

# Overview of the Cross-border initiatives 2021

ENTSO-E | WGAS | June 2022



# Table of Content

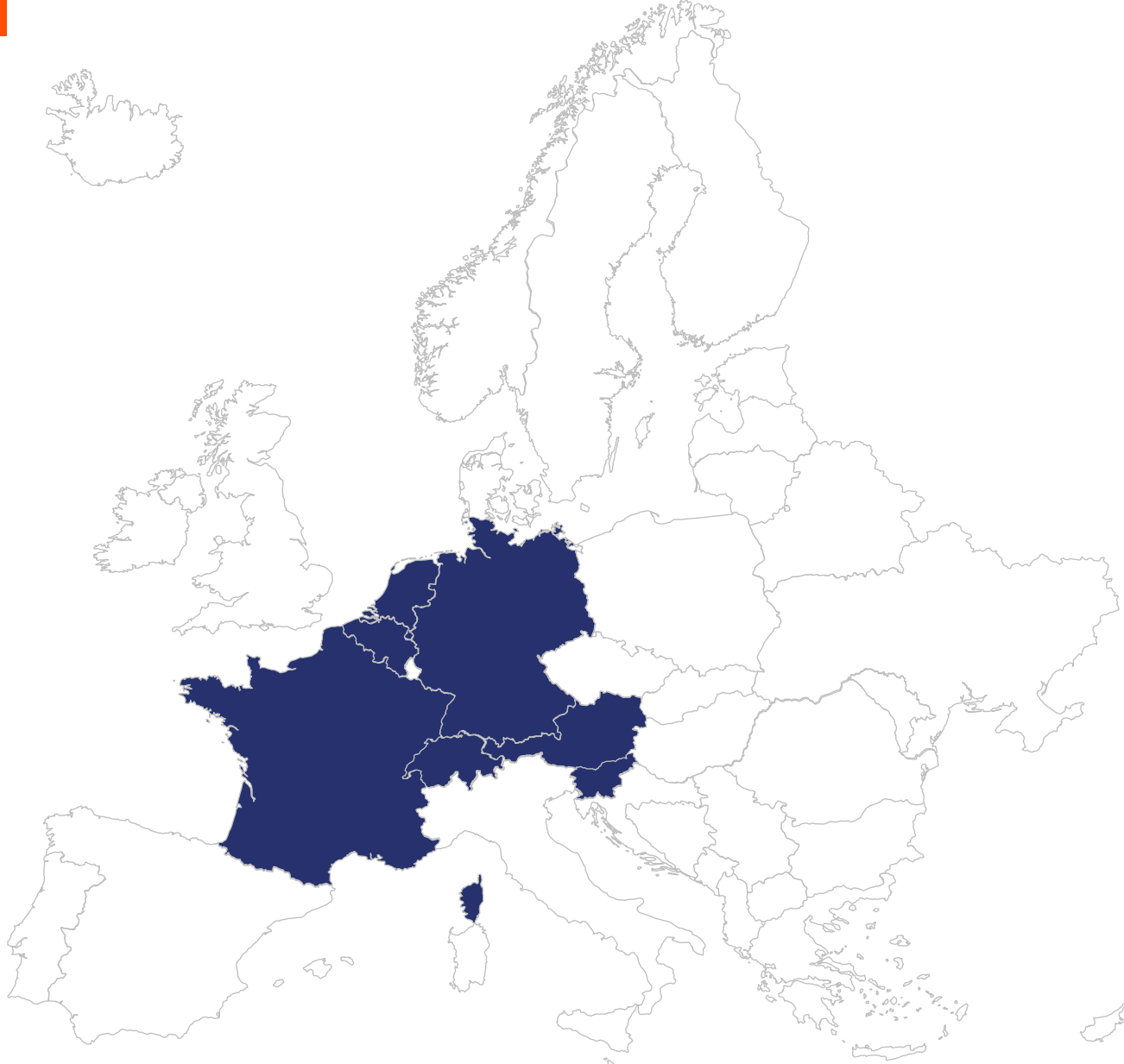
- [Exchange or sharing of balancing capacity \(Slides 3 - 22\)](#)
- [Exchange of balancing energy \(Slides 23 - 40\)](#)
- [Exchange of imbalance netting \(Slides 41 - 46\)](#)

# Exchanges or Sharing of Balancing Capacity

(Part One)

# FCR Cooperation between AT, BE, CH, DE, FR, DK, NL and SL

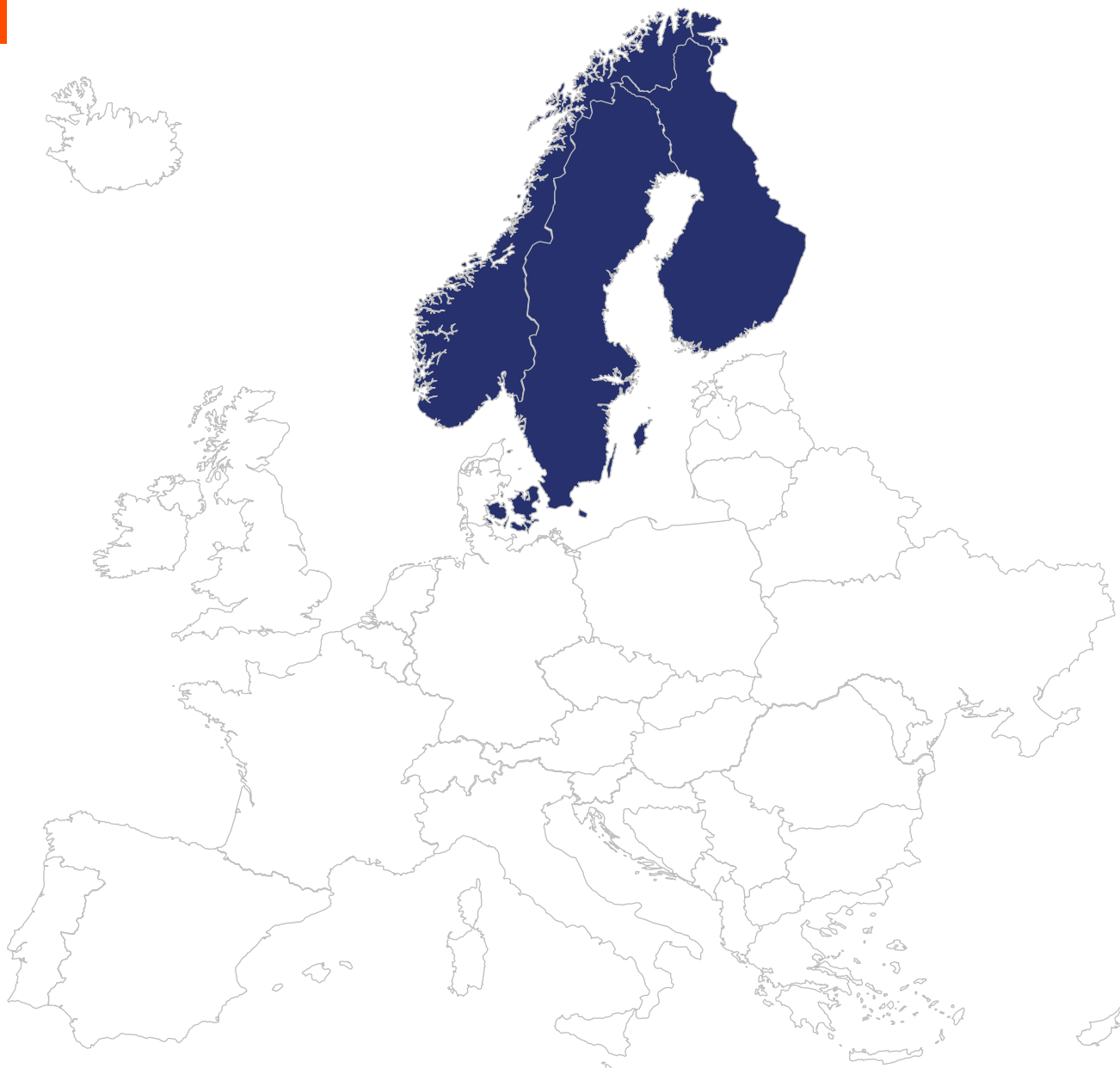
TSOs involved: : 50Hertz, Amprion, APG, ELES, ELIA, Energinet, RTE, Swissgrid, Tennet GER, TenneT NL & TransnetBW



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	Exchange of balancing capacity (TSO-TSO cooperation)
What products are used in the exchange mechanism?	Frequency Containment Reserve
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	N/A (if initially the same)
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	Yes
Are the Imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	via ENTSO-E
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	
There is a common TSO-TSO Settlement scheme (same for all participants) and harmonization for TSO-BSP Settlement.	

# Nordic

TSO's involved: Fingrid, Energinet, Svenska Kraftnät & Statnett

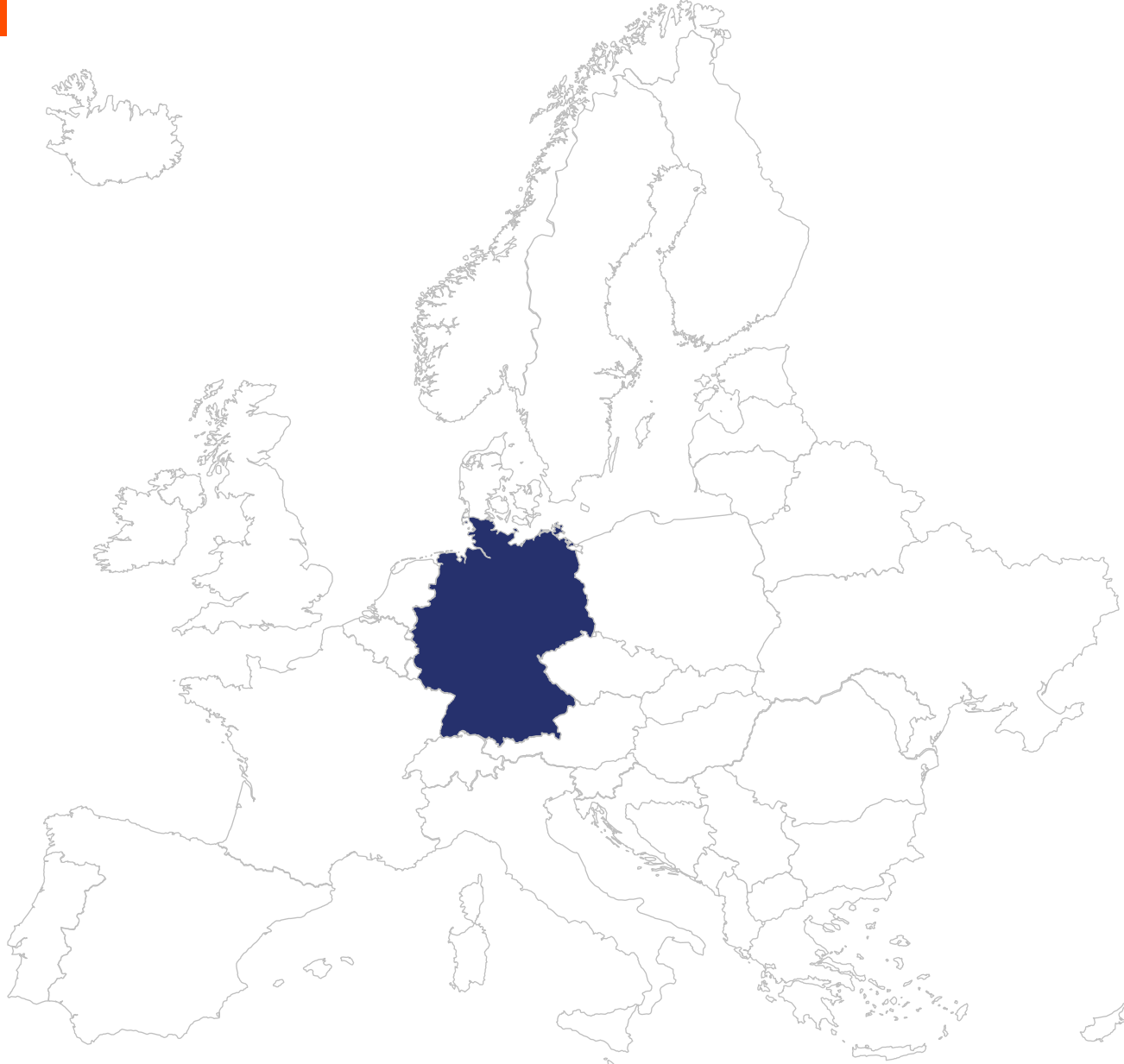


Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	Exchange of balancing capacity (TSO-TSO cooperation)
What products are used in the exchange mechanism?	Frequency Containment Reserve (FCR)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	N/A (if initially the same)
Are the Gate Closure Times for internal markets harmonised?	Partially Harmonised
Is the Imbalance Settlement Time Period harmonised?	Yes
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Some Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	



# German Grid Control Cooperation (GCC)

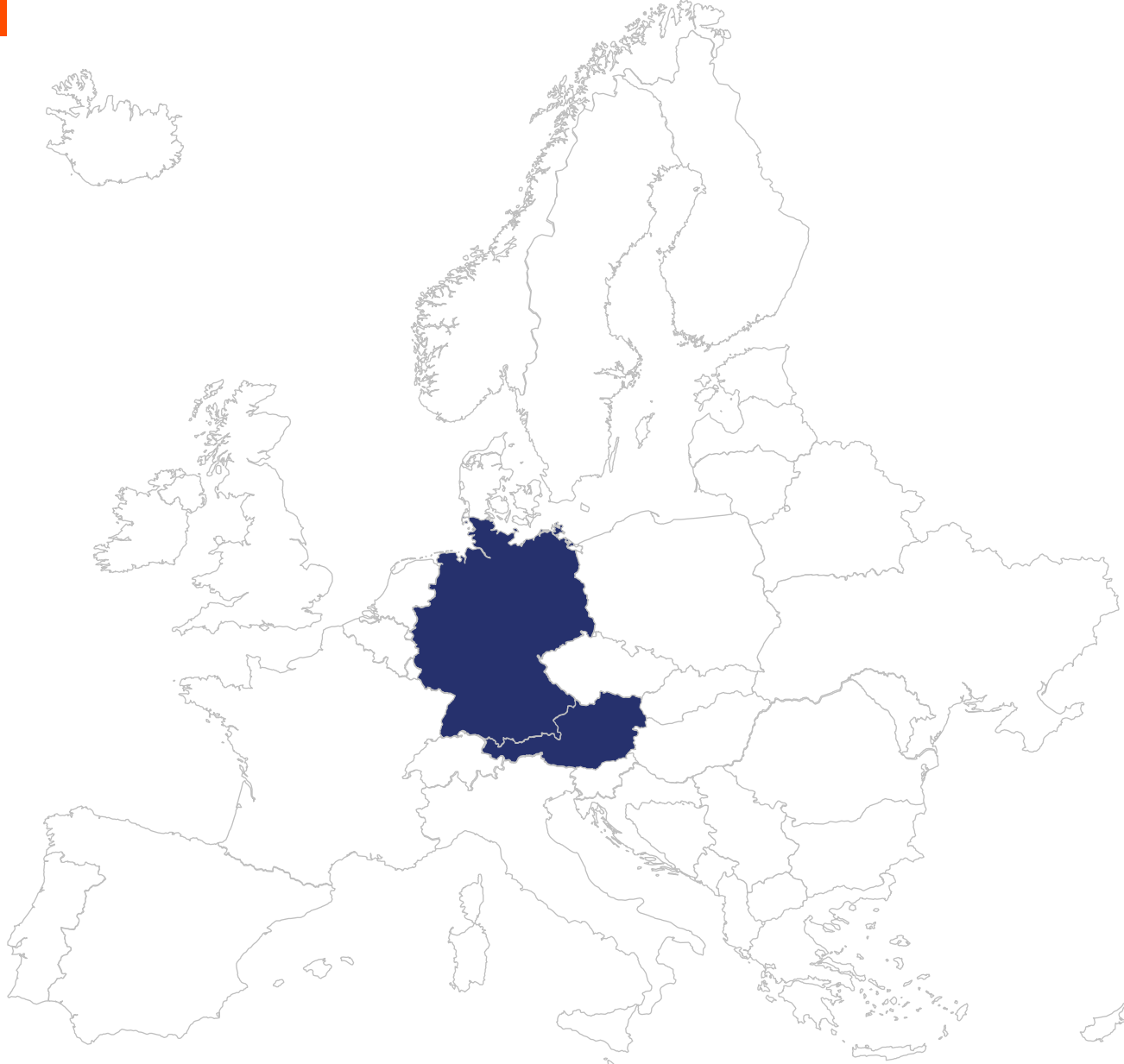
TSO's involved: 50Hertz, TransnetBW, Amprion & Tennet GER



