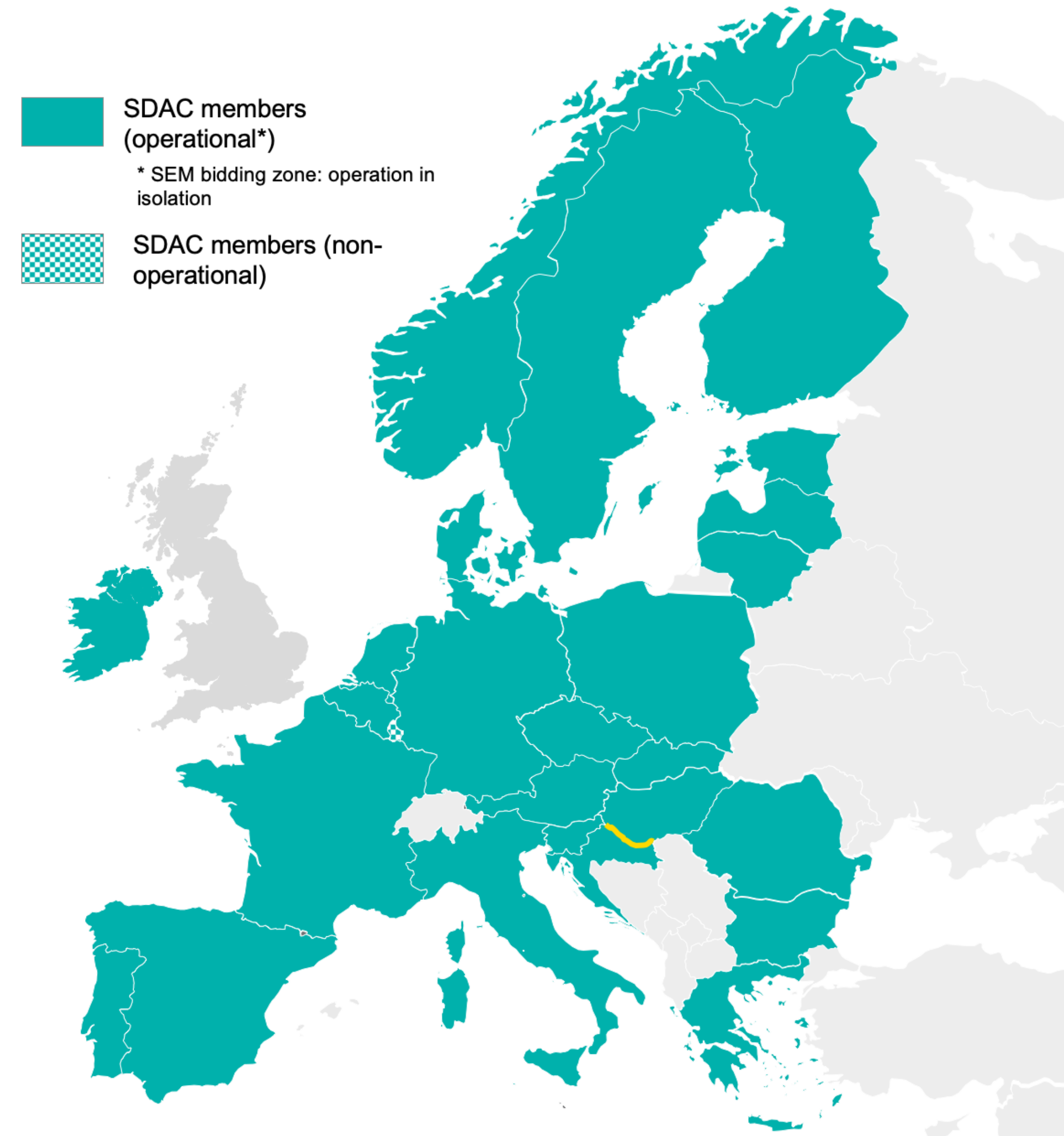


# Internal Electricity Market sequence



# Market Coupling: A major step for market integration

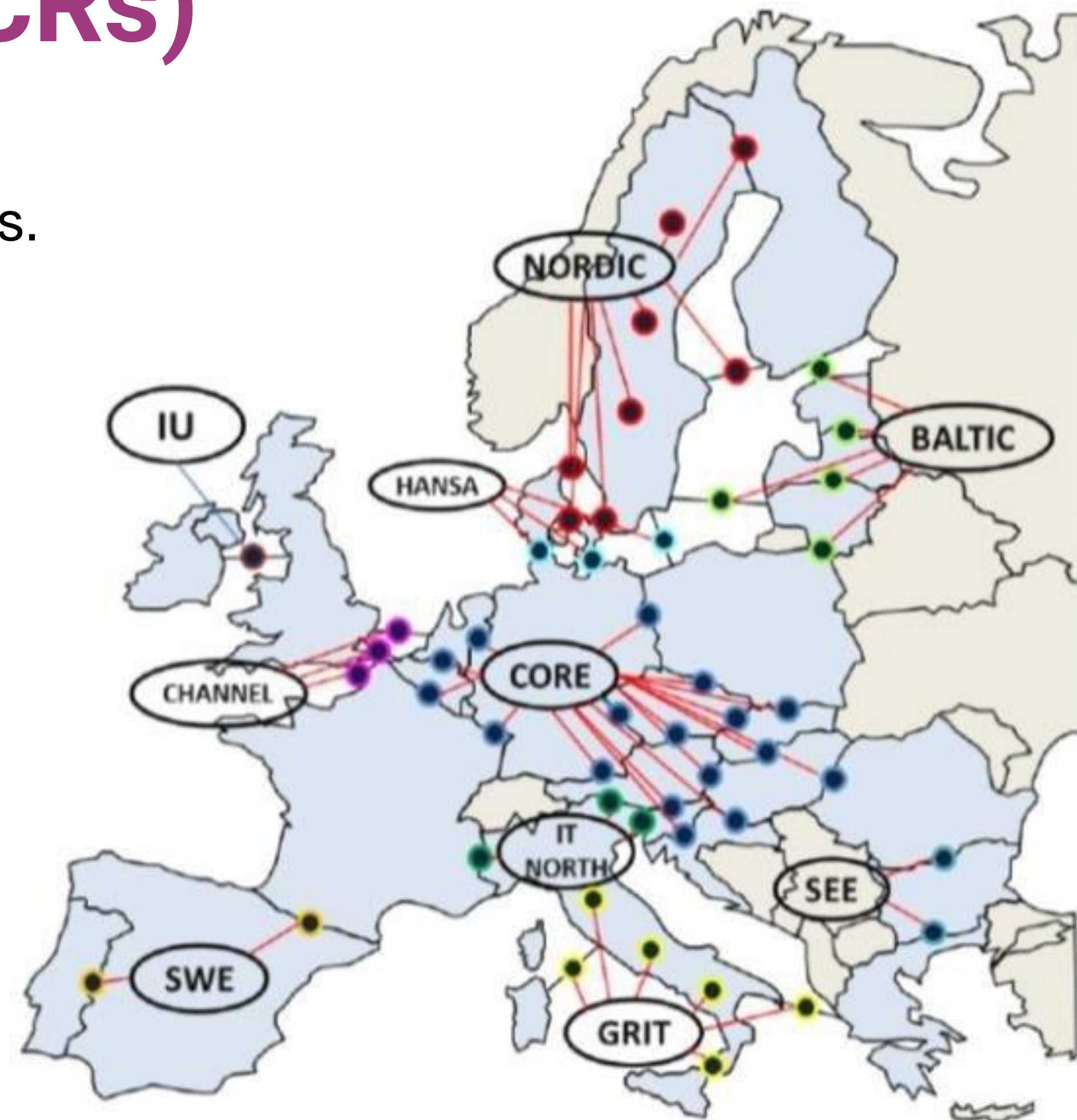
- Target: Use the cheapest generation across the continent → A unique price on wholesale markets.
- Pan-European algorithm to solve the market
- Interconnectors set limits in the integration
- By 2021 all markets in EU are coupled. Common algorithm for the market for all EU territory so that to maximize social welfare at Pan European level;
- Necessary to know in advance the NTCs of the interconnectors;



