Presentation of the ERRA EMER COM Report (2025) **«Grid investments: Regulatory Evaluation and Incentives»**

Luca Lo Schiavo
ERRA Regulatory Specialist

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Content

- **Short history** of ERRA / EMER reports on (grid) investments
- **Survey, participation** and in-depth case studies
- **Findings and «takeaways»** /1st part: regulatory evaluation of grid plans submitted to regulators
- **Findings and «takeaways»** /2nd part: regulatory incentives for timely/efficient investment execution
- **Summary of Case studies**
- **Eight final recommendations**

EMER 2024 Report on investments

- The EMER Committees issued in May 2024 its first Report on investments

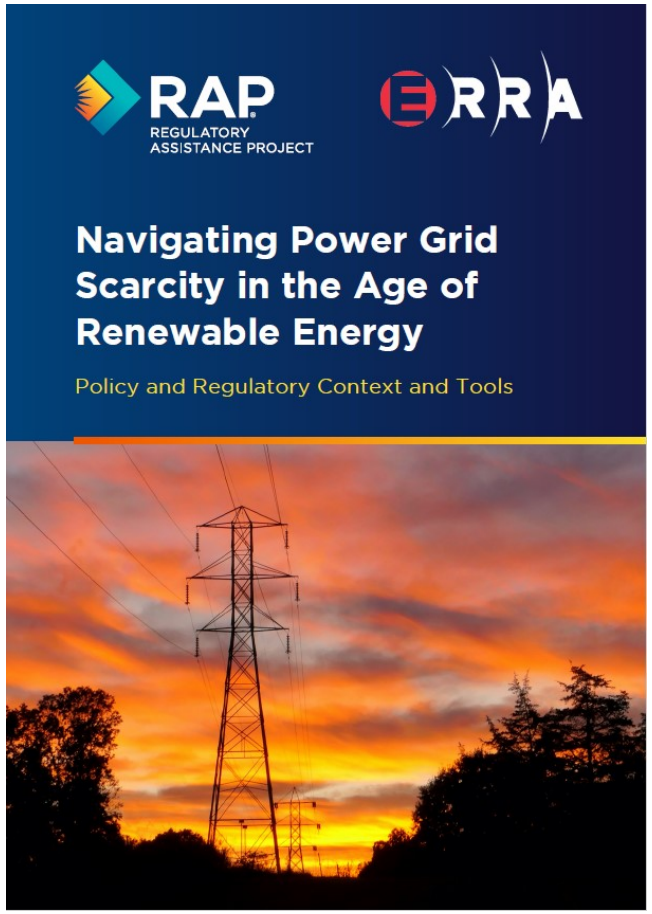
  Investment regulation evaluation, approval and risk mitigation approaches for large investment projects, obstacle to investments

- This report is available on the ERRA website
- Content: **not only grid** investments

  i. Approvals and evaluations in energy investment projects
  ii. Overlap regulatory, policy & approval
  iii. Regulation of investments in energy generation
  iv. Incentives to attract investments in energy generation
  v. Treatment and planning
  vi. Approval of investment projects and development plans
  vii. Monitoring

ERRA 2024 Report on «grid scarcity»

- *"Grids risk becoming the **weak link** of clean energy transitions"* (IEA 2023)
- As the issue becomes more apparent also among ERRA member countries, the Association issues the Study on how **grid scarcity** is perceived among ERRA regulators and how the issue can be tackled with an adequate **regulatory toolbox**
- **ERRA survey** results for 11 member countries
- **Case studies** on:
  - cable pooling in Poland,
  - grid transparency in Belgium,
  - competitive renewable energy zones in Texas.