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO cooperation
What products are used in the exchange mechanism?	aFRR and mFRR (and FCR)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Full Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	Yes
Is the Imbalance Settlement Time Period harmonised?	Yes
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Full Harmonisation
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	Joint dimensioning of reserves
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	
Common dimensioning and common procurement	

# aFRR Balancing Capacity Cooperation AT & DE

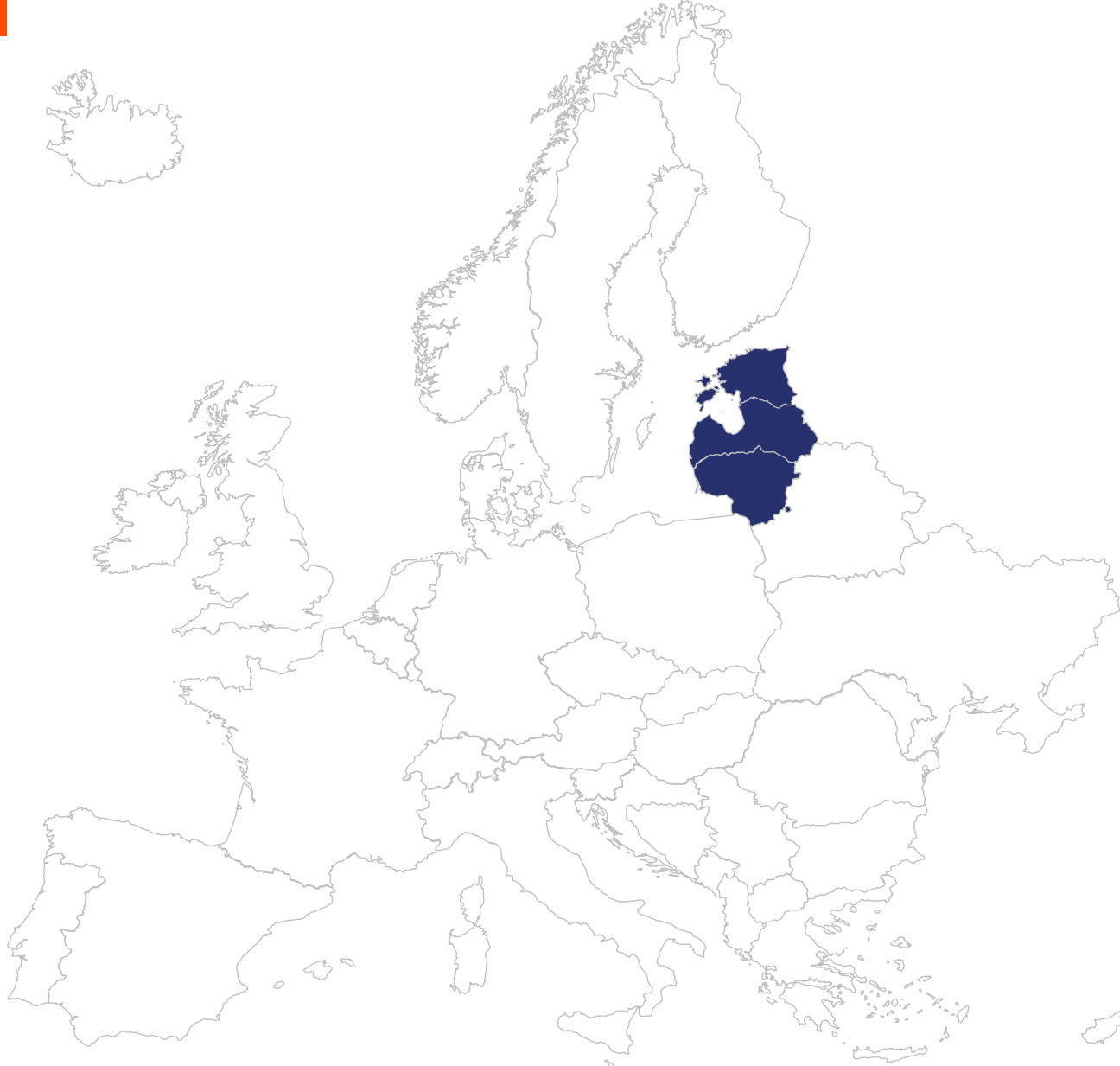
TSO's involved: 50Hertz, Amprion, APG, TenneT GER and TransnetBW



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO cooperation
What products are used in the exchange mechanism?	aFRR
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	Yes
If Yes, Method in Use	-
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Medium Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	Yes
Is the Imbalance Settlement Time Period harmonised?	Yes
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Medium Harmonisation
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	
Separate dimensioning, common procurement	

# Baltic Coordinated Balancing Area (COBA)

TSO's involved: Elering AS, AS Augstsprieguma tīkls & LITGRID AB



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	Partially Harmonised
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	
Common Baltic mFRR balancing energy market	



# Emergency reserves activation

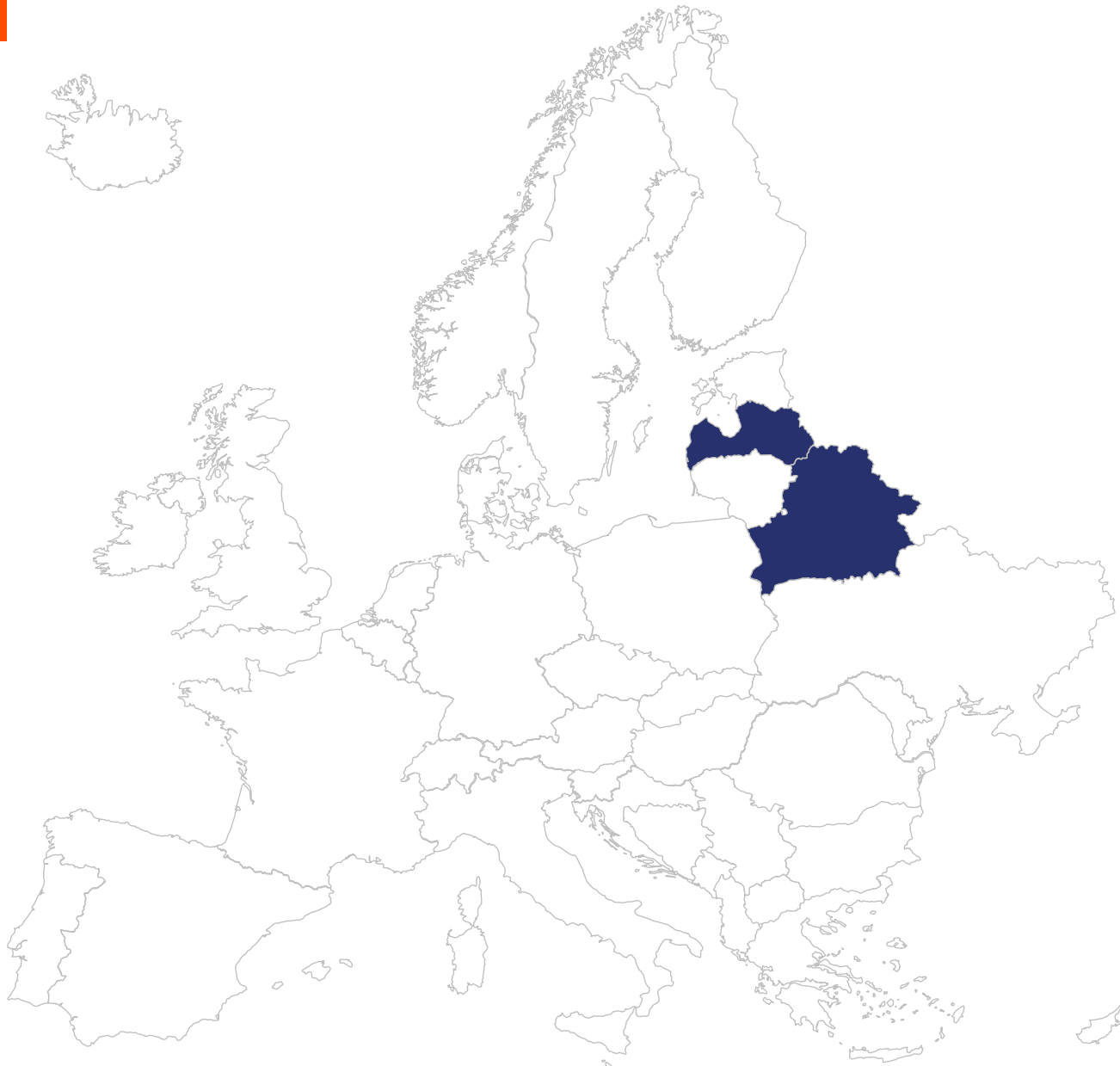
TSO's involved: AS Augstsprieguma tīkls, Latvia SO UPS, Russia



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Agreement on the provision on the system service

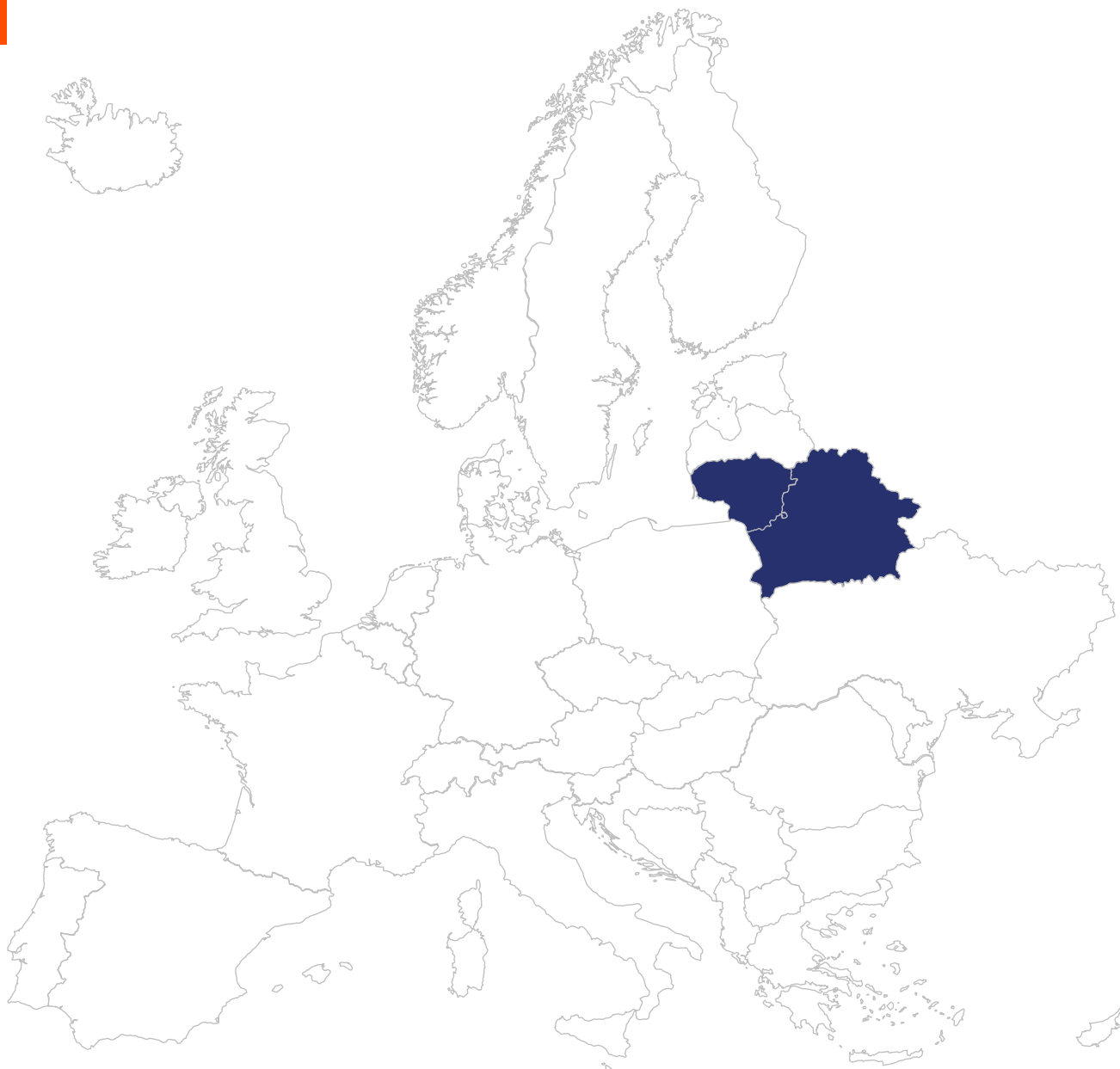
TSO's involved: AS Augstsprieguma tīkls, LatviaODU Belenergo, Belarus



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Agreement on provision of system services/Agreement on provision of regulation service

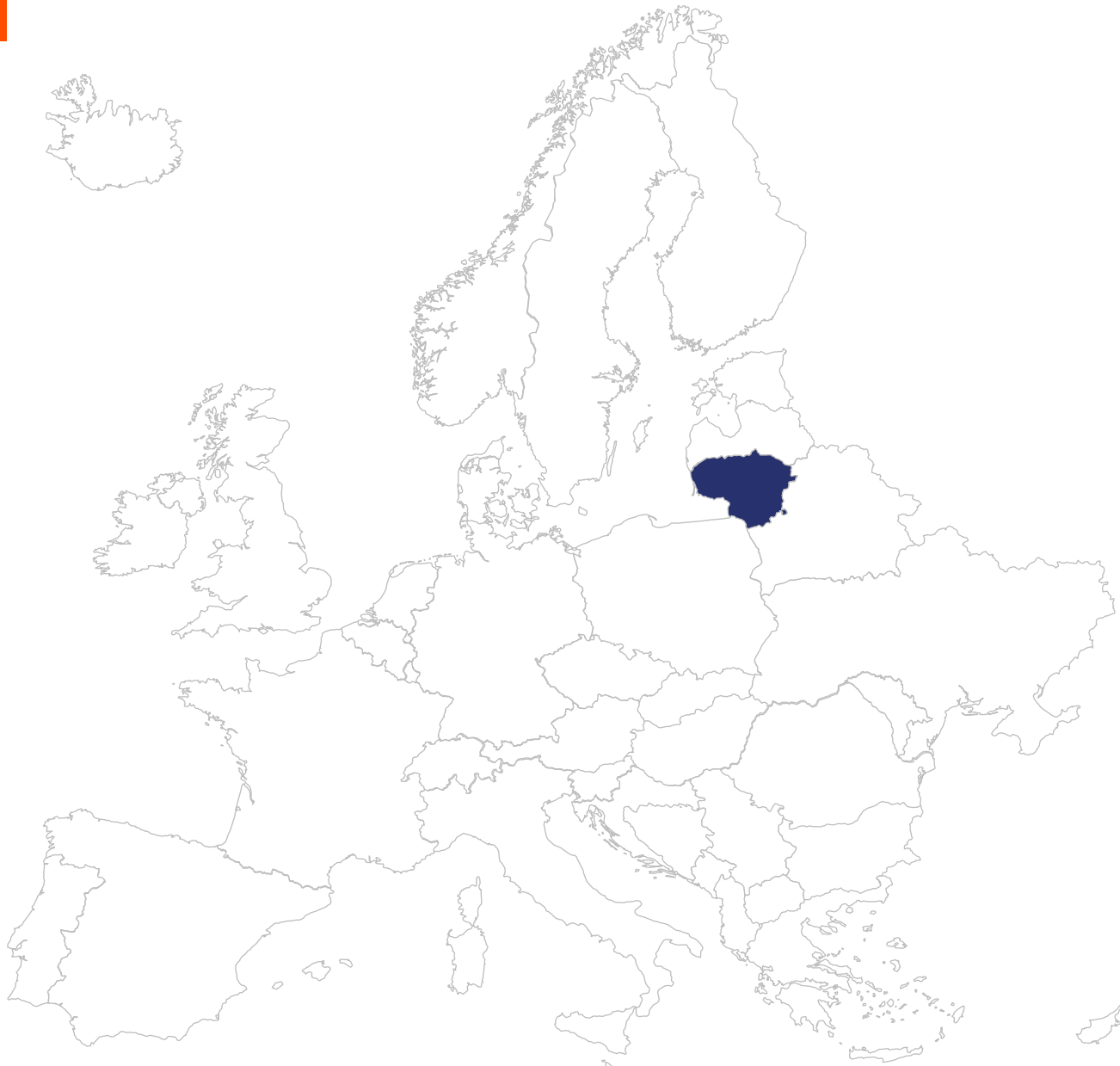
TSO's involved: LITGRID AB & ODU BELENERGO