# Bidding Zones (BZ) and Capacity Calculation Regions (CCRs)

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- Bidding zones: geographical areas with no systematic congestions. One TSO may consist of more than one BZ (e.g., Italy);
- Capacity Calculation regions: the interconnectors among bidding zones. Need to calculate prior to the operation day the secure transfer limit;
- Markets coupled through the interconnectors;
- Numerous CCRs recognized by ACER in EU territory;
- The calculation of the transfer capacities crucial for the market operation;
- Common methodologies per CCR: ATC or flow based;
- Capacity calculations per year/ month/ day to estimate the ATC & NTC.



Source: ACE JAO  
Joint Allocation Office  
SCE CAO  
coordinated auction office  
in south east europe



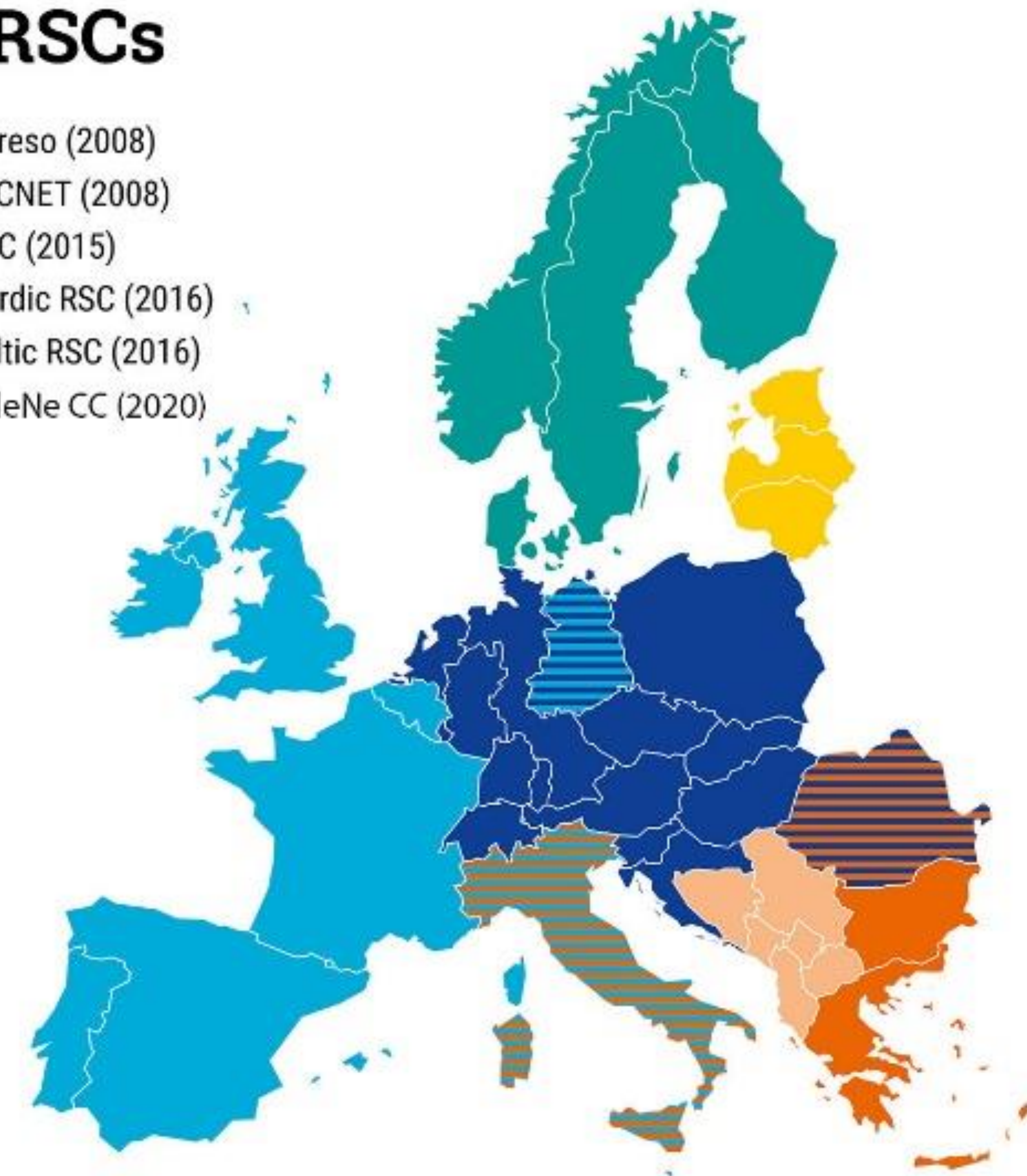
# Regional Security Coordinators (RSCs) at a glance

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- ▶ RSCs are companies owned by TSOs (established under the 2017/1485 EU Regulation – SOGL).
- ▶ An important step towards “coordinated security” in Europe
- ▶ Mission:
  - to perform services for the TSOs under a broader view of the network at the regional level
  - to enhance security under the new challenging environment: facilitation of the European electricity market/ large RES penetration
  - No more than 6 RSCs in Europe

## 6 RSCs

- Coreso (2008)
- TSCNET (2008)
- SCC (2015)
- Nordic RSC (2016)
- Baltic RSC (2016)
- SEleNe CC (2020)