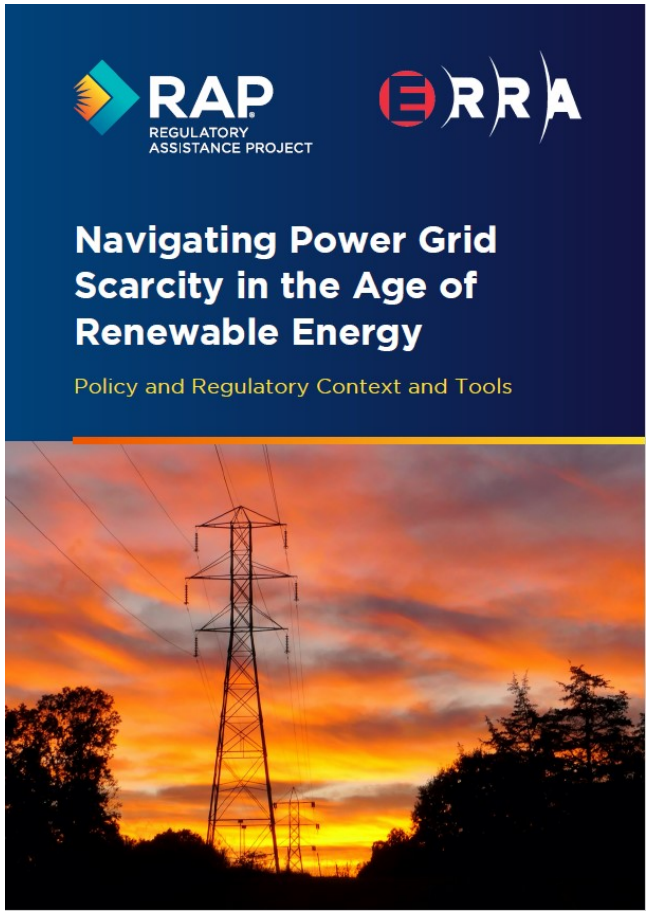
ERRA 2024 Report on «grid scarcity»

Main messages:

0. No-regret option: Make **Better Use** of Existing Grids

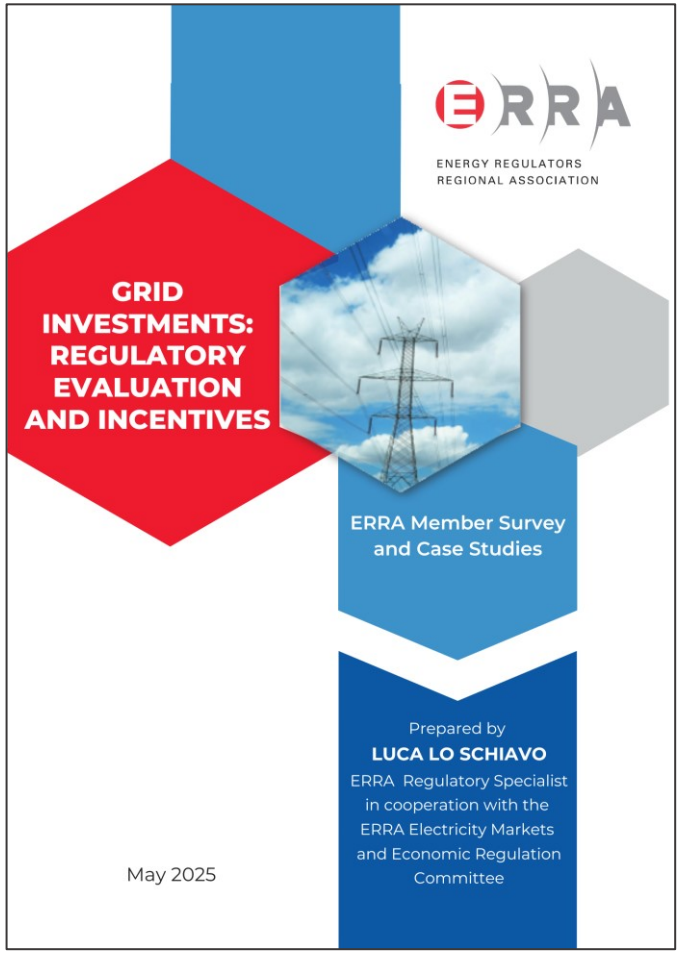
1. Comprehensive **Network Planning**

2. **Incentives** for Investment Execution



EMER 2025 Report on «grid investments»