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Agreement on provision of system services/Agreement on provision of regulation and balancing service

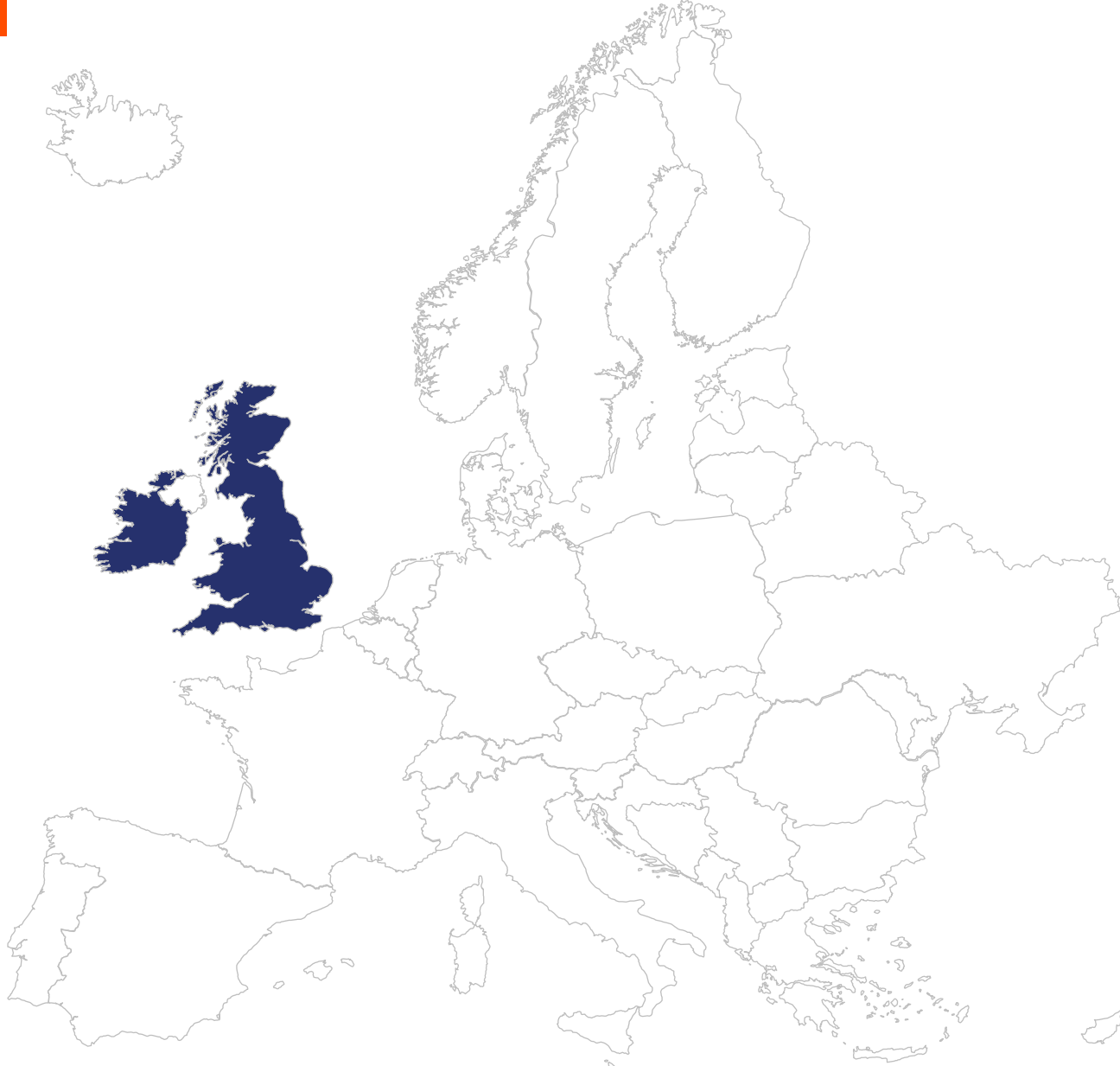
TSO's involved: LITGRID AB & CDU TEK



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Cross Border Balancing between Ireland & GB

TSO's involved: Eirgrid & National Grid



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Containment Reserve
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	Yes
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	



# Cross-border market for FCR: Czech Republic - Slovakia

TSO's involved: ČEPS & SEPS



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	Exchange of balancing capacity (TSO-TSO cooperation)
What products are used in the exchange mechanism?	Frequency Containment Reserve
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	No
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	No, in Slovakia ISP is 15 min. In Czech Republic ISP is 60 min.
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	N/A
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	N/A
Are there defined cost-sharing rules in place?	N/A
<b>Additional information</b>	

# Finland - Estonia

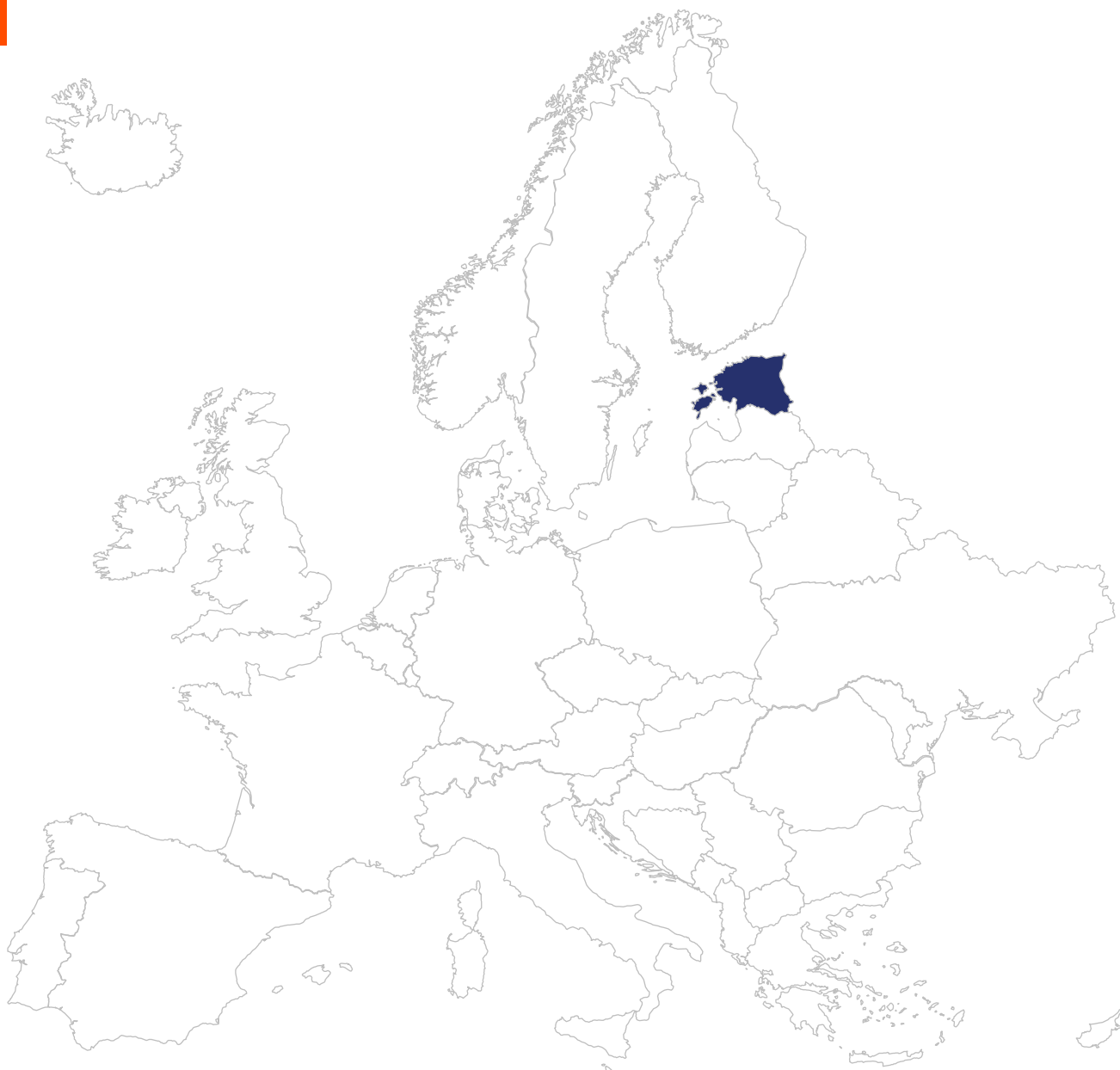
TSO's involved: Elering AS & Fingrid



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	Exchange of balancing capacity (TSO-TSO cooperation)
What products are used in the exchange mechanism?	Automatic Frequency Restoration Reserve (aFRR) & Manual Frequency Restoration Reserve (mFRR)
Is there symmetry/reciprocity in the products exchanged?	Yes (mFRR)
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	No
Are the Gate Closure Times for internal markets harmonised?	N/A (if initially the same)
Is the Imbalance Settlement Time Period harmonised?	No
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	
Using any other cross-border arrangement?	No

# Emergency reserve activation agreement

TSO's involved: Elering AS & ODU BELENERGO



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	N/A (if initially the same)
Is the Imbalance Settlement Time Period harmonised?	No
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
<b>Additional information</b>	

# Agreement on common frequency control reserves in the control block SHB

TSO's involved: NOS BIH & ELES & HOPS



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No Harmonisation & creation of dedicated cross-border products
Are the Gate Closure Times for TSO-TSO bids harmonised?	No
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	No
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Agreement on common frequency control reserves in the control block SHB

TSO's involved: NOS BIH & HOPS

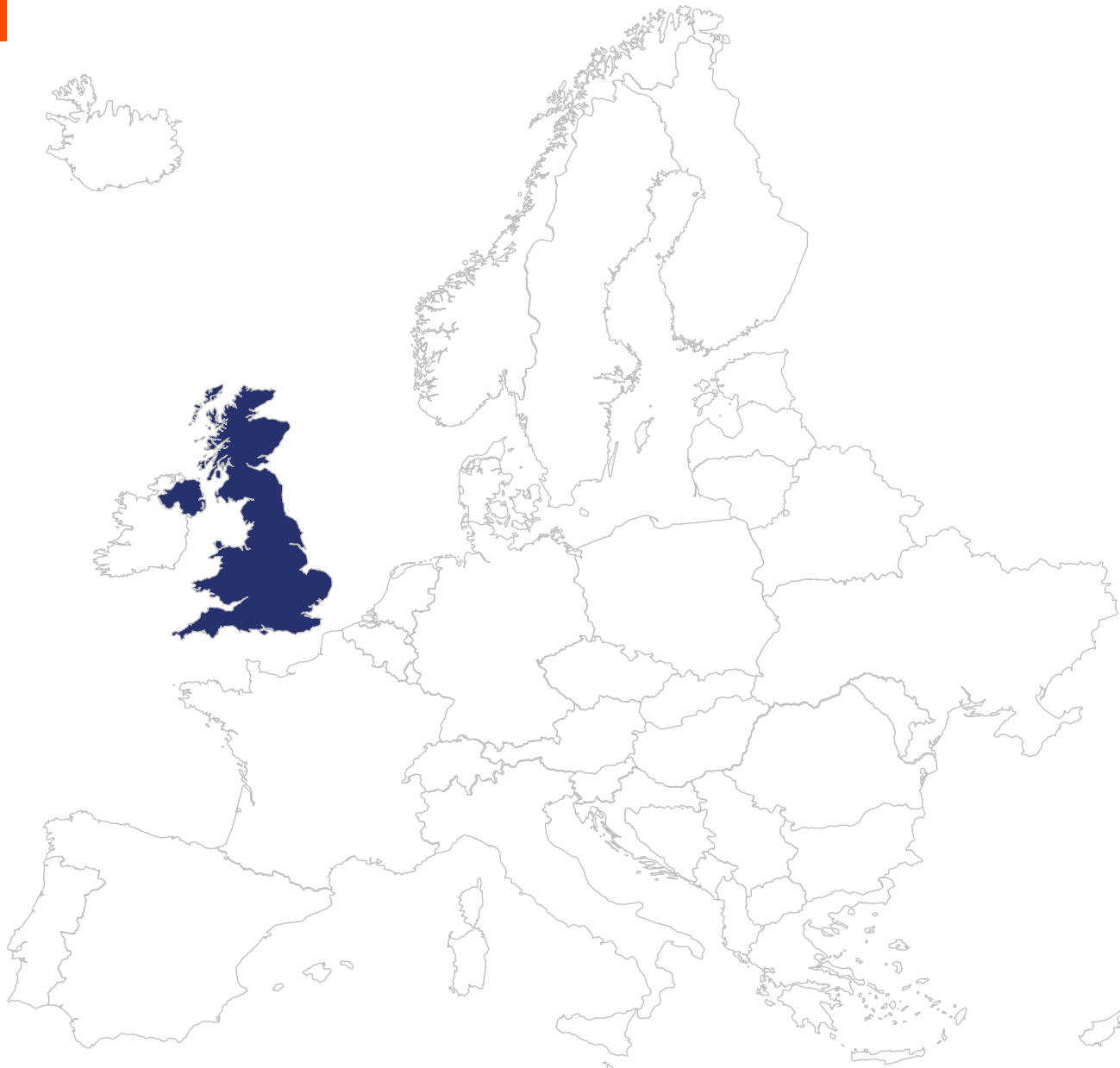


Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	N/A
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Some Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	N/A
<b>Reserves</b>	
Responsibility in sizing	Joint definition of reserves
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	