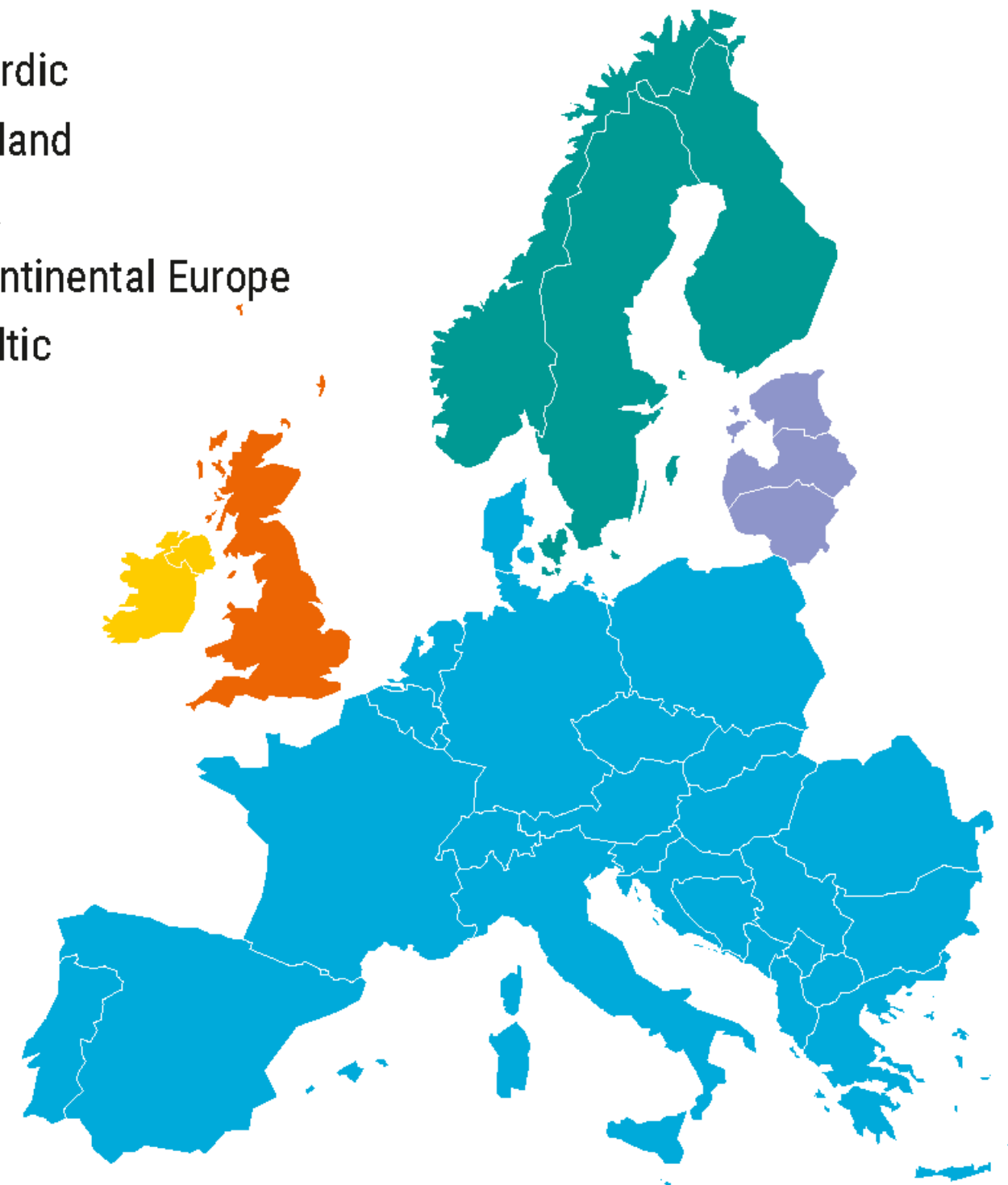


■ Services obtained from several RSCs

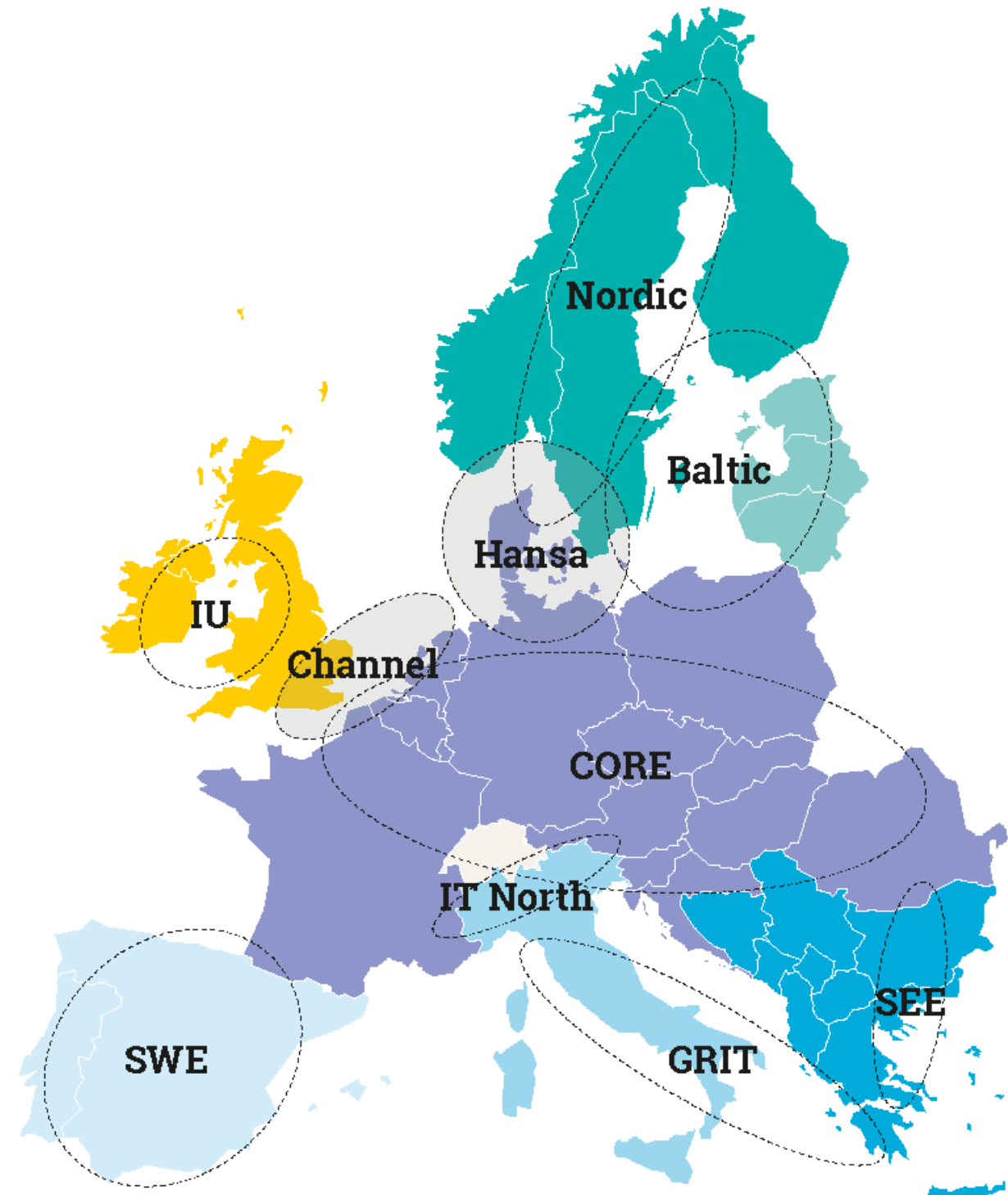
# TSOs regional coordination: State of play