- Focus on topic raised by grid scarcity report:
  - regulatory assessment of grid plans submitted by grid operators and **how regulators evaluate proposed investments**
  - regulatory **incentives for investments execution** (timeliness and efficiency).
- **Survey of practices** in 13 Erra Members
- Five in-depth **case studies**
  - Armenia: DSO long-term planning
  - France: incentives for timely/efficient execution (TSO)
  - Georgia: comprehensive grid plan assessment
  - North Macedonia: tariff incentives (recognition at investment approval and monitoring)
  - Rhode Island: investment approval & monitoring



Survey: two main parts

*Sections of the **«Grid plan assessment»** part of the survey*

1) **Investment evaluation process**
2) **Size threshold for evaluation**
3) **Cost benefit analysis**
4) **Scenarios and treatment of uncertainty**
5) **Stakeholder engagement**

*Sections of the **«Investment incentives»** part of the survey*

6) **Financiability of planned investments**
7) **Incentives for timeliness of execution**
8) **Incentives for efficiency of execution and other incentives**
9) **Monitoring of investment execution after their approval**

For each section a few questions (both multiple choice and open answers) have been prepared with the help of Chairs

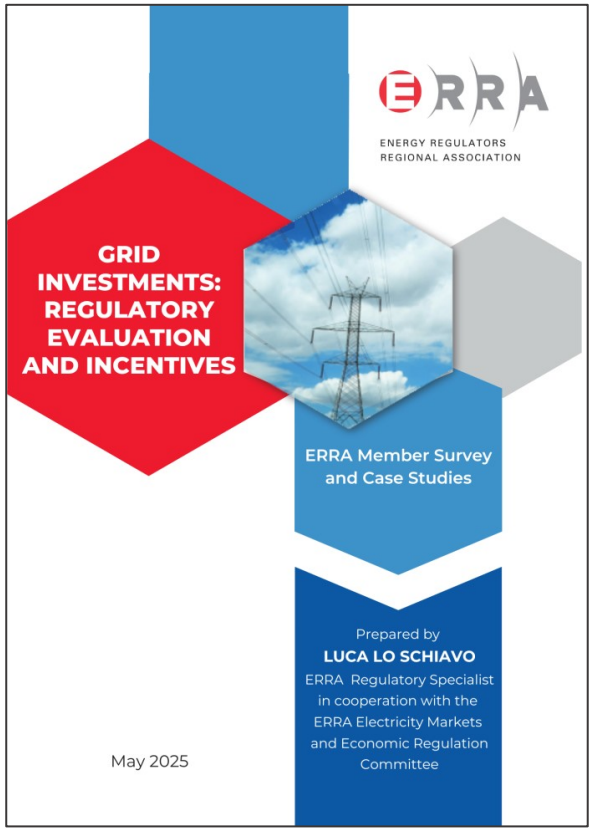
Survey and case studies participation

Regulatory Diversity survey and case studies are on both EU and non-EU countries

EU		Non-EU	
Country	**Organisation**	**Country**	**Organisation**
Austria	Energie-Control (E-Control)	**Albania**	Albanian Energy Regulatory Authority (ERE)
France	Commission de Regulation de l'Energie (CRE)	**Armenia**	Public Services Regulatory Commission (PSRC)
Hungary	Hungarian Energy and Public Utility Regulatory Authority (MEKH)	**Georgia**	Georgian Energy and Water Supply Regulatory Commission (GNERC)
Latvia	Public Utilities Commission (PUC)	**Moldova**	National Agency for Energy Regulation (ANRE)
Lithuania	National Energy Regulatory Council (NERC)	**North Macedonia**	Energy, Water Services and Municipal Waste Management Regulatory Commission (ERC)
Romania	Romanian Energy Regulatory Authority (ANRE)	**Oman**	Authority for Public Services Regulation (APSR)
		Saudi Arabia	Saudi Electricity Regulatory Authority (SERA)
		Türkiye	Energy Market Regulatory Authority (EMRA)
		Rhode Island (US)	Public Utility Commission Rhode Island (PUC-RI)