# Cross Border Balancing Northern Ireland & GB

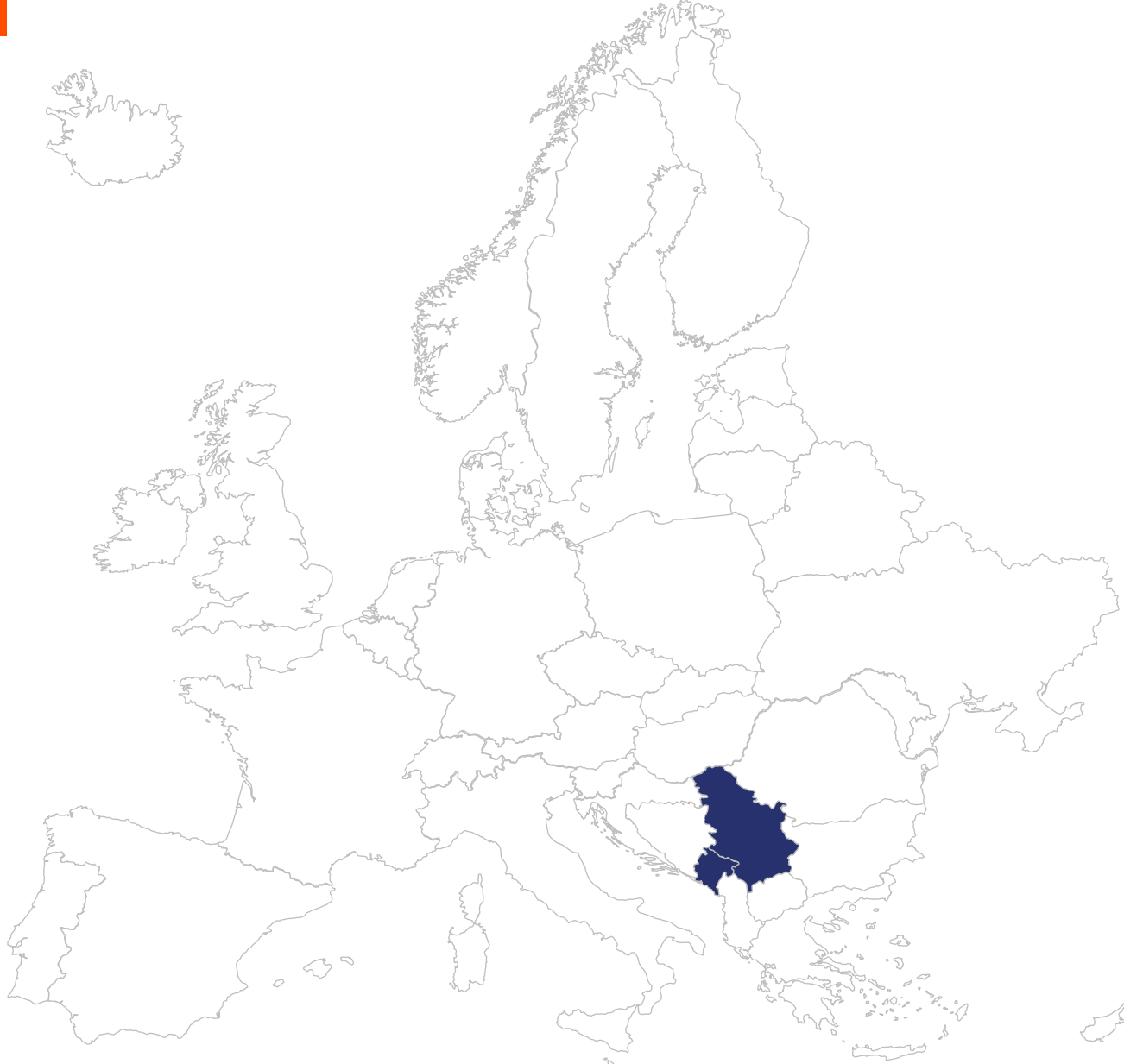
TSO's involved: SONI & National Grid



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Containment Reserve
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	No harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	No
Is the Imbalance Settlement Time Period harmonised?	Yes
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No
Are other items harmonised?	No
<b>Reserves</b>	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	

# Cross-border Tertiary Regulation

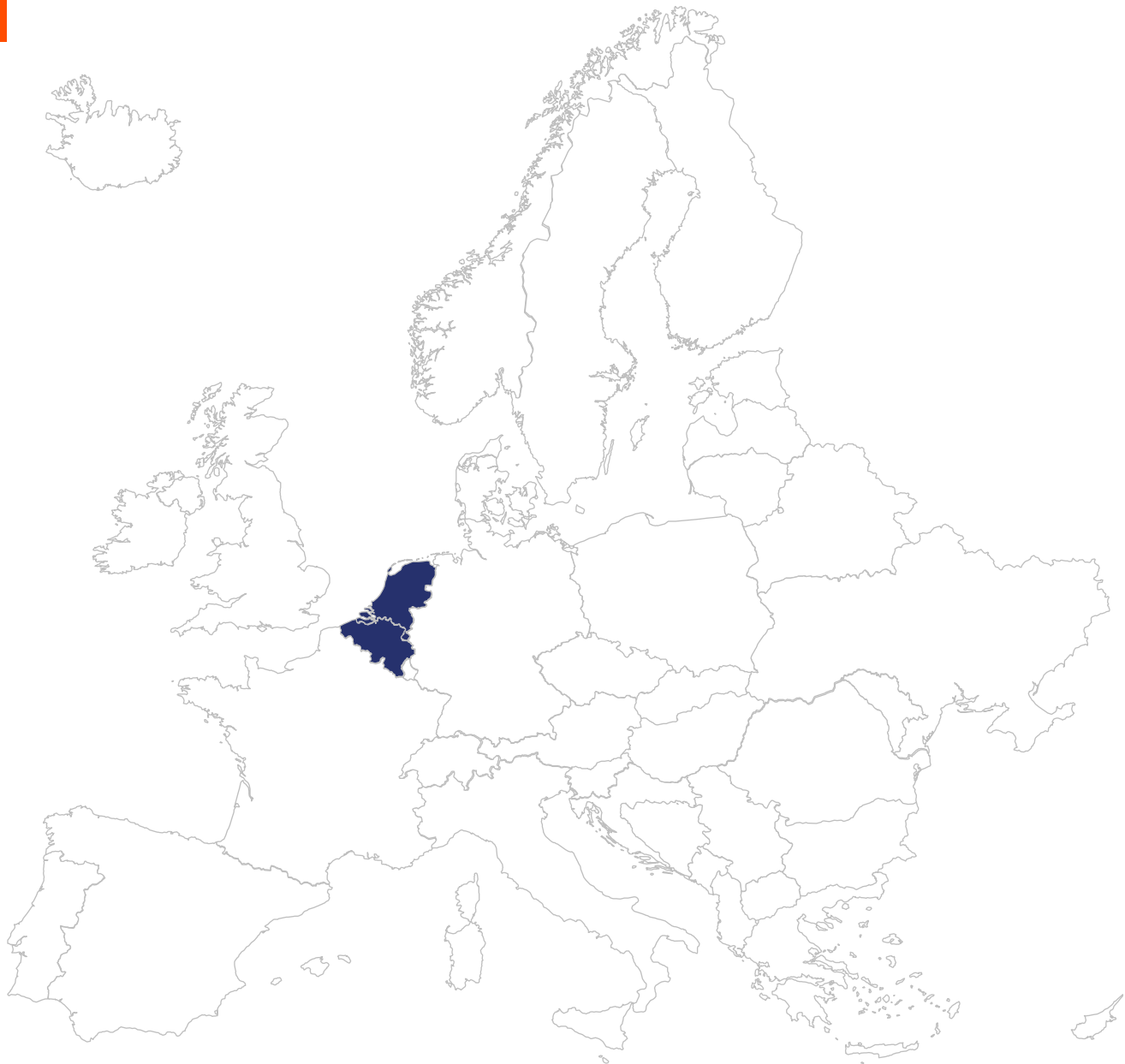
TSO's involved: EMS Serbia & CGES Montenegro



Question	Exchanges of Reserves
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
<b>Capacity reservation</b>	
Cross-Border Capacity Reservation	No
If Yes, Method in Use	
<b>Level of harmonisation</b>	
What is the level of Harmonisation of national or local Products?	Full Harmonisation
Are the Gate Closure Times for TSO-TSO bids harmonised?	Yes
Are the Gate Closure Times for internal markets harmonised?	Yes
Is the Imbalance Settlement Time Period harmonised?	N/A (if imbalance settlement period is already the same for exchanging parties)
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	Yes
<b>Additional information</b>	

# Pooling of Power reserves and exchange of Control energy between TenneT and Elia

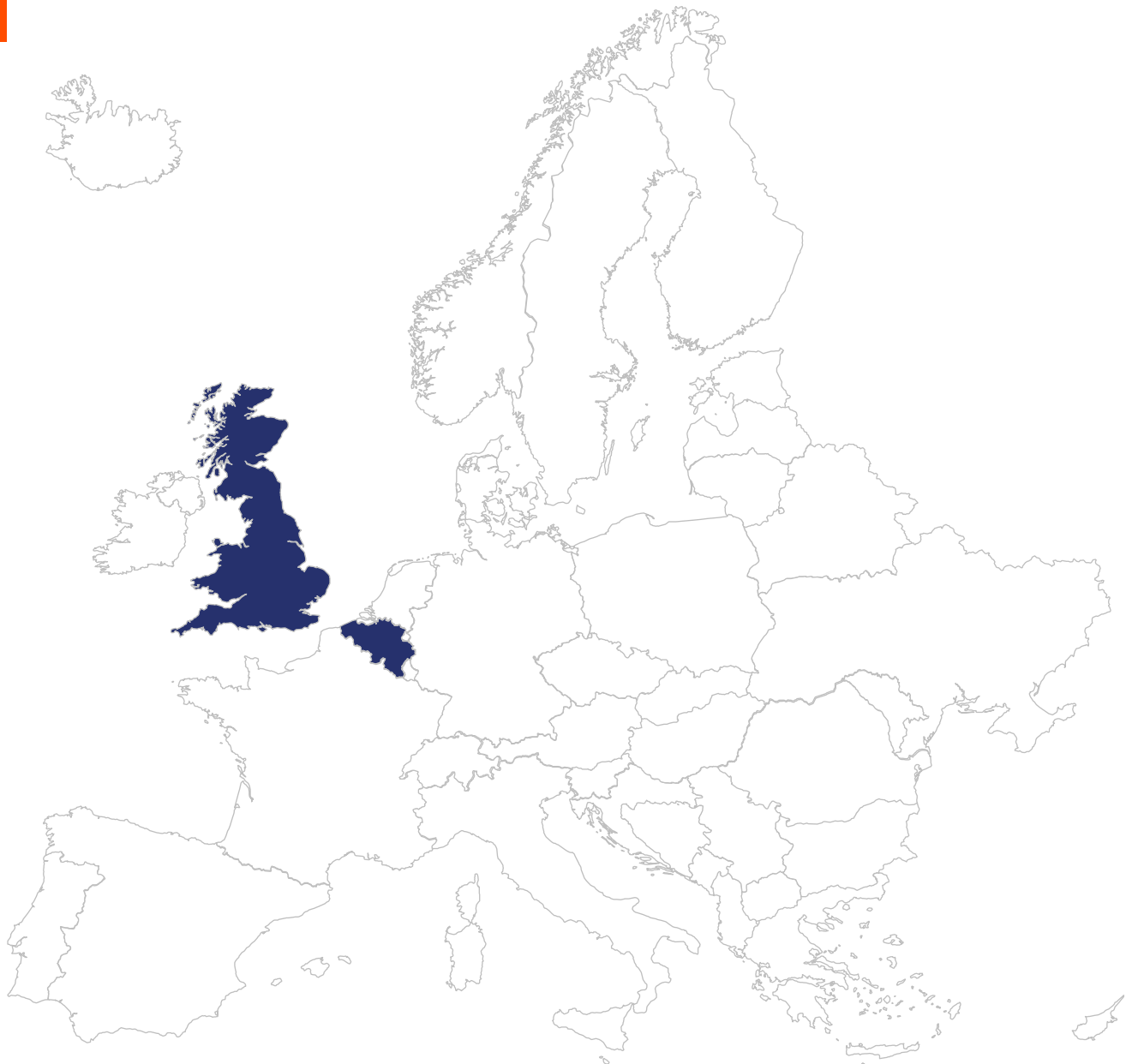
TSO's involved: Elia & TenneT NL



Question	Sharing of Reserves
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the requesting TSO through the providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No
Are other items harmonised?	No
Reserves	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
Additional information	

# Reserve Sharing Agreement between NGESO and Elia

TSO's involved: Elia & NGESO



Question	Sharing of Reserves
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the requesting TSO through the providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No
Are other items harmonised?	No
Reserves	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
Additional information	

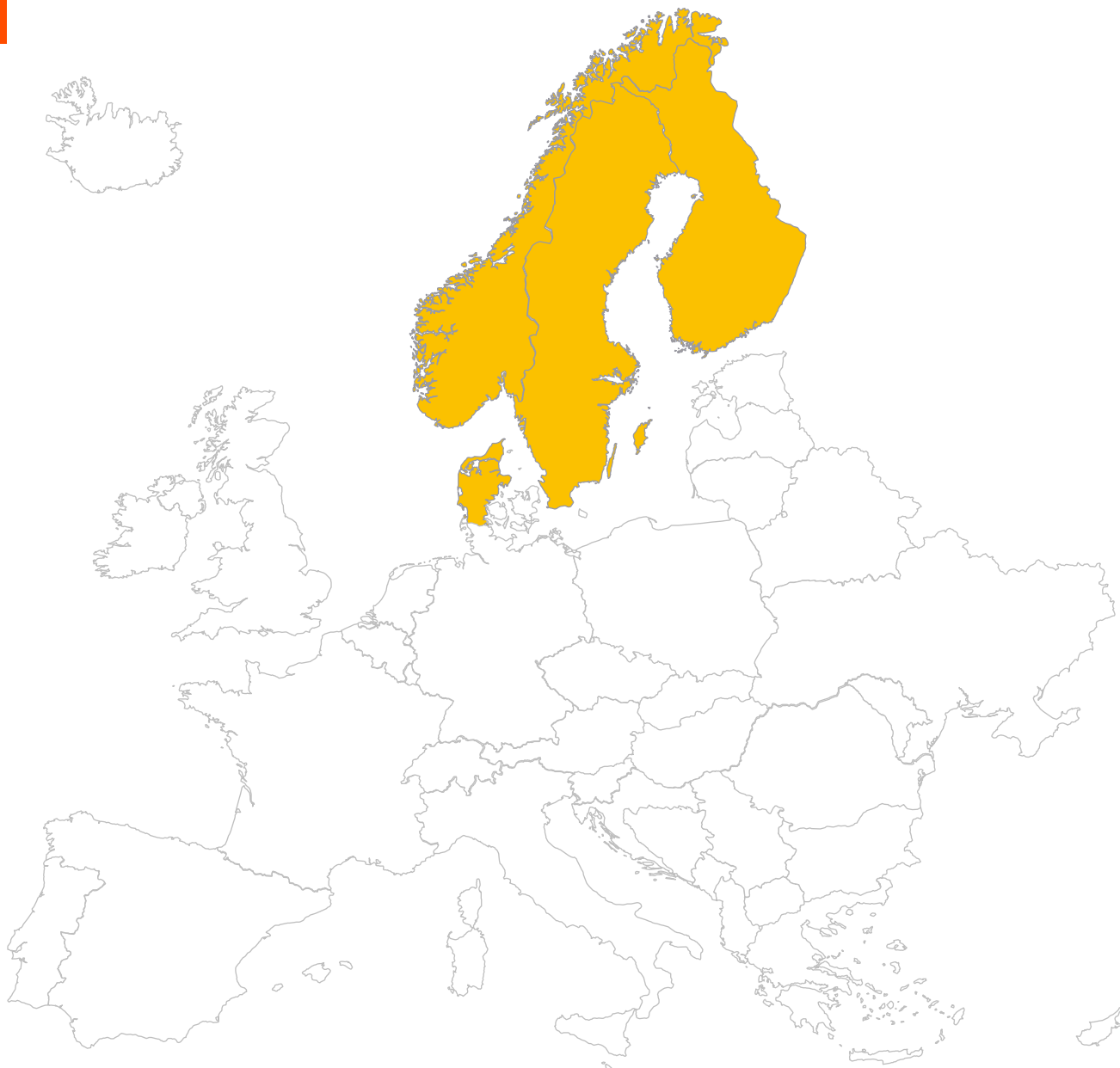
# Exchanges of balancing energy

(Part Two)