## 5 Synchronous Areas

- Nordic
- Ireland
- UK
- Continental Europe
- Baltic

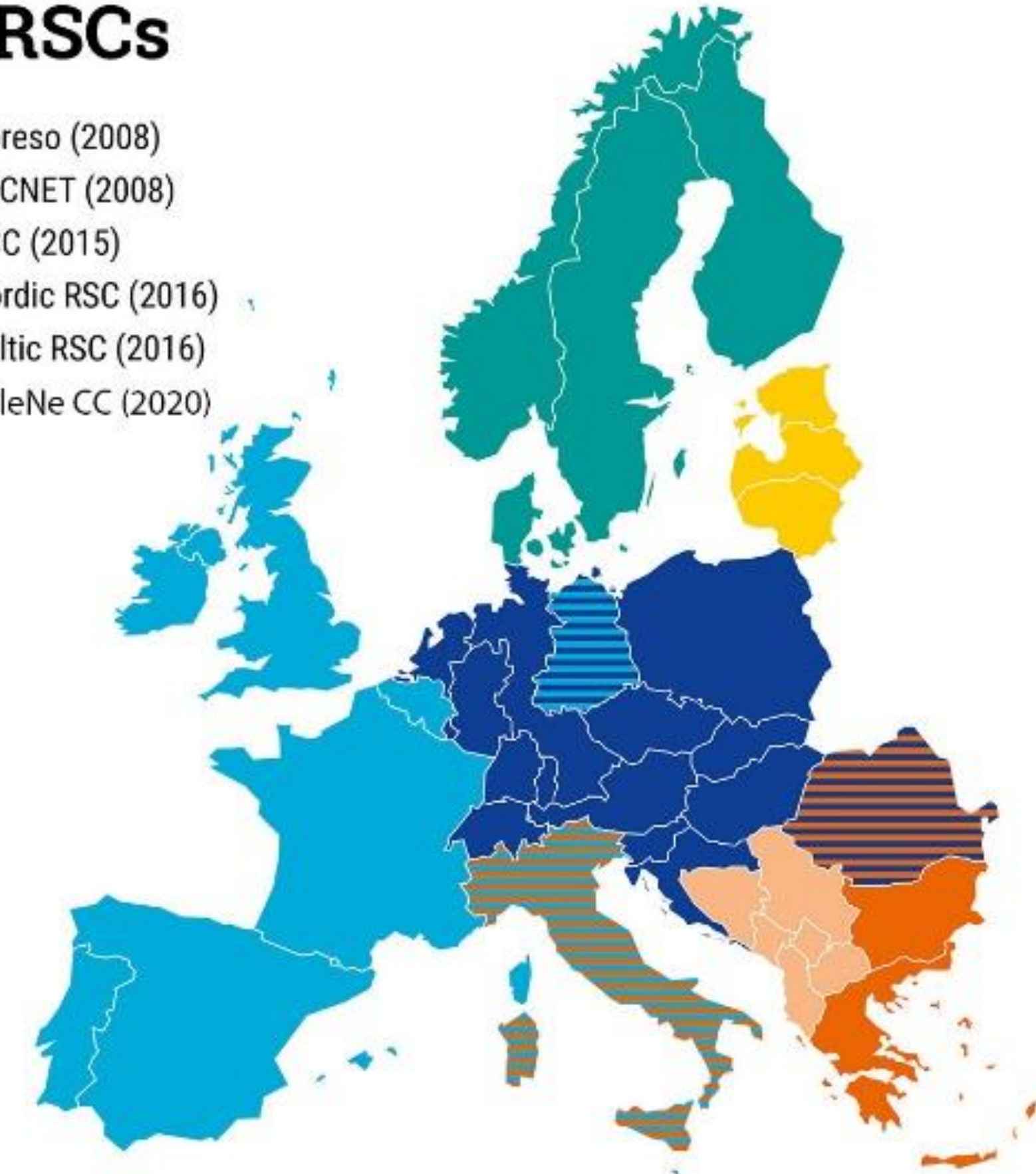


## 11 CCRs



## 6 RSCs

- Coreso (2008)
- TSCNET (2008)
- SCC (2015)
- Nordic RSC (2016)
- Baltic RSC (2016)
- SEleNe CC (2020)



Services obtained from several RSCs

State of play of TSOs' regional coordination in markets and system operations.

Source: Joachim Vanzetta, Chair of the Board, ENTSO-E, Enhanced TSO coordination for Europe, RSC Conference, Copenhagen, October 2019

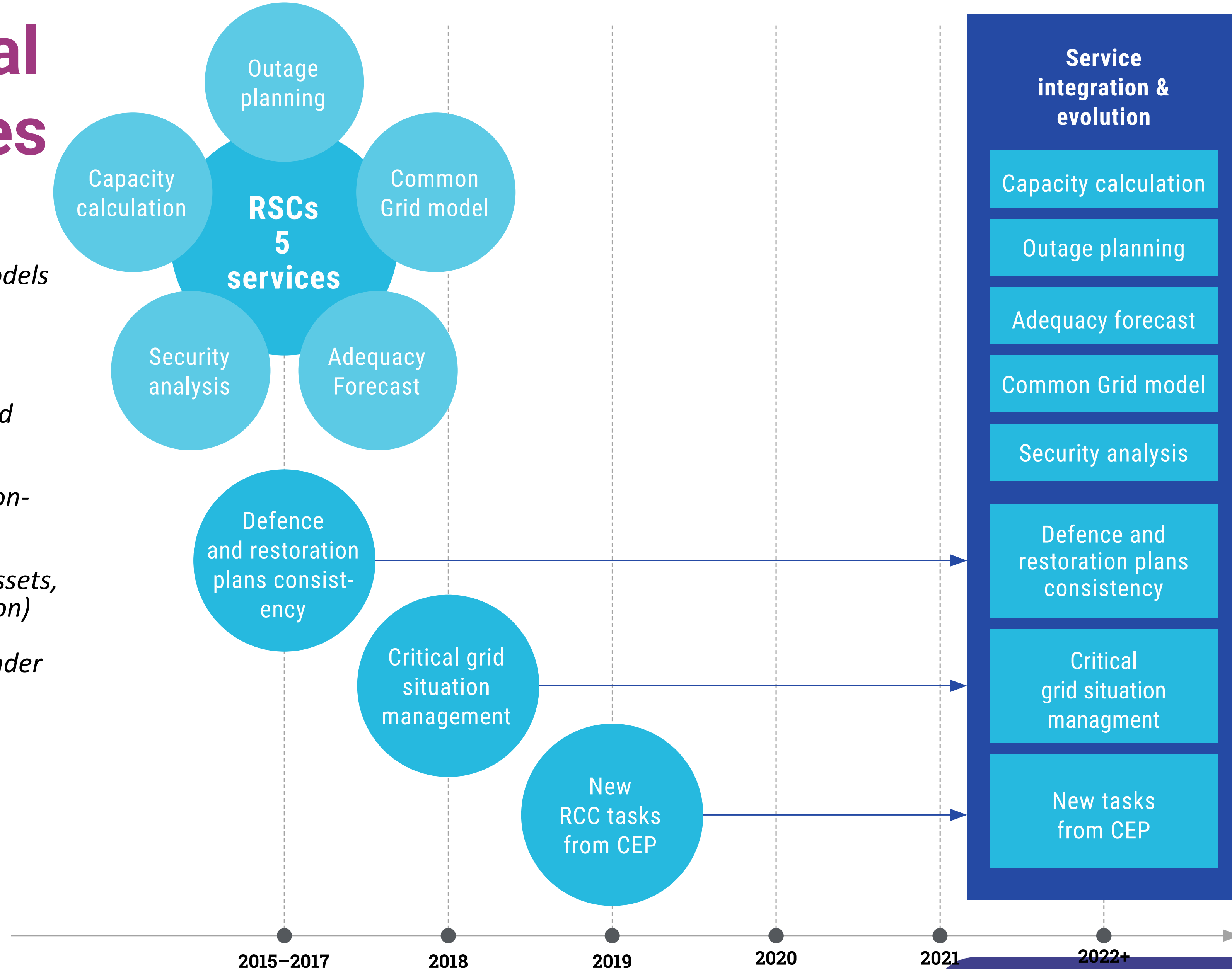




# Evolution of regional coordinated services

1. **European data model delivery** (Individual Grid Models from TSOs → Common Grid Model)
2. **Security Analysis** (focus: flows)
3. **Regional Capacity Calculation** (input for day ahead markets),
4. **Short-term Adequacy** (short term match generation-load; availability of MW's; link with balancing)
5. **Outage planning coordination** (optimized use of assets, incl PST (Phase Shifter Transfo) and HVDC coordination)
6. **Coordination in Management of Emergencies** (Under development)