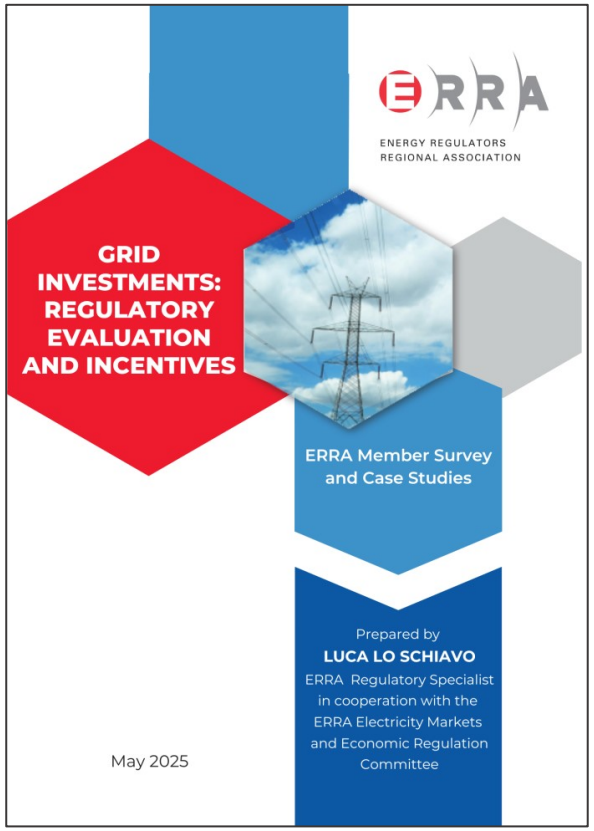
EMER 2025 Report: the context

- Electricity grids face **simultaneous challenges** of renewable integration, growing demand, and reliability requirements across both T and D levels.
- New technologies offer solutions for **optimizing existing infrastructure** while enabling DSM and RES integration.
- Regulatory frameworks must balance **enabling necessary investments** with protecting consumers from unnecessary costs.
- **Cost-benefit analysis frameworks** are evolving to capture broader economic, environmental, and social benefits.
- Effective **stakeholder engagement** throughout the planning process is recognized as essential for successful grid development.



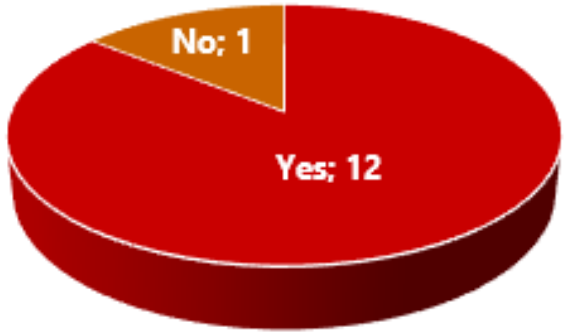
EMER 2025 Report: a reference framework

- Modern grid planning must **address both conventional infrastructure needs and emerging technological solutions** through robust yet flexible assessment frameworks.
- **Project categorization** can provide a **structured approach** to evaluating infrastructure against **appropriate criteria**.
- **Risk assessment** must now consider climate change impacts, cybersecurity threats, and technology evolution alongside traditional technical and financial risks.
- Regional coordination is essential for **cross-border projects**, requiring sophisticated frameworks for cost allocation and benefit sharing.
- **Regulatory oversight** must balance providing certainty for project developers with maintaining flexibility to adapt to **changing circumstances**.