# Nordic

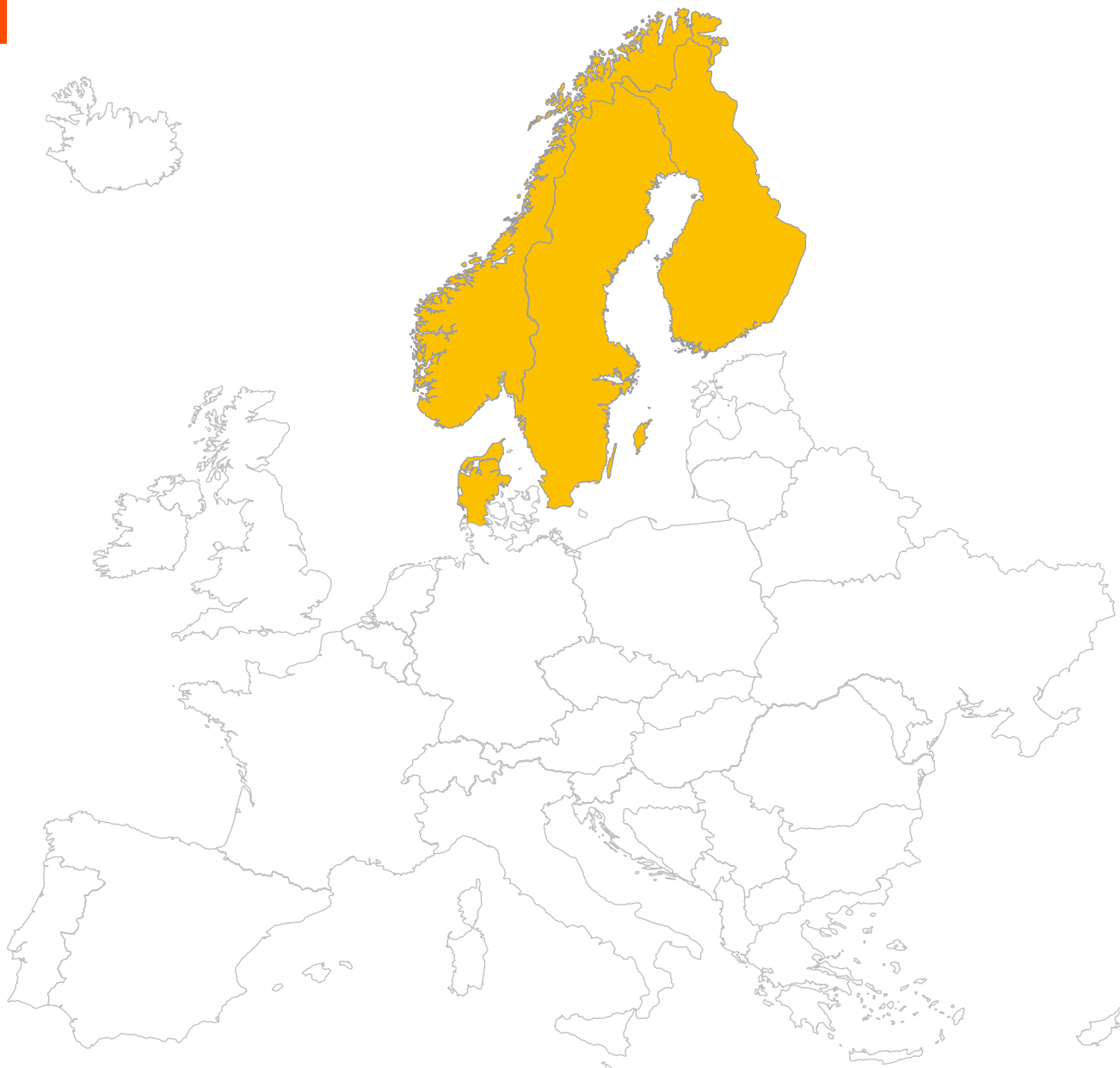
TSO's involved: Fingrid, Energinet, Svenska Kraftnät & Statnett



Question	Exchanges of manual balancing energy
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Level of harmonisation</b>	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Some Harmonisation
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
<b>Additional information</b>	
Using any other cross-border arrangement?	Yes

# Nordic

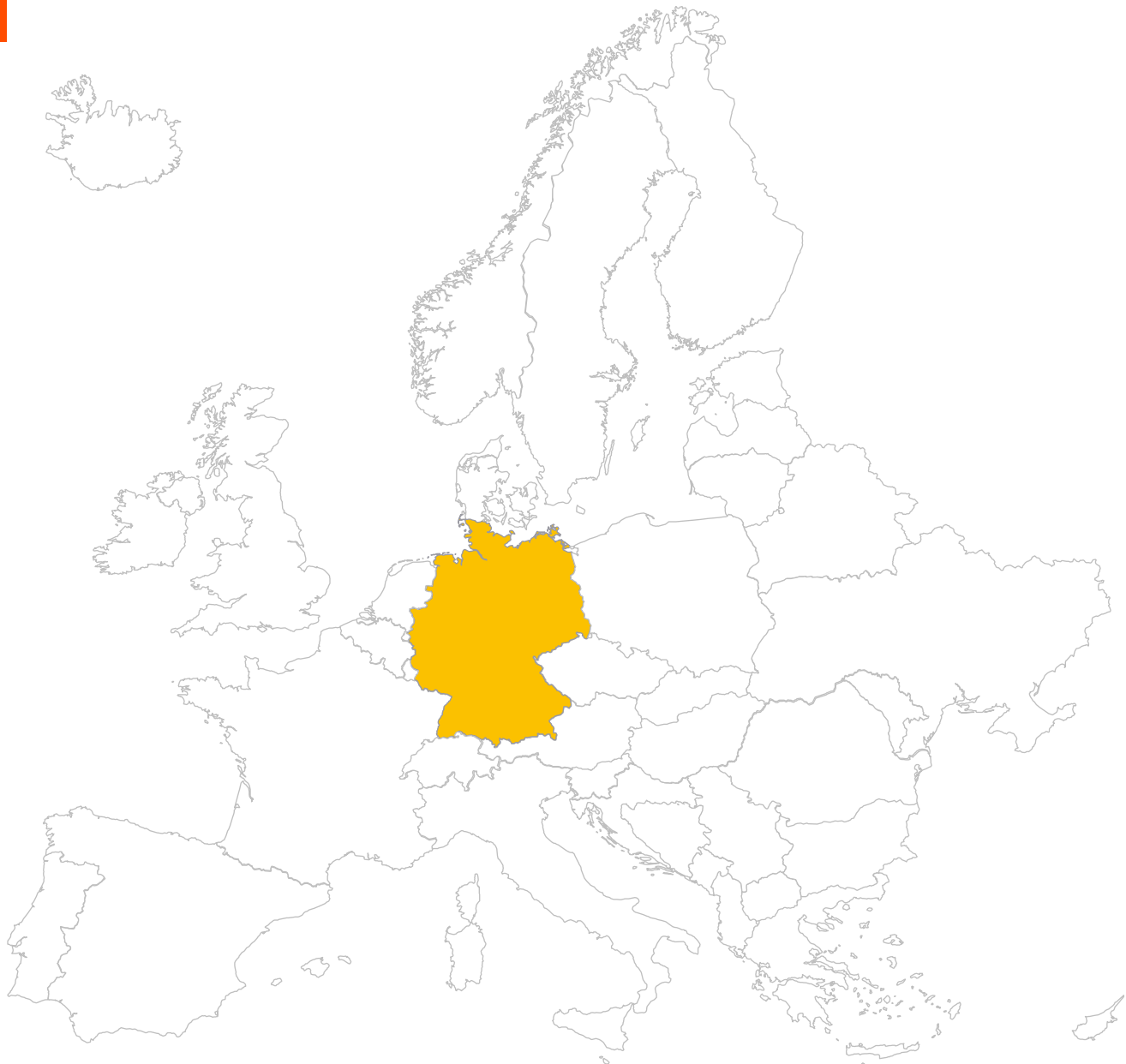
TSO's involved: Fingrid, Energinet, Svenska Kraftnät & Statnett



Question	Exchanges of manual balancing energy
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Level of harmonisation</b>	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Some Harmonisation
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
<b>Additional information</b>	

# German Grid Control Cooperation (GCC)

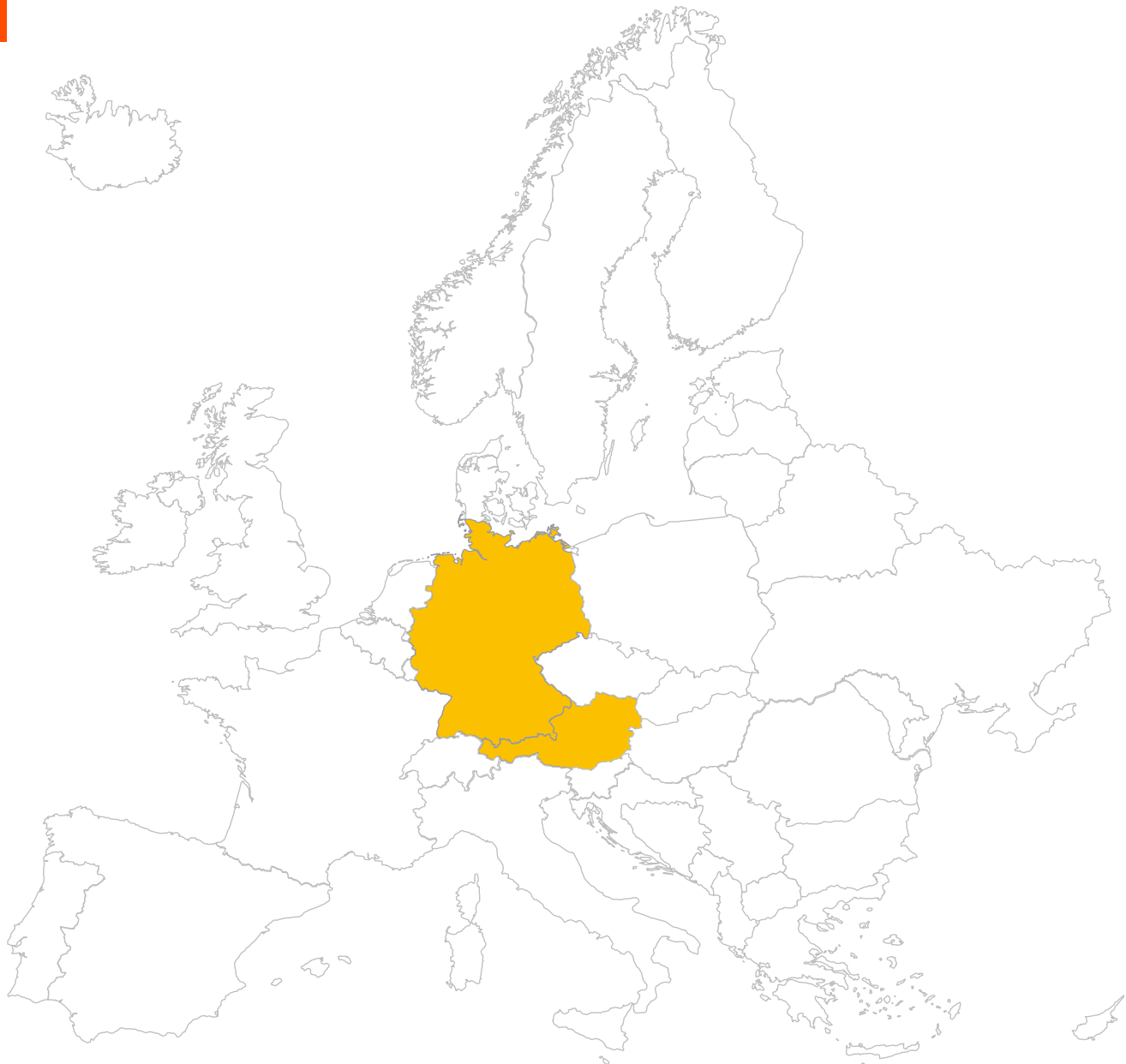
TSO's involved: 50Hertz, TransnetBW, Amprion & Tennet GER



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Automatic and Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Full Harmonisation
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	Joint dimensioning of reserves
Are there defined cost-sharing rules in place?	Yes
Additional information	

# FRR-Cooperation

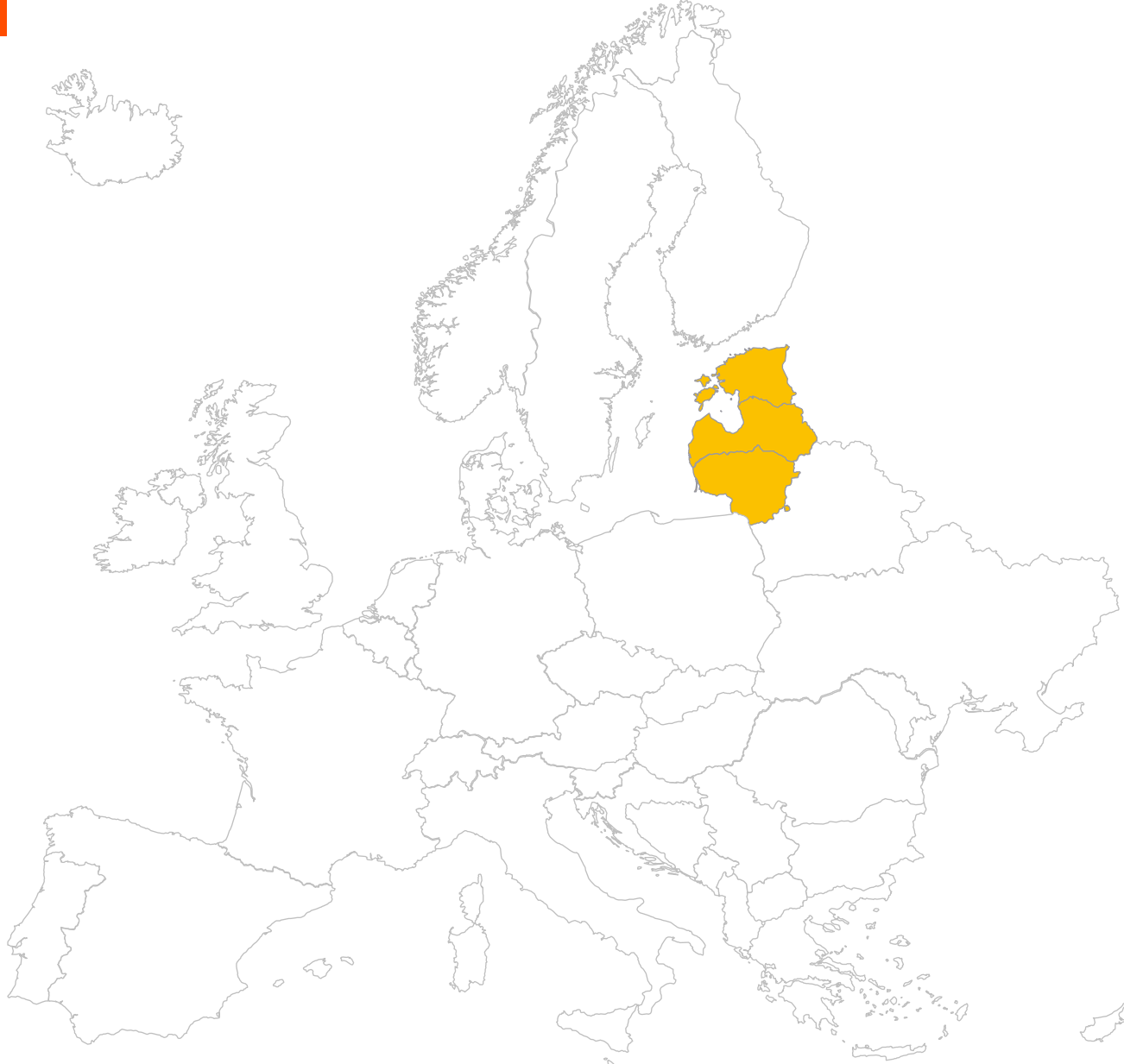
TSO's involved: 50Hertz, TransnetBW, Amprion & Tennet GER, APG