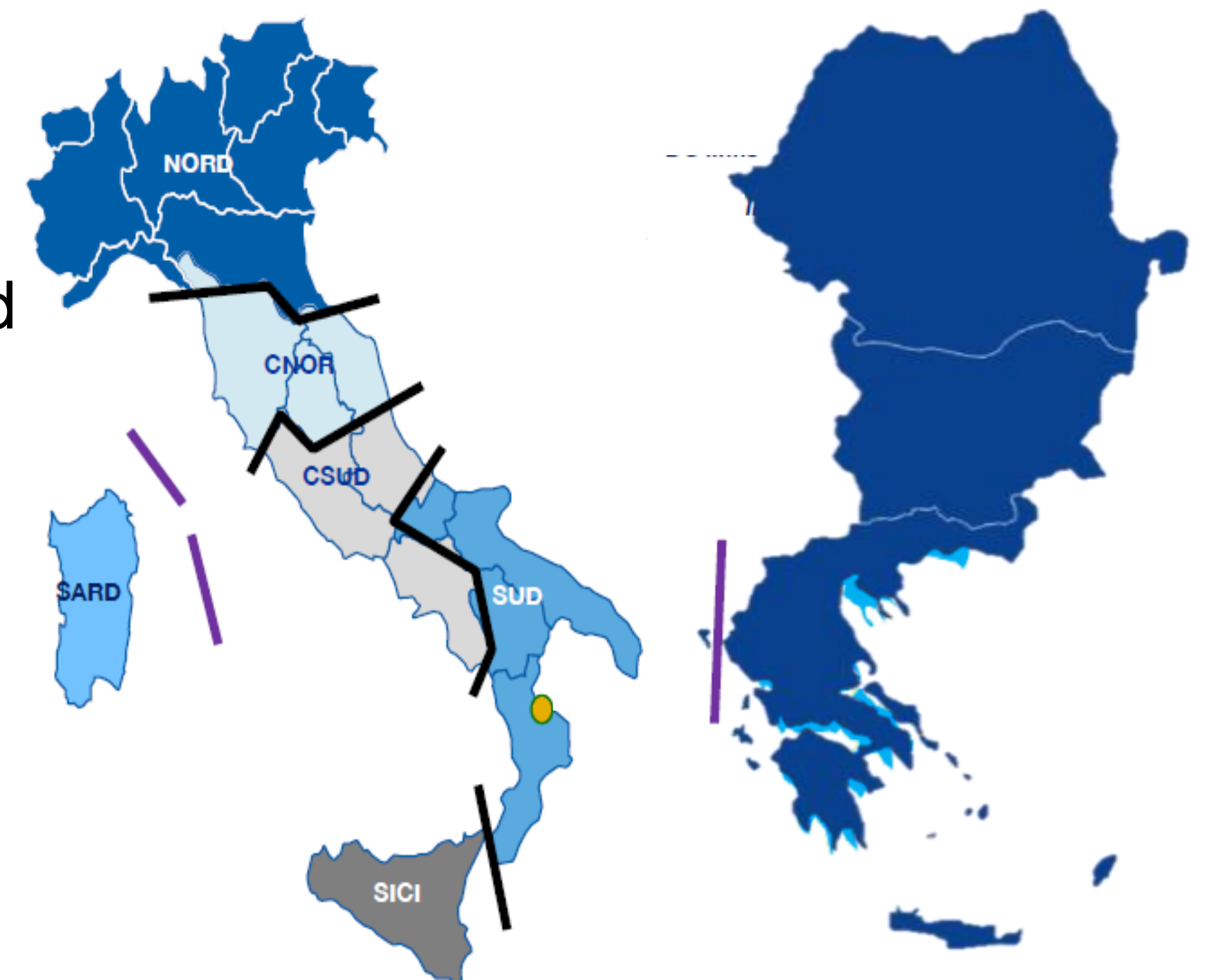
RSCs issue **recommendations** to the TSOs.



# Southeast Electricity Network Coordination Center (SEleNe CC)

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- ▶ Regions covered by each RSC reflect specific Capacity Calculation Regions (CCRs)
- ▶ SELENE CC serves 2 CCRs: **SE Europe** and **GRIT**
- ▶ Shareholders: ESO-EAD (BG), IPTO (GR), TERNA (IT) and Transelectrica (RO) with equal shares (25%)

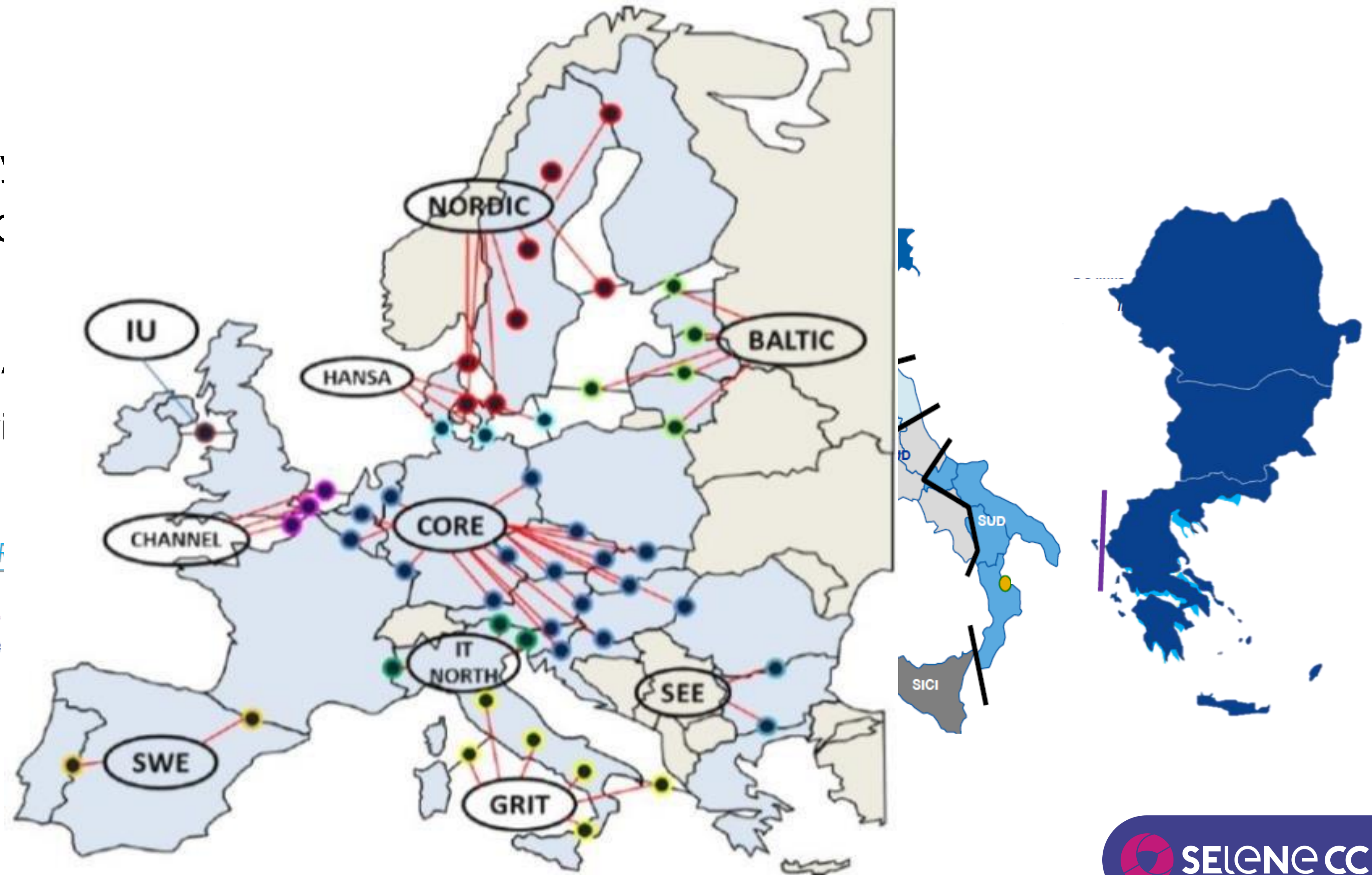


- ▶ 16 employees - all of them highly qualified with excellent engineering skills