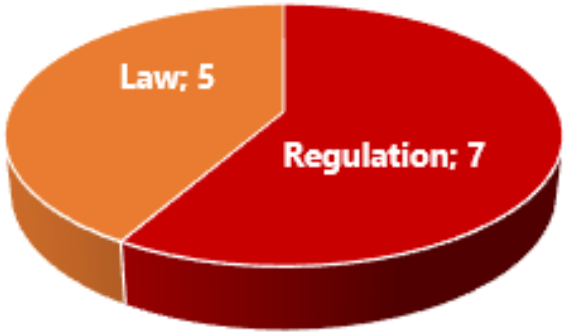


EMER 2025 Report: takeaways /1st part

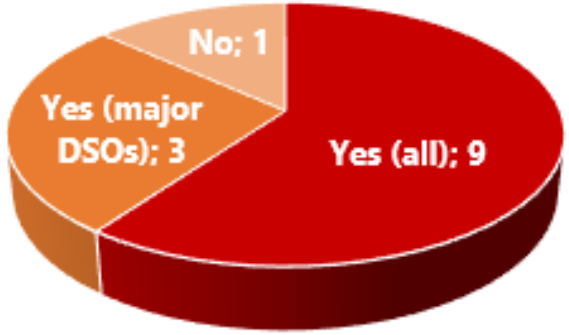
- Most jurisdictions have established well-structured, legally-based processes for evaluating grid investments
- In almost all cases (but one) of the survey sample, grid plans are also approved by the relevant regulatory authority – both at T and D level



TSO Process Formalized:



Legal Basis TSO Process:



DSO Process Formalized:

Legal Basis DSO process

EMER 2025 Report: takeaways /1st part

- Core **content requirements of grid plans** to be submitted to regulators for their assessment (infrastructure descriptions, costs, timelines) are consistent across jurisdictions, while more advanced elements (RES integration, environmental impacts) vary significantly
- **Case studies**: Armenia (see paragraph 5.1) and Georgia (see paragraph 5.3)

Overview of Template Requirements

Country	TSO Template Approved	DSO Template Approved	Template Format
Albania	No	No	Company defined
Armenia	No	No	Company defined
Austria	Yes	No	Regulator defined (TSO only)
Georgia	Yes	Yes	Regulator defined
Hungary	Yes	Yes	Regulator defined
Latvia	Yes	Yes	Regulator defined
Lithuania	Yes	Yes	Regulator defined
Moldova	Yes	Yes	Regulator defined
N. Macedonia	Yes	Yes	Regulator defined
Oman	Yes	Yes	Regulator defined
Romania	Yes	Yes	Regulator defined
Saudi Arabia	Yes	Yes	Regulator defined
Türkiye	No	Yes	Regulator defined (DSO only)
Summary	**Yes: 10/13 No: 3/13**	**Yes: 10/13 No: 3/13**	

Table 2: Regulatory templates for grid plans

EMER 2025 Report: takeaways /1st part

- **CBA implementation** varies widely, from comprehensive frameworks to ad hoc analyses, with substantial differences in **triggering thresholds**.

Country	CBA Status	Methodology Definition	Methodology Owner
Albania	Ad hoc	Not clearly defined	Network operators
Armenia	-	Not used for power grid investments	-
Austria	No CBA (*)	Used only for PCIs	Entso-e
Georgia	Yes	Regulator sets the methodology	Regulator
Hungary	No CBA (*)	Used only for PCIs	Entso-e
Latvia	No CBA (*)	Used so far only for PCIs; planned for 2025	(Regulator in the next future)
Lithuania	Yes	Regulator sets the methodology	Regulator
Moldova	Yes	Defined in regulation, according to investment categorization	Regulator
N. Macedonia	Yes	Based on project cost, but not structured method	Network operators
Oman	Yes	Requirements of CBA methodology are set by regulator	TSO proposes / regulator approves
Romania	Ad hoc	Not clearly defined	Network operators
Saudi Arabia	Ad hoc	Not clearly defined	Network operators
Türkiye	-	Not used for power grid investments	-

(*) Entso-e CBA methodology used for Projects of Common Interest (PCIs)

Table 3: Cost-benefit analysis

Country	Threshold Value	Basis
N. Macedonia	€100,000	Economic efficiency required above this threshold
Georgia	5M GEL (≈€1.7M) for TSO, 1M GEL (≈€0.33M) for DSO	Detailed analysis required above this threshold
Oman	20M Omani Rials (≈€50M) for transmission projects	This threshold applies to Project Delivery Incentive scheme
Lithuania	Electricity: €3.5 M for TSO, €1.5 M for DSO	Assessment based on project category system
Saudi Arabia	TSO/DSO conduct CBA for all projects.	Regulator review projects based on random sampling; above 500 M SAR (≈€125M) transmission projects are automatically selected
Latvia, Hungary, Austria	No threshold specified	CBA only for cross border PCIs
Romania	No threshold specified	Sample analysis of at least 20% of projects, totalling 30% of investment value
Moldova	No threshold specified	Assessment based on project category system (8 categories)
Albania	No threshold specified	Network operators perform ad hoc economic analysis
Armenia, Türkiye	No threshold specified	No CBA required for grid investments