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Automatic and Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Full Harmonisation
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	Joint dimensioning of reserves
Are there defined cost-sharing rules in place?	Yes
Additional information	

# Baltic Coordinated Balancing Area (COBA)

TSO's involved: Elering AS, AS Augstsprieguma tīkls & LITGRID AB



Question	Exchanges of manual balancing energy
<b>Products &amp; Models Involved</b>	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
<b>Level of harmonisation</b>	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Yes
Are other items harmonised?	Yes
<b>Reserves</b>	
Responsibility in sizing	No
Are there defined cost-sharing rules in place?	No
<b>Additional information</b>	
Common Baltic mFRR balancing energy market	



# Emergency reserves activation

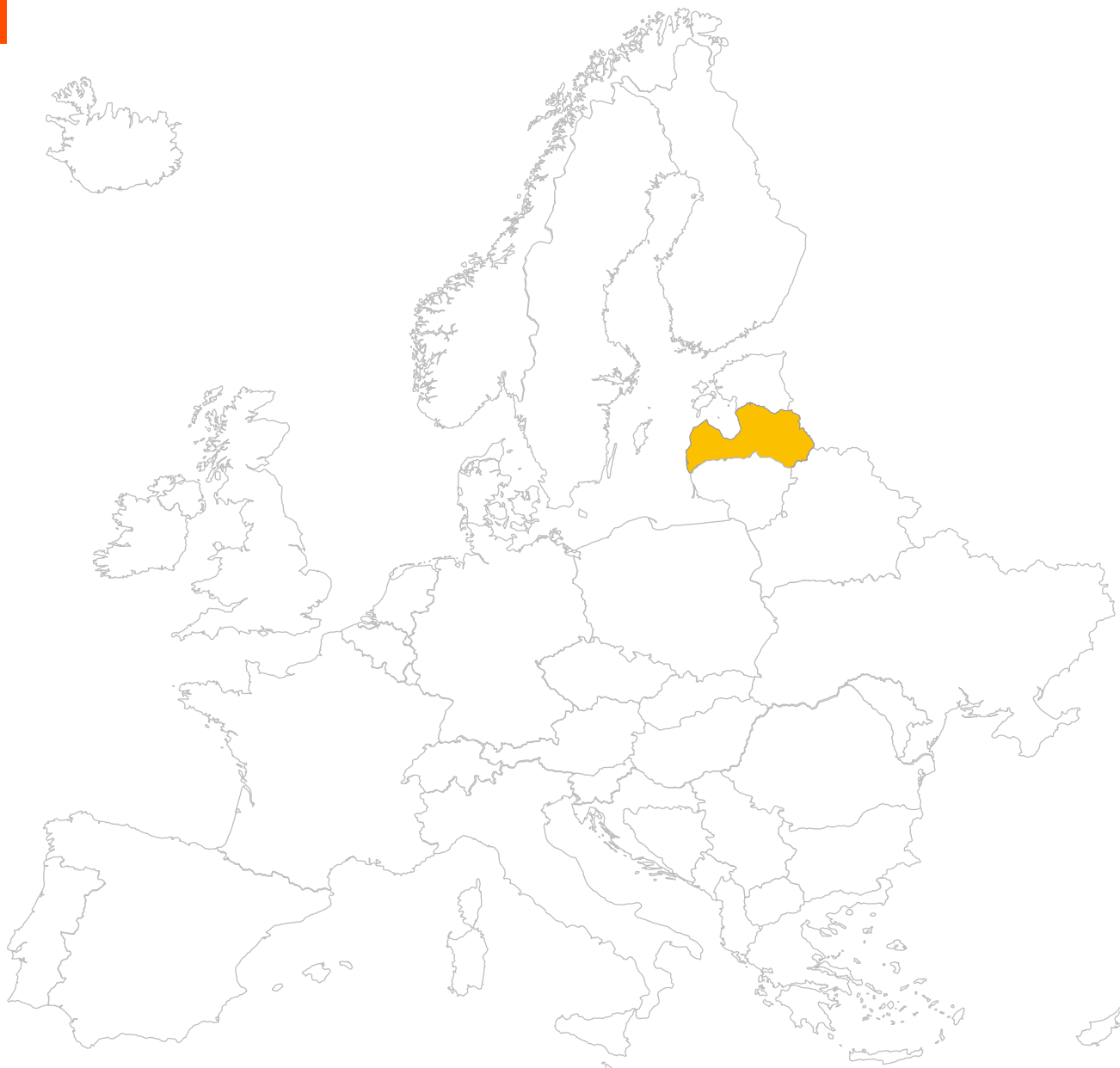
TSO's involved: AS Augstsprieguma tīkls Latvia, SO UPS Russia



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Agreement on the provision on the system service

TSO's involved: AS Augstsprieguma tīkls Latvia, ODU Belenergo Belarus



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Agreement on provision of system services/Agreement on provision of regulation service

TSO's involved: LITGRID AB & ODU BELENERGO



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Agreement on provision of system services/Agreement on provision of regulation and balancing service

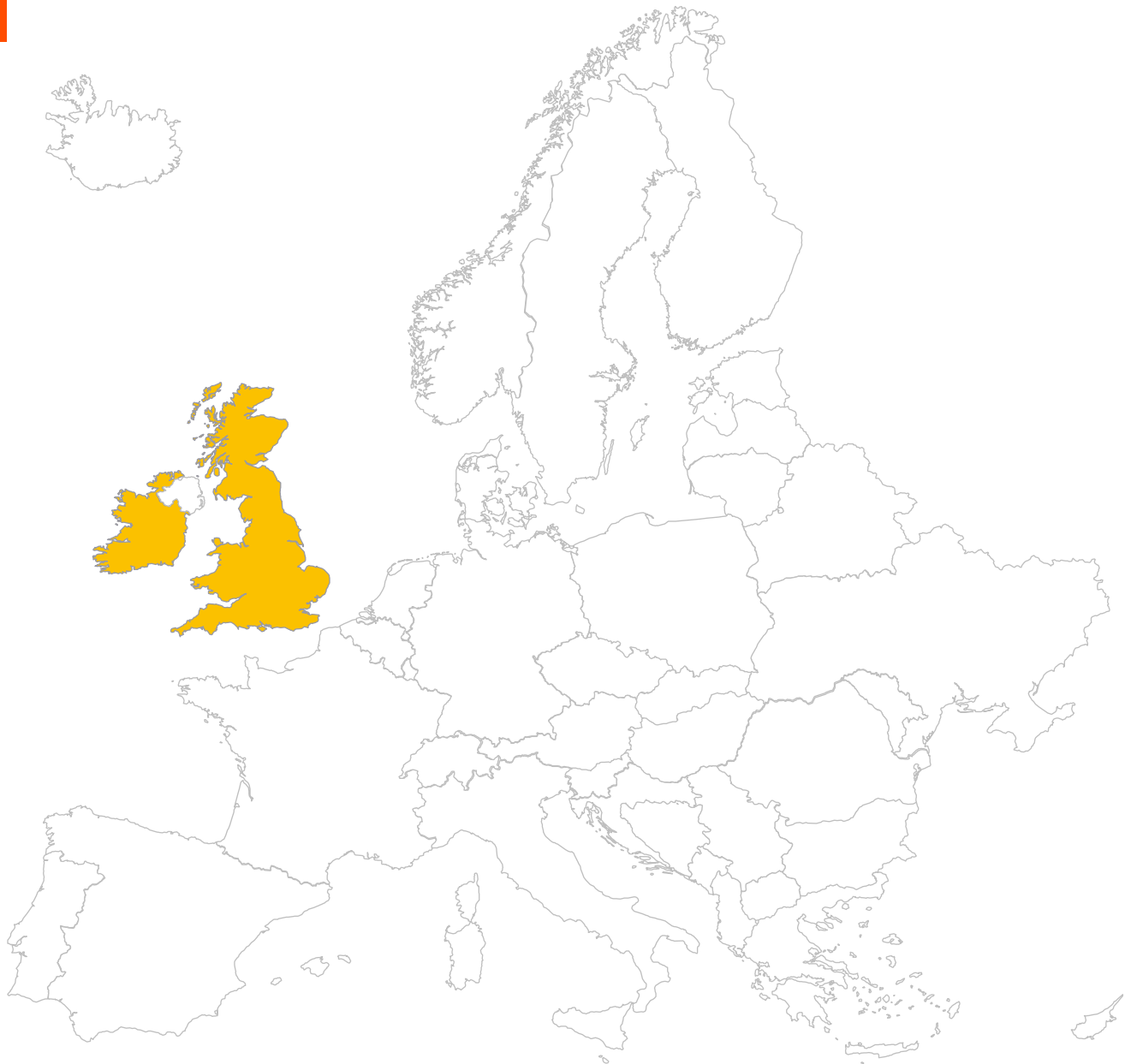
TSO's involved: LITGRID AB & CDU TEK



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Cross Border Balancing between Ireland & GB

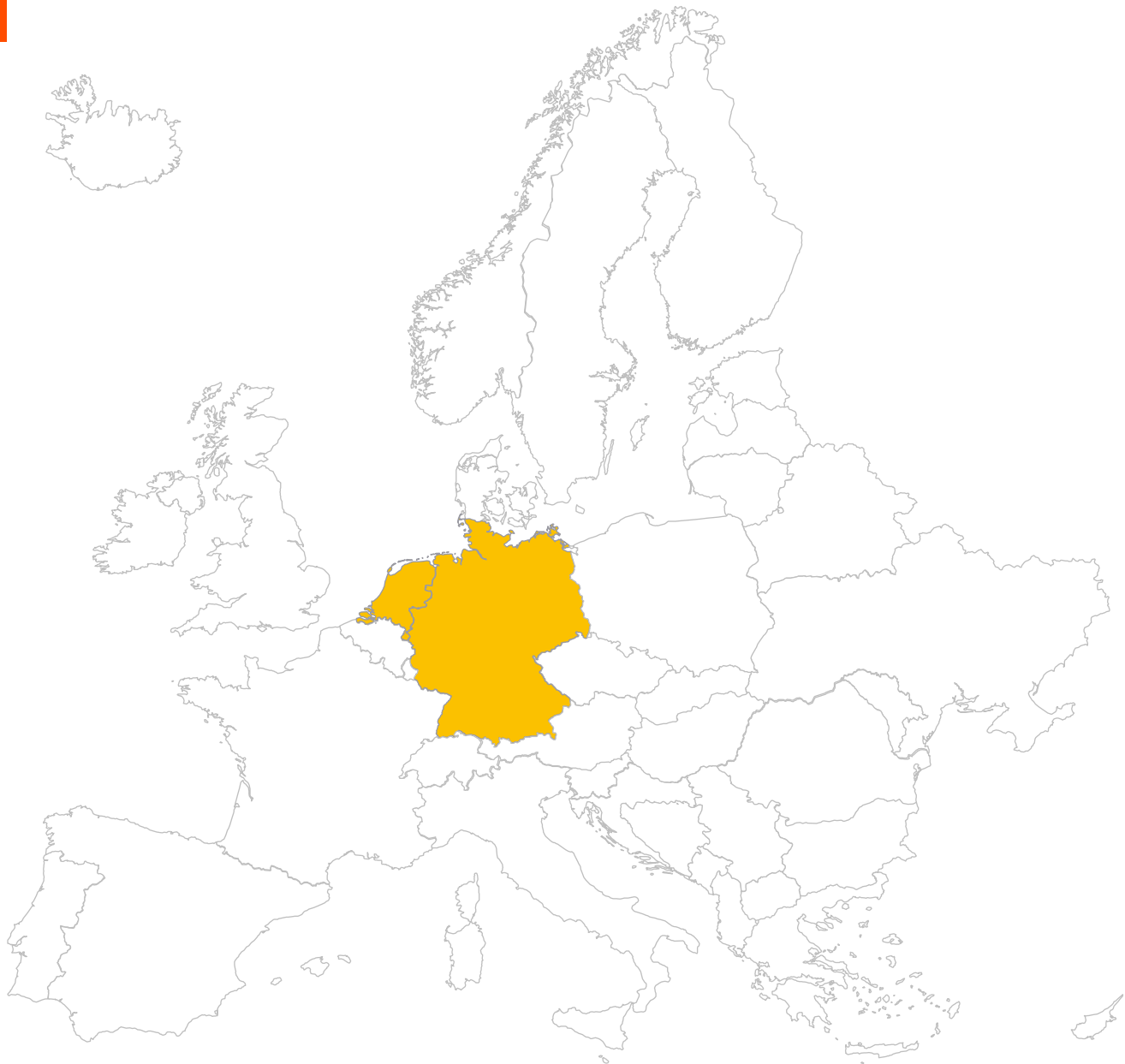
TSO's involved: Eirgrid & National Grid



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Replacement Reserve
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Inter-control area support with emergency reserve capacity