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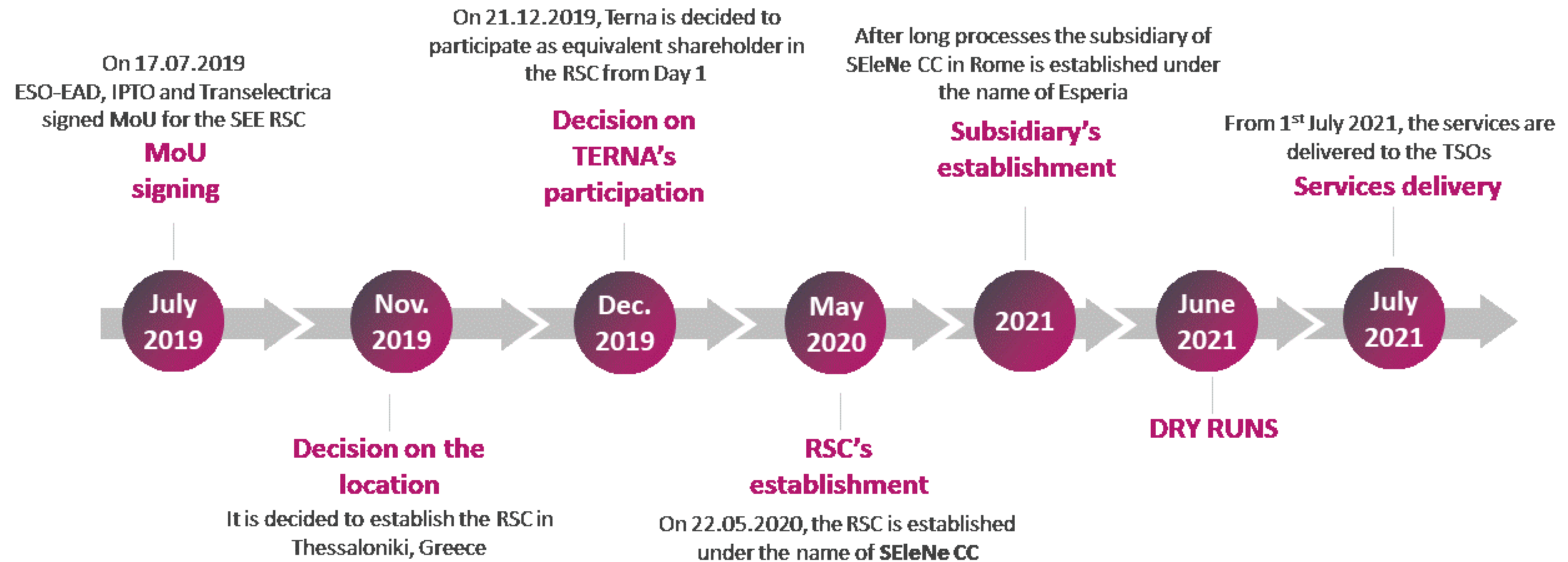
Source: ACER.

- ▶ 16 employees - all engineering skills



# How we got here

- ▶ Legal mandate by the EU Regulation no. 2017/1485 (SO GL)
- ▶ Milestones:

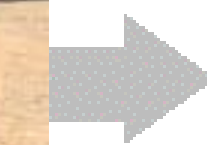


# How

- ▶ Legal
- ▶ Mile

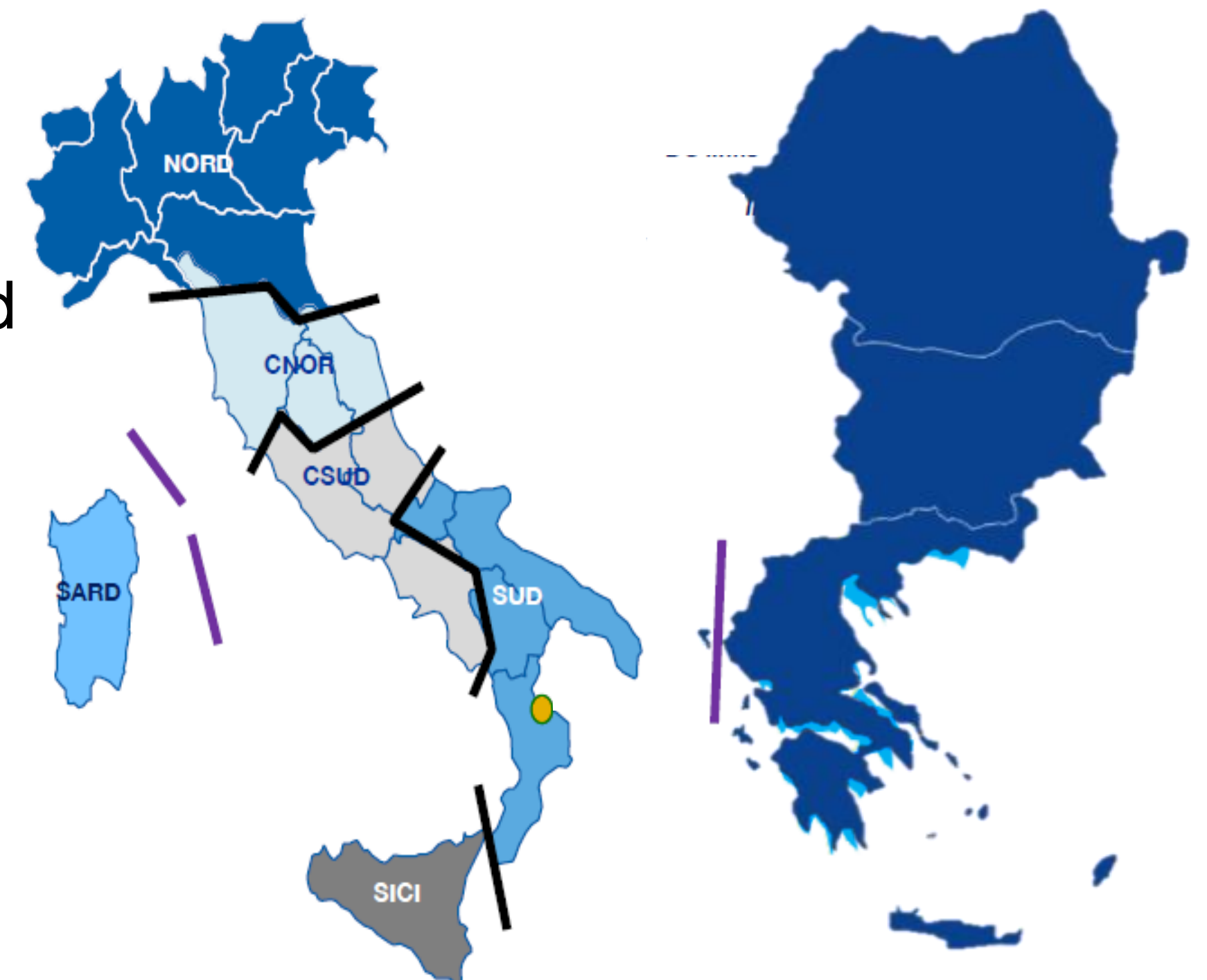


services are  
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# Future Developments and Challenges under the CEP (1/2)

13

## Transition to “Regional Coordination Center” – RCC:

- ▶ The “Clean Energy Package for all Europeans” (in particular Regulation (EU) 2019/943) introduces Regional Coordination Centres (RCCs) which shall replace the Regional Security Coordinators
- ▶ 17 Services will be performed by RCCs (11 New Services are added)

## Implementation of System Operation Regions (SOR)

- ▶ The “Clean Energy Package” introduces also the System Operation Regions (SORs) to be served by the RCCs
- ▶ **Three** SORs will cover the Continental Europe: The Central European (CORE), the Iberian and the SEE.