Table 6: Thresholds for CBA

EMER 2025 Report: takeaways /1st part

- **Multiple scenario planning** and uncertainty analysis remain underdeveloped, with most countries focusing on short to medium-term horizons (3-10 years). Long-term planning still largely non practiced
- As for **sensitivity analysis**, countries commonly focus on the following parameters:
  - Demand forecasts
  - Renewable energy penetration
  - Commodity prices
  - Import/export scenarios

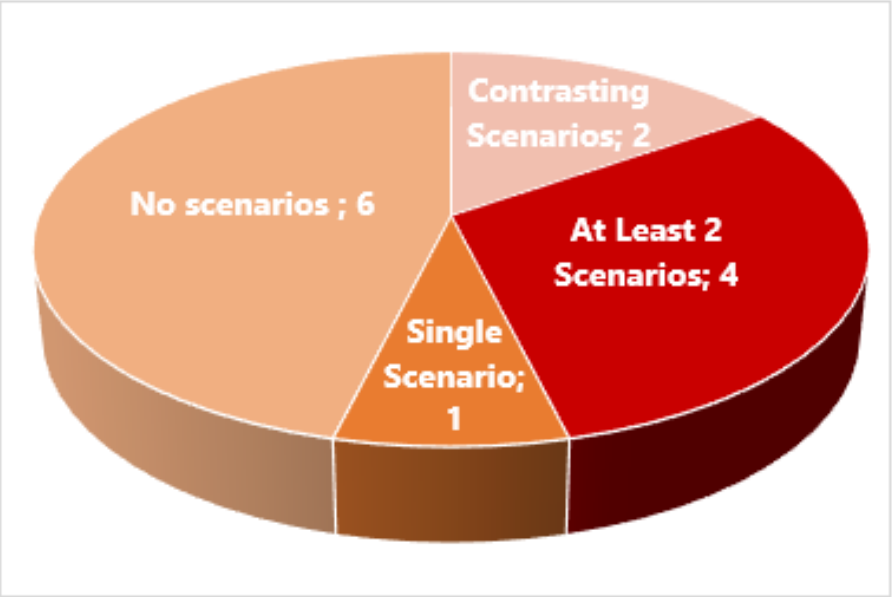


Figure 6: Use of scenarios

EMER 2025 Report: takeaways /1st part

- **Stakeholder consultation** is common practice, though duration requirements vary from 30 days to 6 months, with limited stakeholder participation frequently reported as a challenge.

Pre-consultation phase

- Publication of consultation documents in accessible formats
- Early engagement with key stakeholders such as generators, large consumers, and environmental groups
- Preparation of simplified explanatory materials for non-technical audiences

Consultation phase

- Public workshops and technical sessions
- Online consultation platforms for written submissions
- Specific engagement with affected communities and local authorities
- Expert roundtables on technical aspects

Post-consultation phase

- Publication of consultation responses
- Clear explanation of how feedback has been incorporated
- Regular updates on project progress