TSO's involved: TenneT GER & TenneT NL

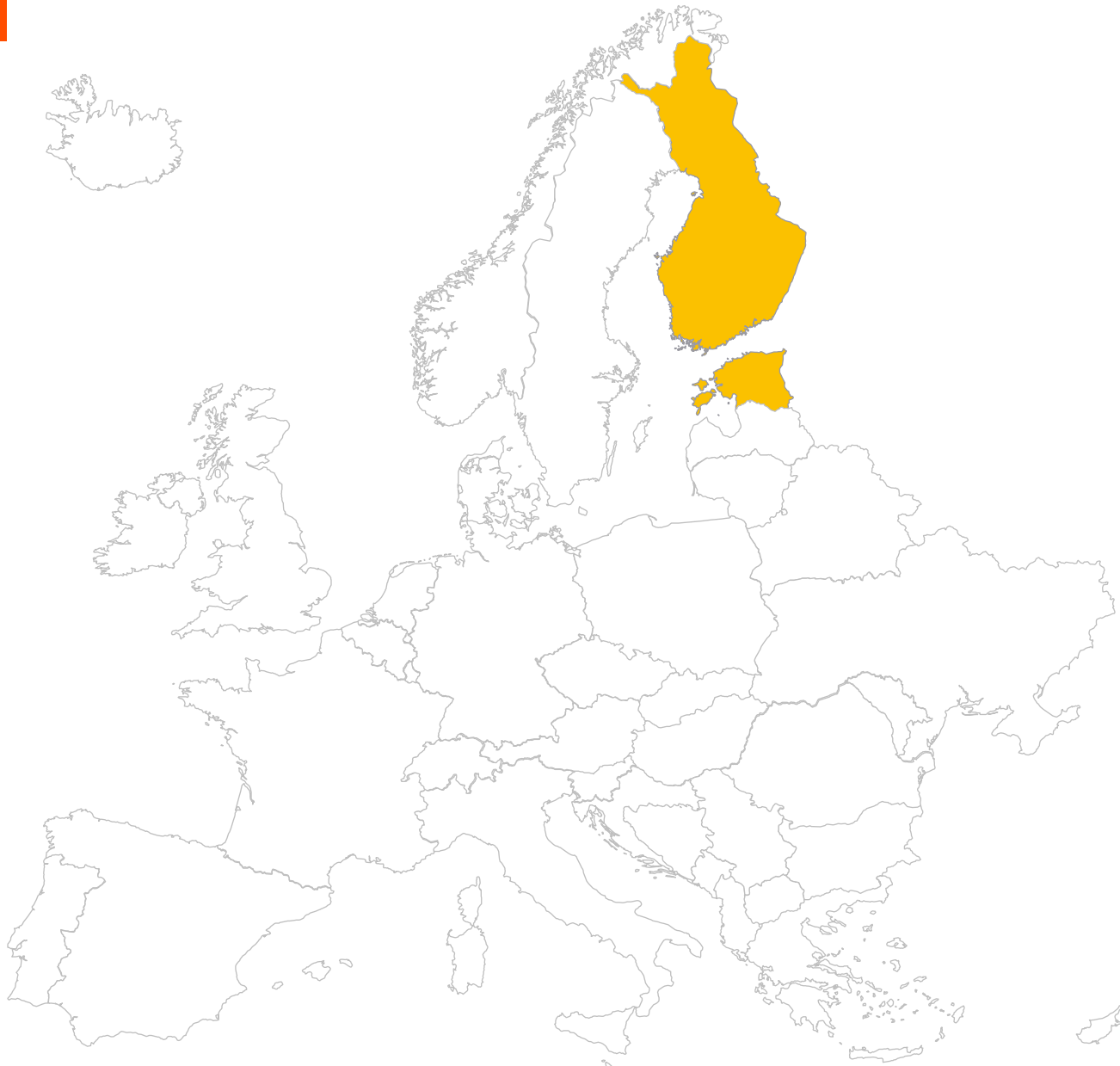


Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	



# Finland - Estonia

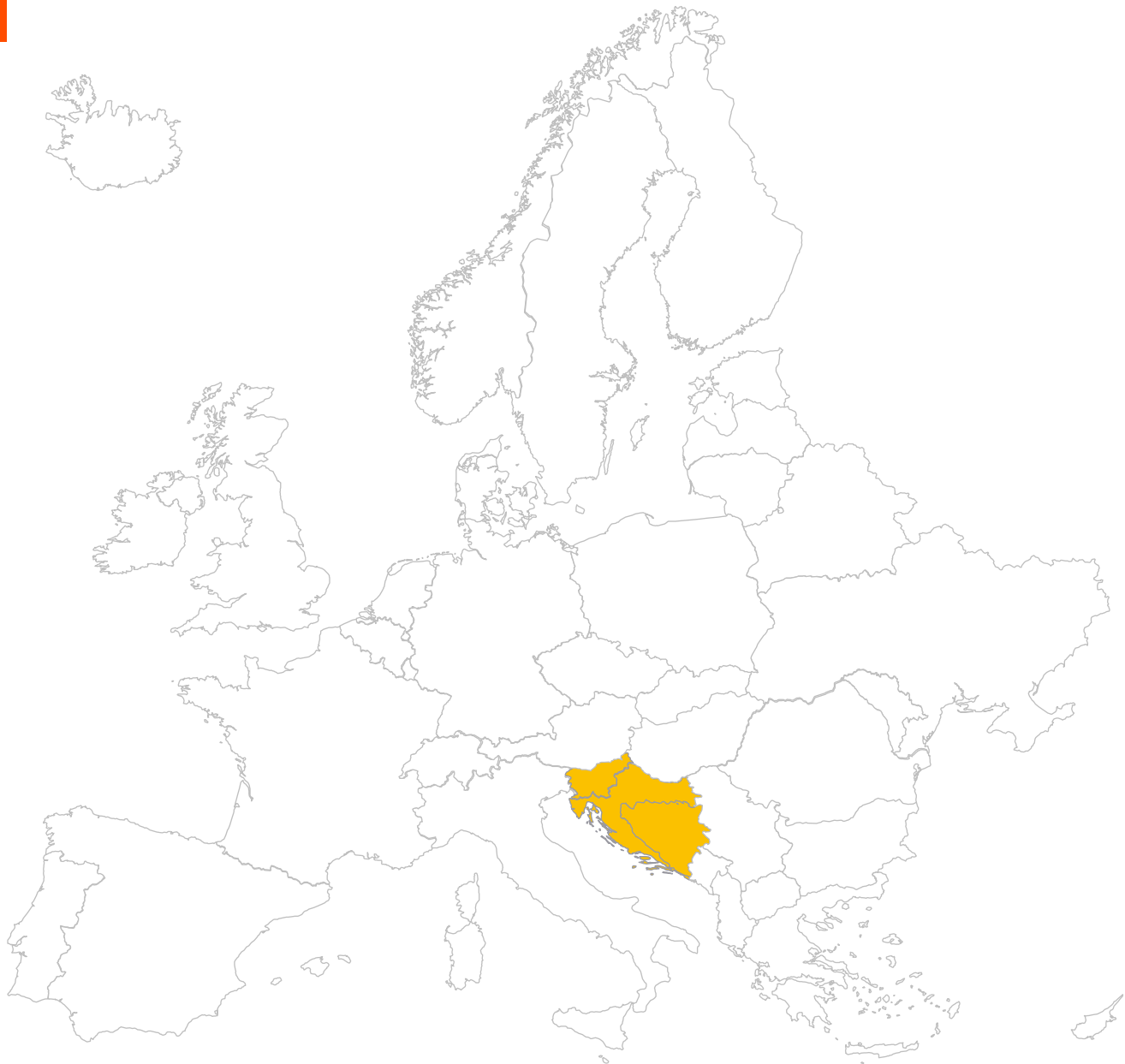
TSO's involved: Elering AS & Fingrid



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	
Using any other cross-border arrangement?	No

# Agreement on common frequency control reserves in the control block SHB

TSO's involved: NOS BIH & ELES & HOPS



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	N/A
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Agreement on common frequency control reserves in the control block SHB

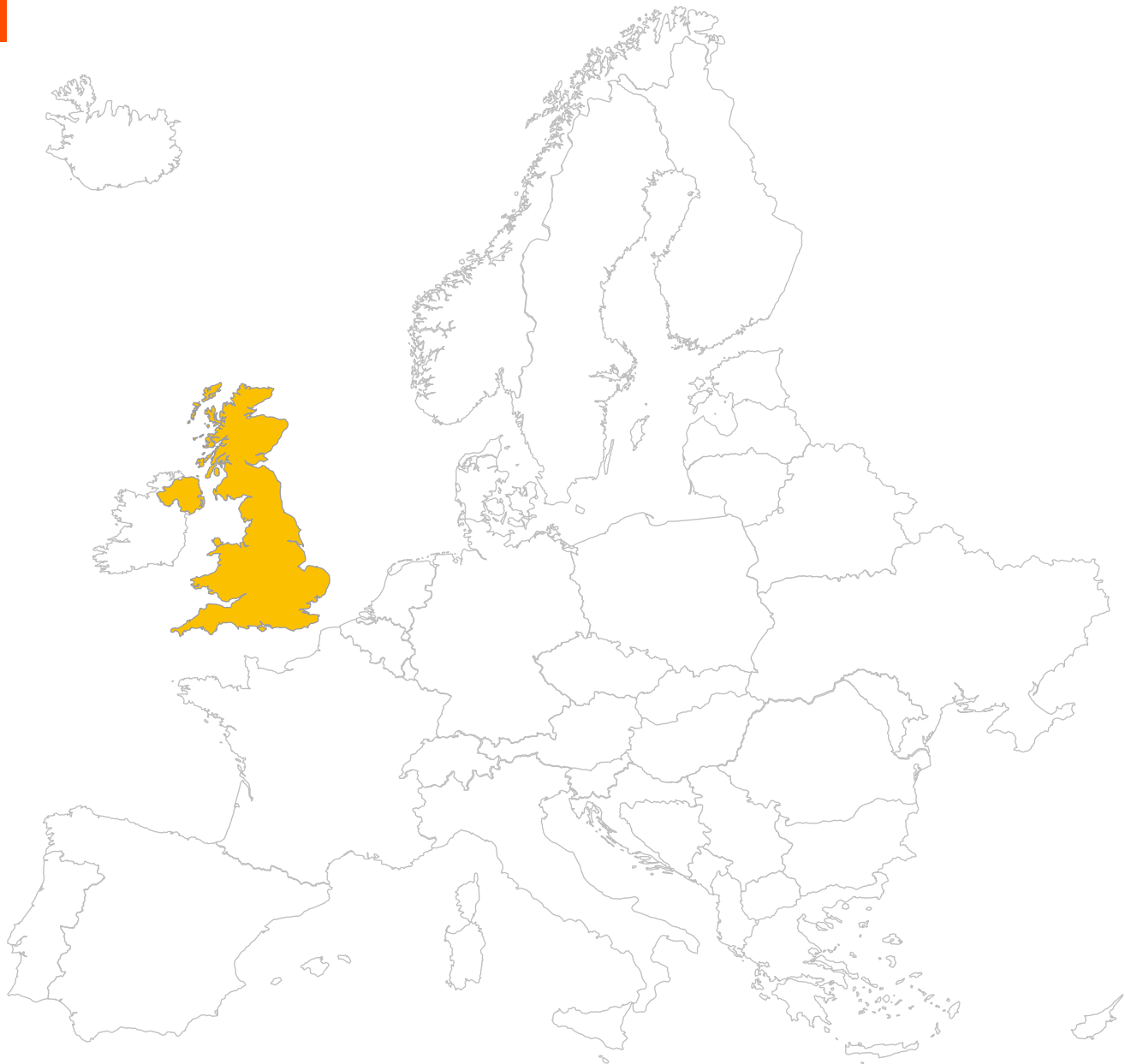
TSO's involved: NOS BIH & HOPS



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	N/A
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Cross Border Balancing Northern Ireland & GB

TSO's involved: SONI & National Grid



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Cross-border Tertiary Regulation

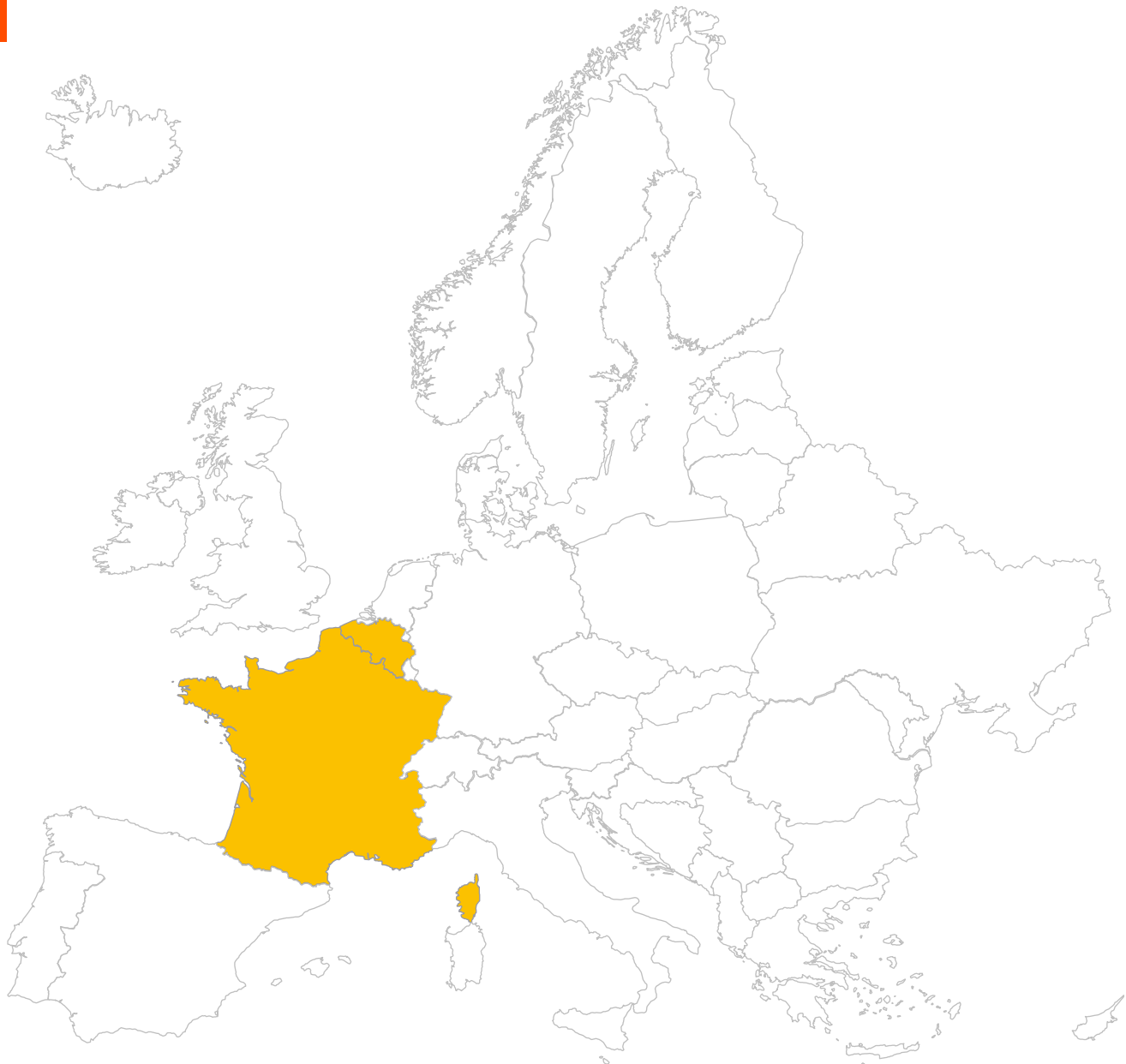
TSO's involved: EMS Serbia & CGES Montenegro



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	No
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Mutual Energy Assistance between Elia & RTE

TSO's involved: Elia & RTE



Question	Exchanges of manual balancing energy
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the requesting TSO through the providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Manual)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
Additional information	