# Future Developments and Challenges under the CEP (1/2)

## Transition to “Regional Security Coordination”

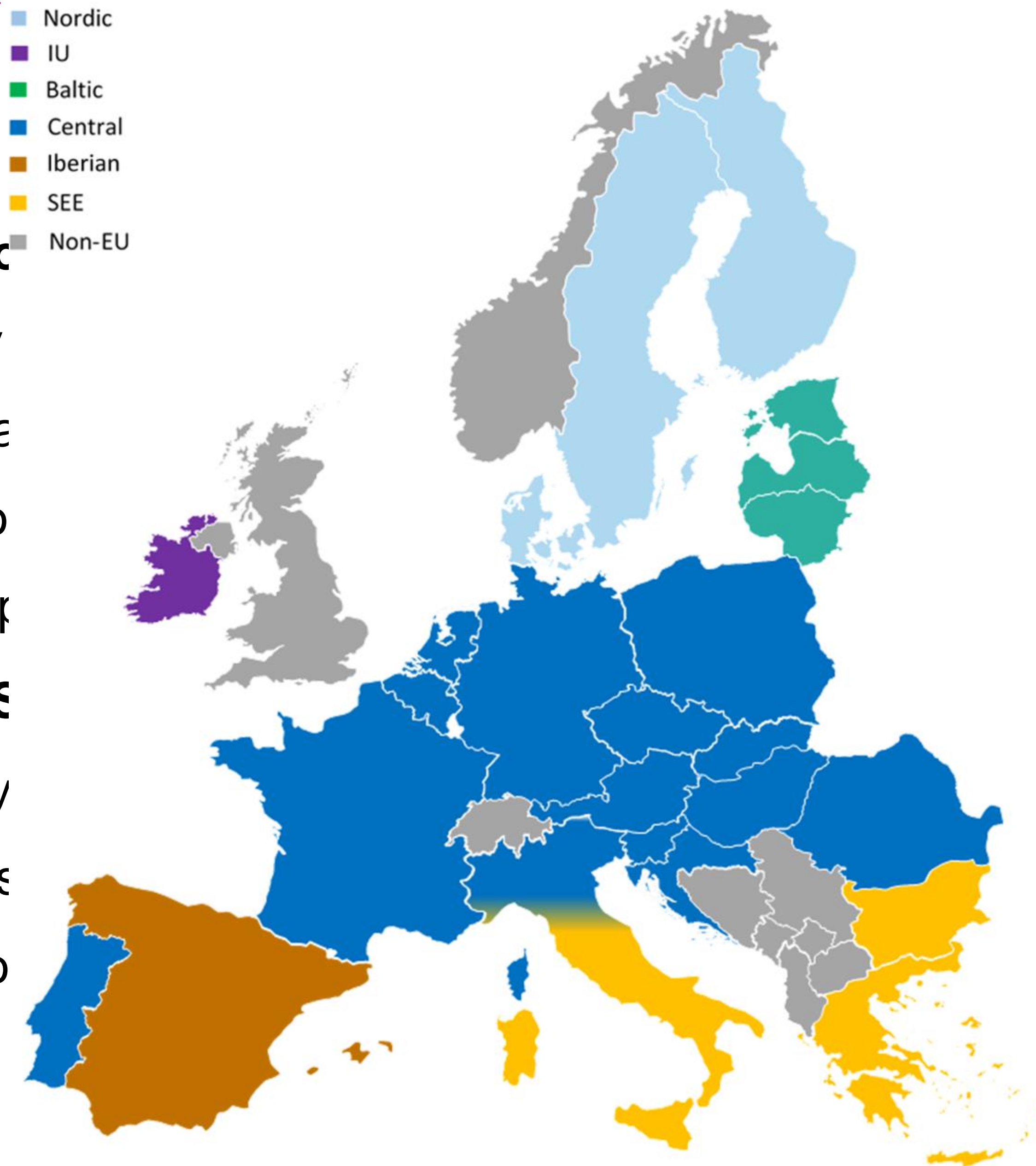
▶ The “Clean Energy Package” introduces Regional Security Coordination (RSC) through the Regional Security Coordination (RSC) Regulation (EU) 2019/943)

▶ 17 Services will be provided by the RSC

## Implementation of RSC

▶ The “Clean Energy Package” will be served by the RCCs

▶ **Three** SORs will coordinate the SEE.



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# Future Developments and Challenges under the CEP (2/2)

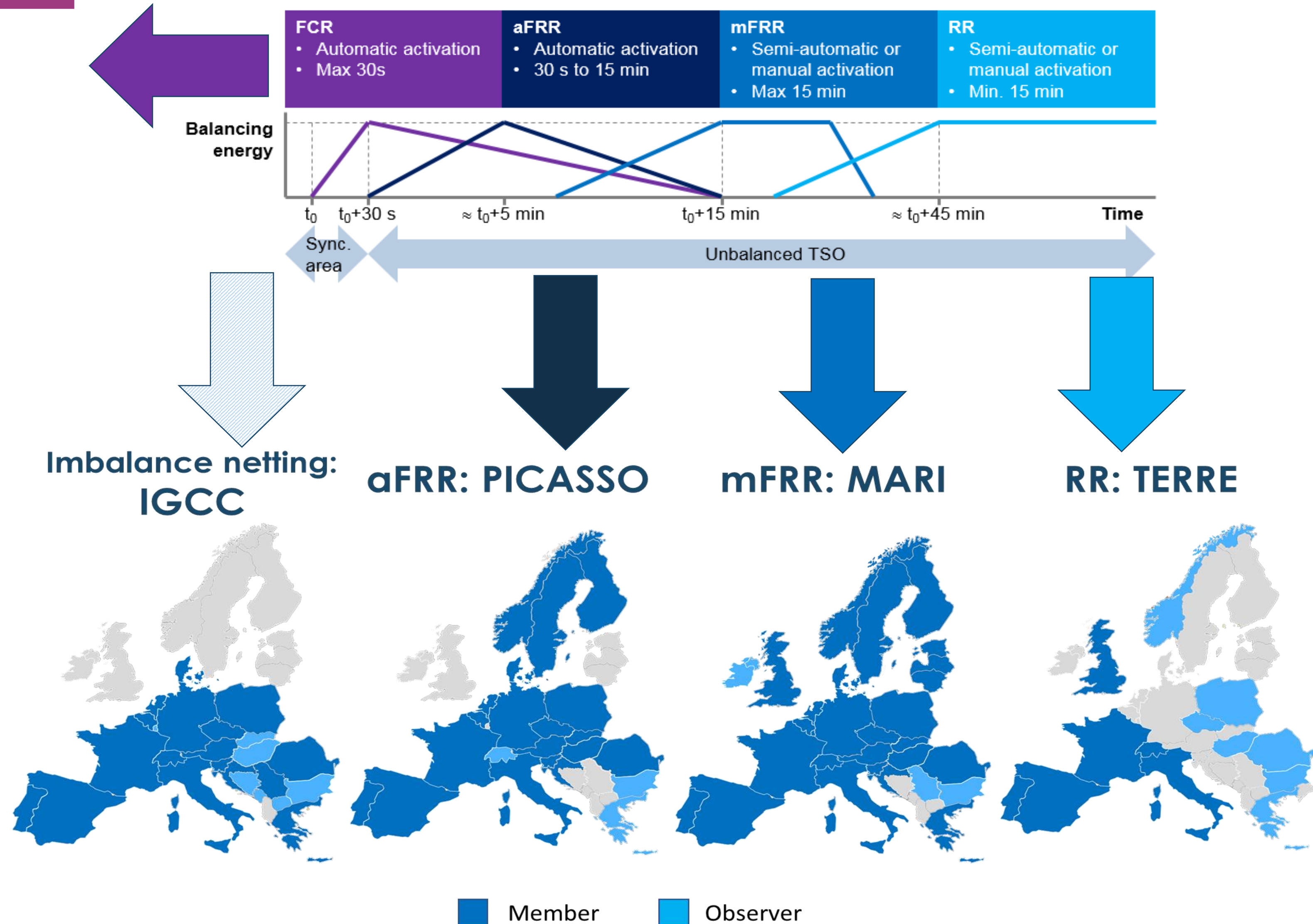
## Regional specificities and challenges