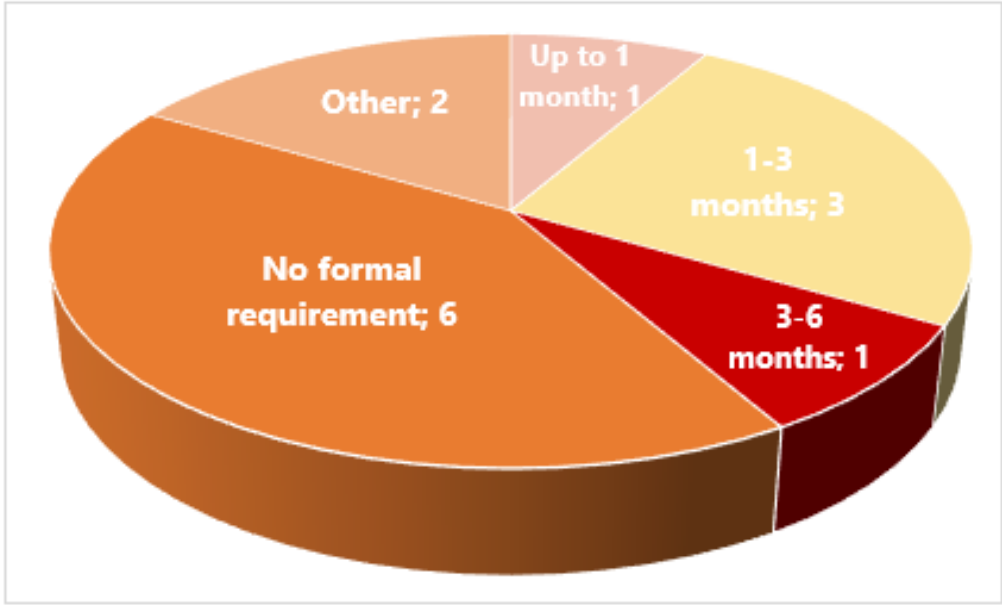


Figure 7: Duration of consultations

EMER 2025 Report: takeaways /2nd part

- **Financial viability assessment** is required by most regulators as a prerequisite for project approval, although in some cases the approval of the grid plan is fully distinct from the financial justification of investments
- Approaches to **tariff recognition** range from at-approval to at-commissioning.
- **Case studies**: North Macedonia and Rhode Island (US)

Country	Financial Substantiation Required	Type of Information Required
Albania	Yes	Feasibility studies
Armenia	No	TSO not required to demonstrate financial resources
Austria	Yes	Medium-term investment planning
Georgia	Yes	Documentation of financial sources and relevant information
Hungary	No	Approving an investment in NDP does not result in automatically approving the investment costs in tariff. TSO provides information but formal substantiation not required
Latvia	Yes	Tabular forms with sources of financing
Lithuania	Yes	Sources of financing and financial appraisal
Moldova	Yes	Sources of finance for each project
N. Macedonia	Yes	Data on planned investments with financing sources
Oman	Yes	Information provided during price control review
Romania	No	TSO provides information but formal substantiation not required
Saudi Arabia	No	TSO provides all data via a single process (Revenue Requirement Determination)
Türkiye	No	Regulators not involved with financial sources, but monitor financial ratios of network operators
SUMMARY	**Yes: 9/13** **No: 4/13**	

Table 7: Financial viability and information required

EMER 2025 Report: takeaways /2nd part

- **Advanced incentive frameworks** for timeliness and efficiency remain limited, with notable examples
- **Incentives** can be bi-lateral (bonus and penalty) or mono-lateral (penalty only; not found in the sample examples of bonus-only incentive mechanisms)
- **Case studies**: Oman's PDI scheme (see paragraph 4.2) and France's case study (see paragraph 5.2)

Country	Formalized control of timely execution	Timeliness Incentive/penalty	Efficiency control and incentive/penalty
Albania	No	No	No
Armenia	No	No	Yes
Austria	No	Yes (bonus & penalty)	Yes (standard costs)
Georgia	Yes	No	Yes (assessment system)
Hungary	Yes	No	No
Latvia	No	Yes (penalty only)	No
Lithuania	Yes	Yes (penalty only)	Yes (expert assessment)
Moldova	No	No	No
N. Macedonia	No	Yes (penalty only)	No
Oman	Yes	Yes (penalty only)	Yes (ex post assessment; possible RAB reductions)
Romania	No	No	Yes (output-based)
Saudi Arabia	Yes	No	No
Türkiye	Yes	Yes (bonus & penalty)	Yes (unit cost approach)
SUMMARY	**Yes: 6/13** **No: 7/13**	**Yes (bonus & penalty): 2/13** **Yes (only penalty): 4/13** **No: 7/13**	**Yes (various means): 6/13** **No: 7/13**

Table 9: Regulatory mechanisms for timely and efficient execution

EMER 2025 Report: takeaways /2nd part

- **Monitoring frameworks include** processes for plan amending (cost/time variation) and regular reporting requirements
- The balance between regulatory oversight and operator **flexibility remains a key challenge** in investment monitoring frameworks.