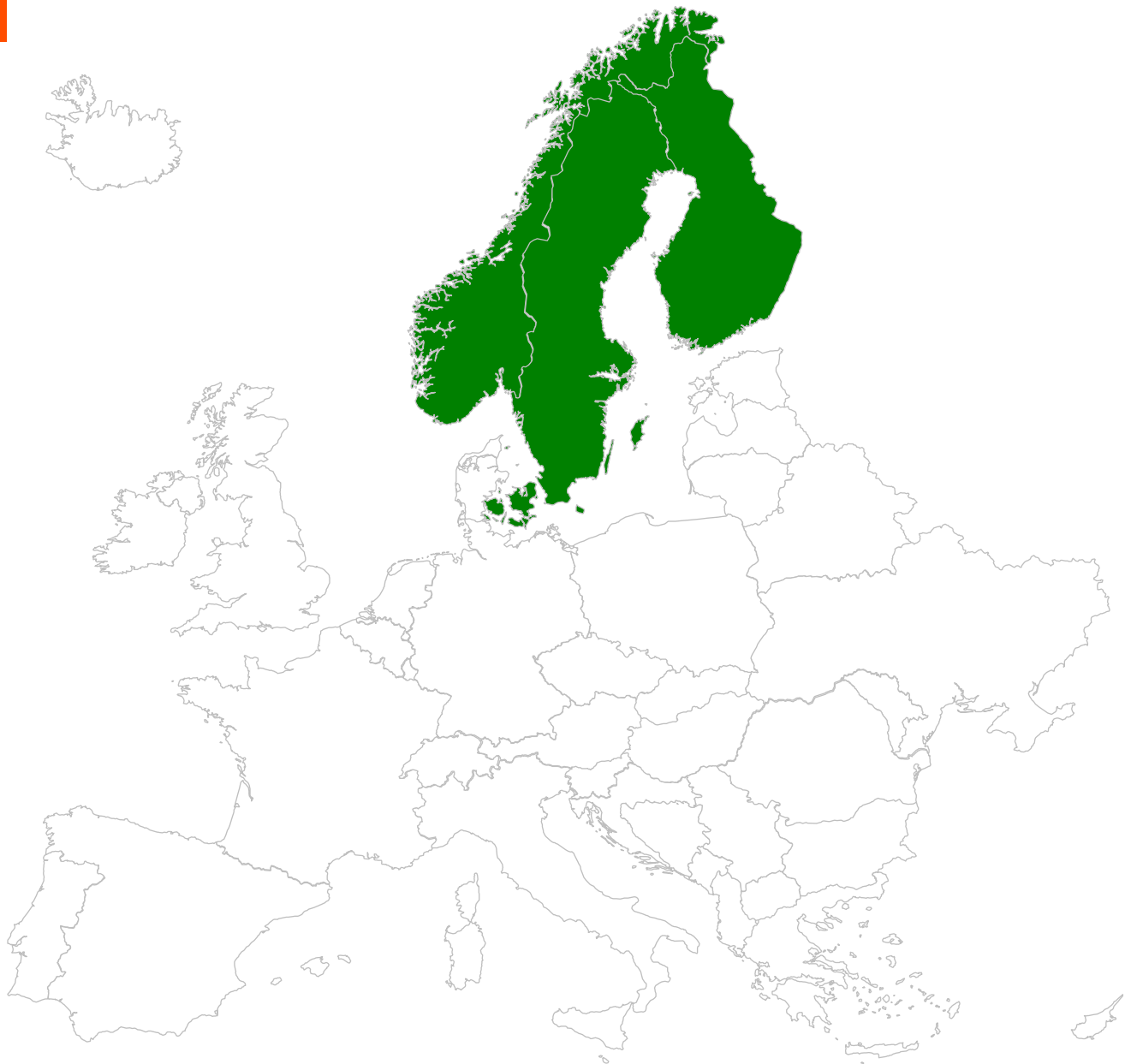


# Exchanges for Imbalance netting

(Part Three)

Nordic

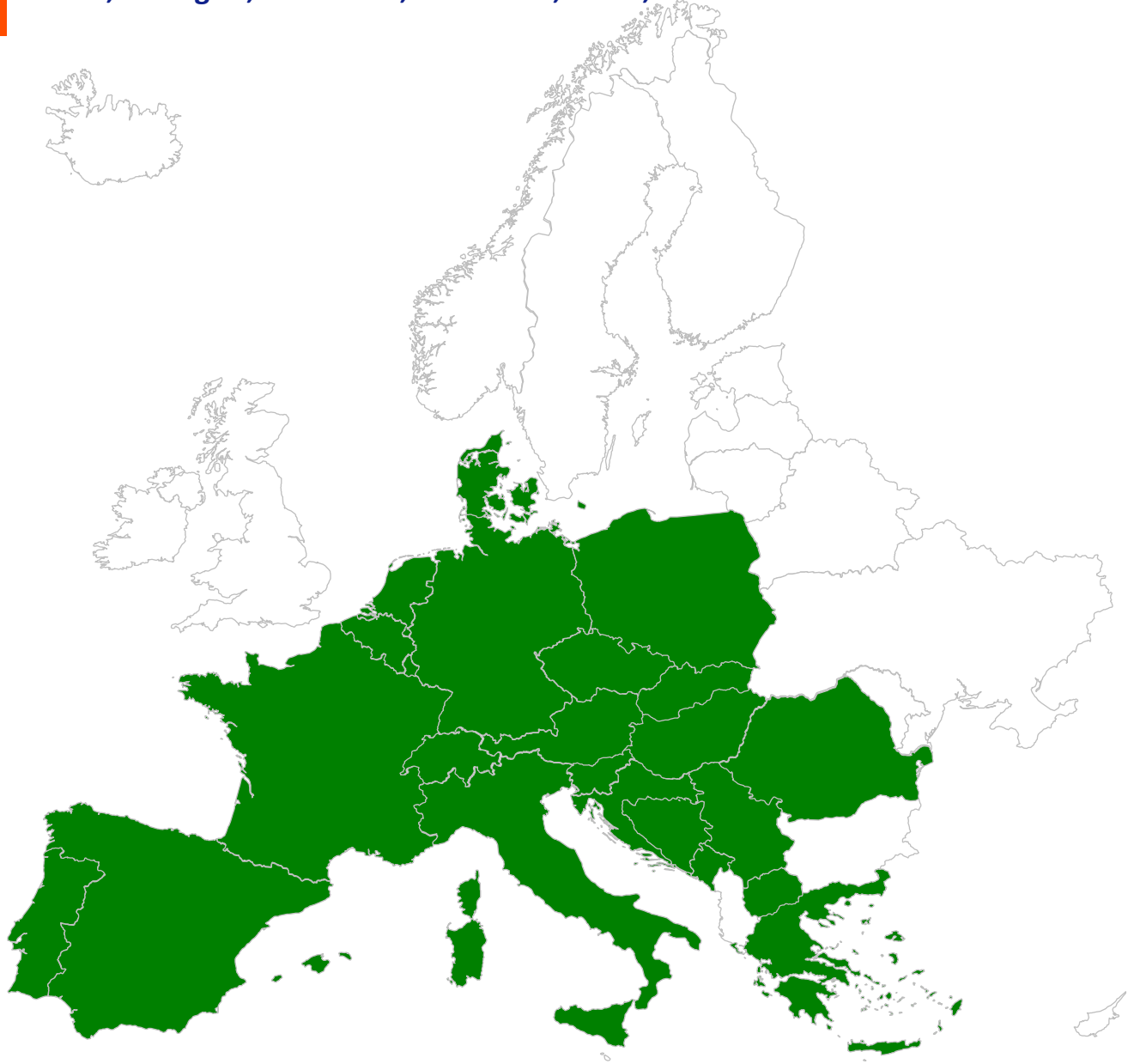
TSO's involved: Fingrid, Energinet, Svenska Kraftnät & Statnett



Question	Exchanges for imbalance netting
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Full Harmonisation
Are other items harmonised?	
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# International Grid Control Cooperation (IGCC)

TSO's involved: 50Herz, ADMIE, Amprion, APG, ČEPS, CGES, CREOS, ELES, Elia, EMS, Energinet, ESO, HOPS, MAVIR, MEPSO, NOS BiH, PSE, REE, REN, RTE, SEPS, Swissgrid, TenneT DE, TenneT NL, Terna, Transelectrica & TransnetBW



Question	Exchanges for imbalance netting
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Automatic)
Is there symmetry/reciprocity in the products exchanged?	N/A
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	Yes
Additional information	
There is a common TSO-TSO Settlement scheme (same for all participants) but no harmonization for TSO-BSP or TSO-BRP Settlement.	

# German Grid Control Cooperation (GCC)

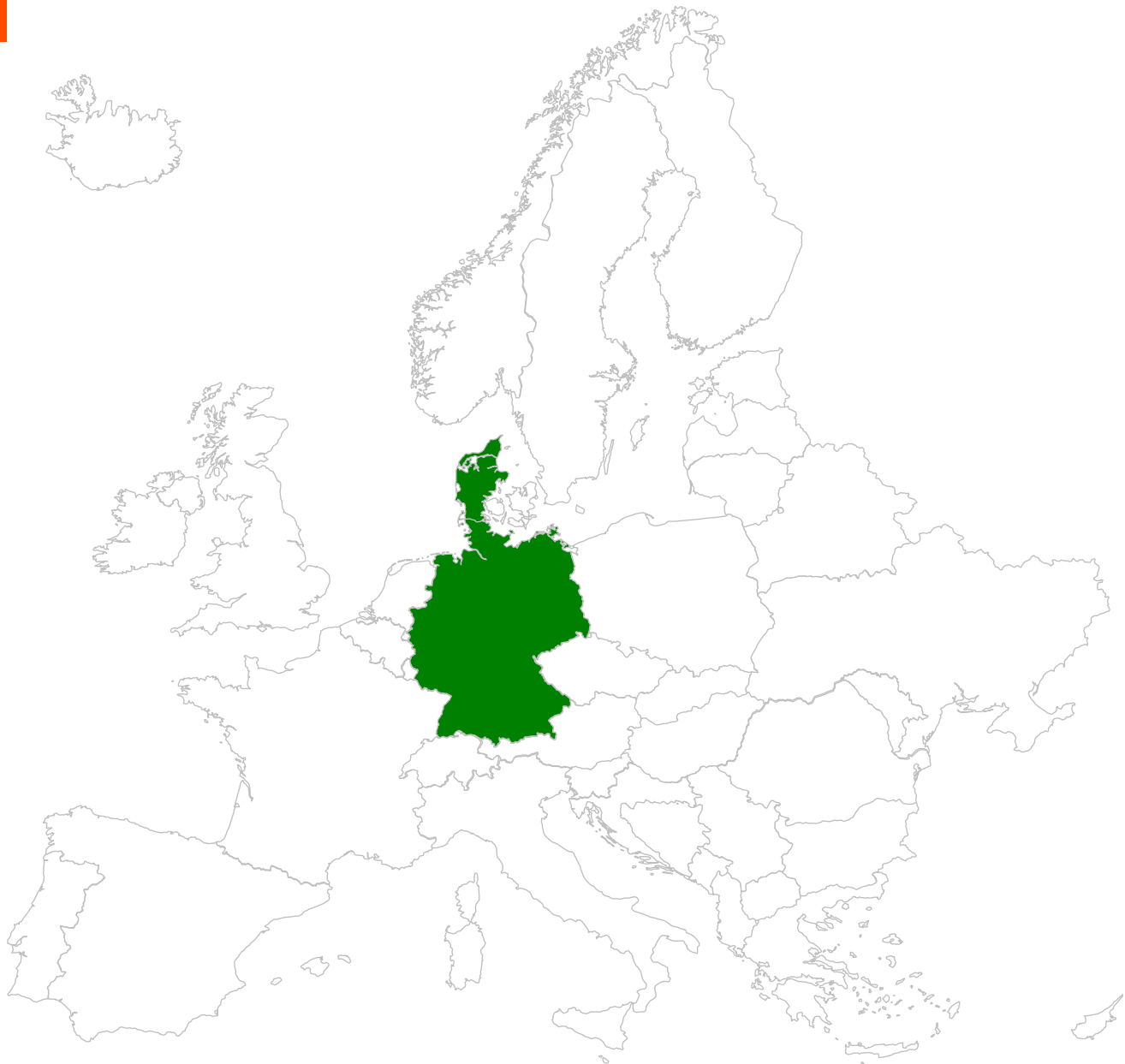
TSO's involved: 50Hertz, TransnetBW, Amprion & Tennet GER



Question	Exchanges for imbalance netting
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Automatic)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	Yes
Are the imbalance pricing methods harmonised?	Full Harmonisation
Are other items harmonised?	Yes
Reserves	
Responsibility in sizing	Joined dimensioning
Are there defined cost-sharing rules in place?	Yeas
Additional information	

# ENDK-W-Tennet Ger/ENDK-W view

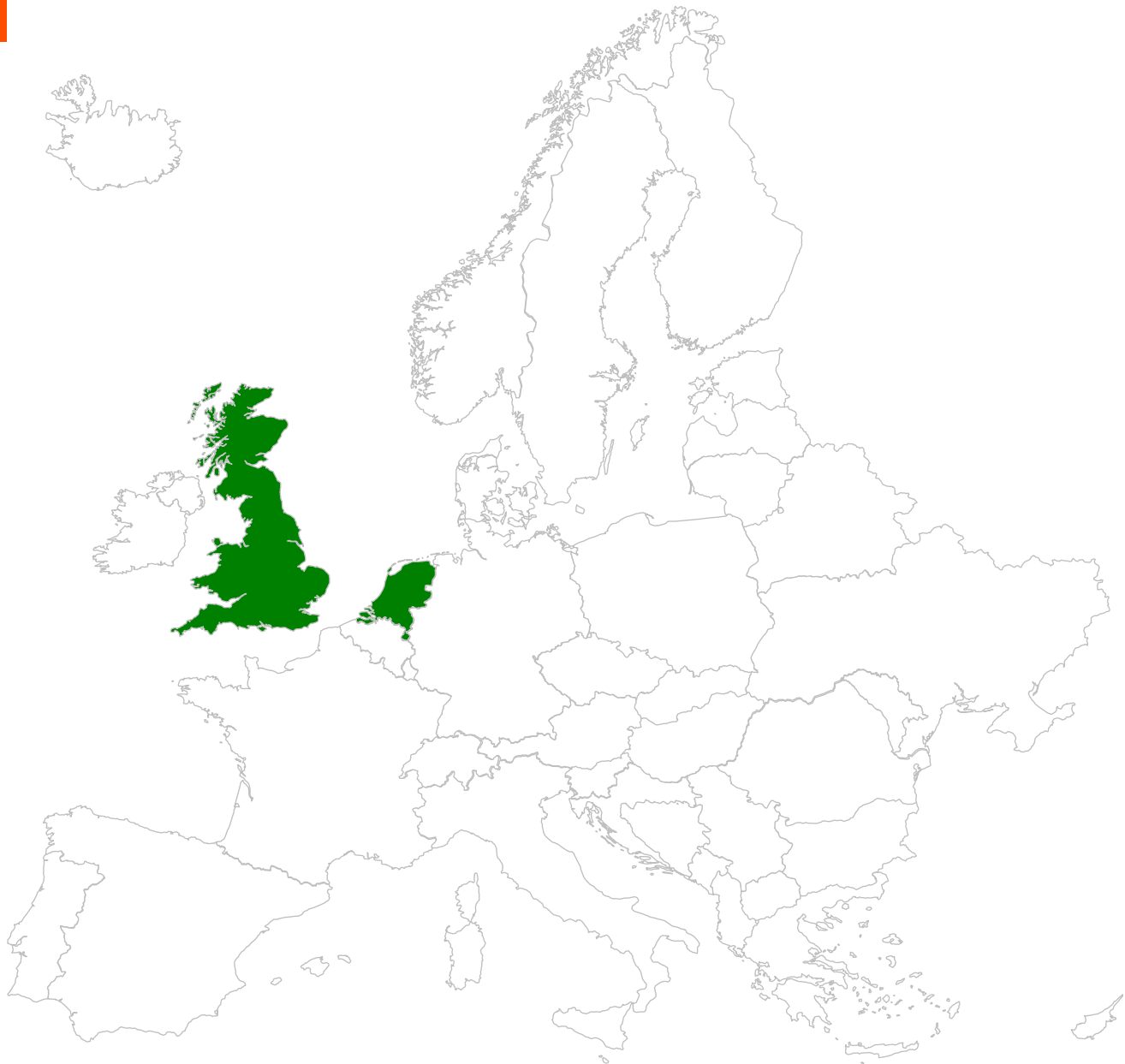
TSO's involved: Tennet GER & Energinet



Question	Exchanges for imbalance netting
Products & Models Involved	
Who participates in the cross border transaction?	TSO-TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	Frequency Restoration Reserve (Automatic)
Is there symmetry/reciprocity in the products exchanged?	Yes
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	
Are there defined cost-sharing rules in place?	
Additional information	

# Imbalance Netting Cooperation – BritNed Frequency Coupling Trial

TSO's involved: Tennet & National Grid



Question	Exchanges for imbalance netting
Products & Models Involved	
Who participates in the cross border transaction?	TSO- Interconnector Owner - TSO (power request by the reserve requesting TSO through the reserve providing TSO)
What products are used in the exchange mechanism?	N/A
Is there symmetry/reciprocity in the products exchanged?	No
Level of harmonisation	
Are the Settlement Rules harmonised?	No
Are the imbalance pricing methods harmonised?	No Harmonisation
Are other items harmonised?	No
Reserves	
Responsibility in sizing	Defined separately
Are there defined cost-sharing rules in place?	No
Additional information	