- ▶ Sparse transmission network
- ▶ Low interconnectivity (sensitivity in disturbances)
- ▶ Low RES
- ▶ **But also different market models and rules**
- ▶ Special effort should be paid to facilitate the participation of the non-EU TSOs of the region in the processes in order to enhance security;
- ▶ Need to harmonize basic rules between EU and non-EU TSOs;
- ▶ EnC has launched actions to incorporate basic European legislation in contracting parties (non-EU countries).
- ▶ Need for new investments in transmission and further resources (crucial role of Regulators);

# New Services under RCC regime

1. Support the coordination and optimization of regional restoration
2. Post event (Operation & Disturbance) analysis and reporting
3. Regional sizing of reserve capacity
4. Facilitation of regional procurement of balancing capacity
5. Training and Certification of RCC staff
6. Optimization of inter-transmission system operator compensation mechanisms
7. Identification of regional electricity crisis scenarios
8. Identification of needs for new transmission capacity, for upgrade of existing transmission capacity or their alternatives – TYNDP Related
9. Calculation of the maximum entry capacity available for the participation of foreign capacity in capacity mechanisms
10. Preparation of seasonal adequacy assessments
- 11A. Regional Adequacy Assessment (RAA)
- 11B. Cross Regional Adequacy Assessment (CRAA)

# Pan-European Balancing Platforms



# In conclusion

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- ▶ Under the current and foreseen environment with high RES penetration and bulk power exchanges among countries Regional cooperation is of crucial importance in order to guarantee system security and facilitate the market integration in EU
- ▶ The market coupling has been completed and the RSCs have been developed to support security at the regional level
- ▶ CEP calls for further developments in regional coordination and the new structures (RCCs / SORs) will be operational by 1<sup>st</sup> July 2022
- ▶ Optimization and sharing of reserves at the regional level is the most challenging task
- ▶ South East Europe faces specific challenges:
  - ▶ need to increase interconnectivity
  - ▶ Legislative changes for the non-EU countries

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# Thank you!


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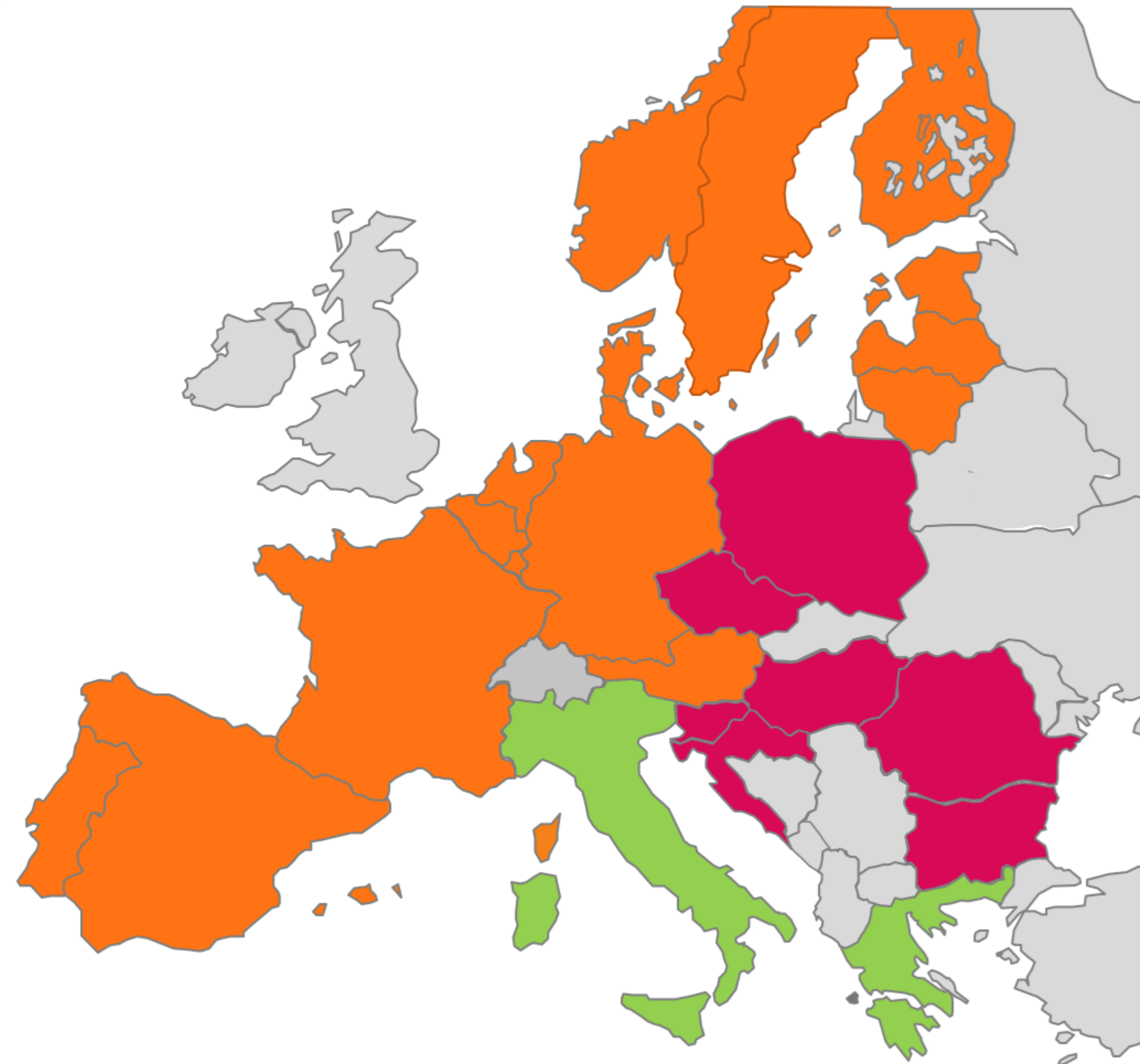
**Web:** [www.selene-cc.eu](http://www.selene-cc.eu)

## Countries coupled Intraday with 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> SIDC Go-Live

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Countries coupled in  
1<sup>st</sup> go-live  
(June 2018)

 =  
Countries coupled in  
2<sup>nd</sup> go-live  
(November 2019)

 =  
Countries to be  
coupled in  
3<sup>rd</sup> go-live  
(Q1/2021)



# Market coupling in Europe

- MRC members (operational)
- 4M MC members (operational)

