

Training Day – Module 2B Perspectives of South Caucasus Regional Electricity Market Integration

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EU4Energy Phase III – Project Overview



Funded by the
European Union

Promoting the Clean Energy Transition and Connectivity in the Eastern Partnership Countries

Funding
European Union

Implementation
4 years
2026-202G

Budget
€6 million

Geographic Coverage



Republic of
Armenia



Republic of
Azerbaijan



Georgia



Republic of
Moldova



Ukraine



Republic of
Türkiye under
Component 3

Project aims to contribute to the accelerated transition to interconnected, secure, sustainable and low-emission energy systems in the Eastern Partnership Countries

Component 1

Armenia

Fully integrated and competitive electricity sector, independent regulator

Component 2

Azerbaijan

Gradual energy market liberalisation, strengthening energy regulator capacity

Component 3

South Caucasus + Türkiye

Energy connectivity through a coordinated, collaborative and inclusive regional framework

Component 4

EaP Region

Regional energy cooperation, data-driven regulation and green education

Component 5

EaP Region

Greater regional visibility, communication and stakeholder engagement

Connectivity focus

Component 3: Improve energy connectivity and foster a coordinated, collaborative and inclusive framework in the South Caucasus, including Türkiye

Infrastructure and
Interconnectivity
Development

Market and
Regulatory
Alignment

Renewable Energy
Integration and
Flexibility

Transparency,
Information
Exchange and
Digital Resilience

Next Steps of
cooperation

Trends and Challenges in the Region

- Differences in market structures, regulatory frameworks, pricing and cross-border trading arrangements
- Growing electricity demand and increasing share of renewable energy
- Complementary but differing generation mixes and seasonal supply–demand patterns
- Ageing infrastructure and increasing need for grid modernisation
- Limited cross-border interconnection capacity and regional grid integration
- Grid congestion, insufficient flexibility, and limited cross-border balancing capabilities

Regional Power System Impacts: Reliability, Flexibility and Cost

- Higher risk of blackouts, load shedding and supply interruptions
- Reduced ability to meet peak demand and maintain system reliability
- Renewable generation curtailment and slower integration of additional renewables
- Higher balancing and overall system operating costs
- Inefficient utilisation of available generation, reserves and cross-border resources
- Reduced system flexibility, resilience and security of electricity supply

Rationale for Regional Balancing Framework



Enabling Higher RE Integration

Regional balancing framework will provide the flexibility needed to manage variability of REs and maintain system stability



Better Use of Existing Resources

Access to the pool of reserves allows systems to use available capacity more efficiently and lower the overall cost



Stronger and Smarter Grid Operations

Advanced monitoring, control and information sharing reduce congestion and improve real-time decision-making



Investments in Flexibility

Regional balancing framework will encourage investments in storage, flexible generation and demand response solutions



Shared Benefits and Lower Risks

Coordinated balancing reduces costs and minimises the risk of supply shortages and blackouts

Key Principles of the Proposed Regional Balancing Framework

**Voluntary
Participation**

**Scalable and
adaptable to future
regional market
development**

TSO-to-TSO model

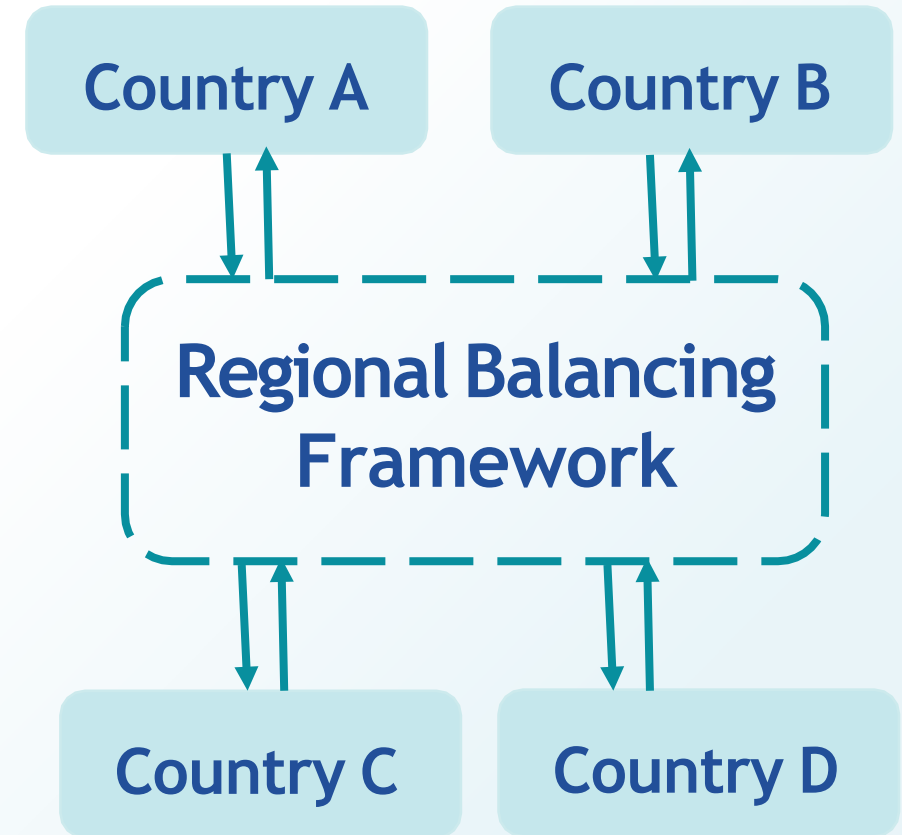
**Countries are
financially responsible
for imbalances**

**Unified principles
and standards**

**Participation in the
regional balancing
framework despite
different national
reform speeds**

**Imbalances settled
hourly**

**Phased
Development**



Readiness for Regional Balancing Framework

Factors	Current Status	Readiness
Balancing Resources Availability	Diverse generation mix offers strong regional balancing potential	 High
Regional Operational Coordination	Bilateral TSO cooperation exists, but no regional balancing mechanism	 Medium
Cross-Border Interconnection	Physical interconnections exist, but balancing access and operating arrangements vary	 Medium
Real-Time System Monitoring & Data Exchange	National system monitoring capabilities exist, but standardised real-time regional data exchange and coordinated balancing procedures are limited	 Medium
Balancing & Imbalance Settlement	National balancing arrangements exist but vary in design, settlement and maturity	 Low
Balancing Energy Pricing	No harmonised regional pricing; national pricing mechanisms differ significantly	 Low
Market & Regulatory Harmonisation	Market structures, regulatory frameworks and liberalisation levels differ significantly.	 Low



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