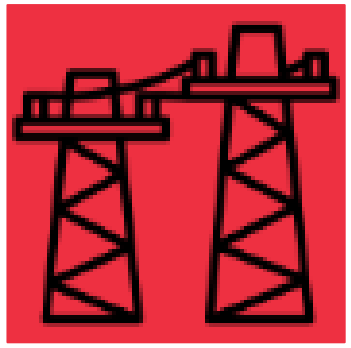
Country	Amendment Procedure	Key Features
Albania	Yes	Annual updates
Armenia	Yes	Changes to be submitted by November 1
Austria	Yes	Updates every two years
Georgia	Yes	10% value change threshold requires amendment
Hungary	No	Yearly planning is a cyclic exercise; annual NDP serves as monitoring exercise
Latvia	Yes	Evaluation for significant cost changes
Lithuania	Yes	10% cost deviation threshold
Moldova	Yes	Two amendment requests permitted annually (deadline: November 1)
N. Macedonia	No	No formal procedure reported
Oman	Yes	Internal gate process for variations. If changes are significant, TSO re-submits the project and it is reviewed by regulator
Romania	Yes	Amendments allowed until October 1; 80% of previous projects must remain
Saudi Arabia	Yes	If changes are beyond certain ranges, TSO re-submits the project and it is reviewed
Türkiye	Yes	Approval is required for budget revisions
SUMMARY	**Yes: 11** **No: 2**	

Table 10: Procedures for amending the grid plan

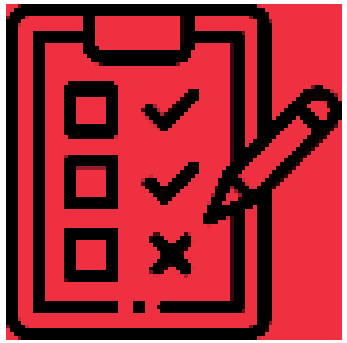
EMER 2025 Report: case studies

Country	Topic
Armenia	Regulatory mandate for DSO long term planning, resulting in progressive improvement in level of network losses and reliability
France	Incentive mechanism for Transmission investments, with milestones and sharing mechanism of saving in respect of unit cost
Georgia	Comprehensive regulatory framework for grid plan assessment at both T and D level, with project categorization
North Macedonia	Tariff recognition of investment at approval ad hoc incentive with ex-post monitoring and adjustment in case of non-execution
Rhode Island (US)	Regulatory mechanism (ISR: safety, reliability investments) allowing utilities to recover these cost without regulatory lag

EMER 2025 Report: recommendations



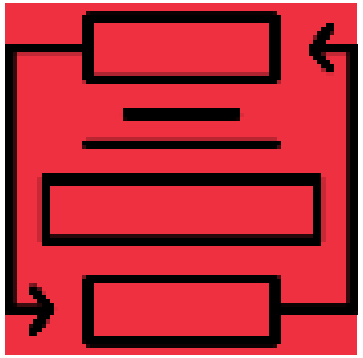
1. GRID OPTIMISATION Prioritize efficient use of existing infrastructure through Grid Enhancing Technologies (GETs) and other measures before expanding networks



2. STANDARDISED ASSESSMENT
Implement structured templates for grid plans with clear minimum requirements for both TSOs and DSOs

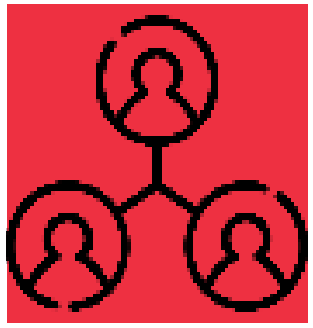
EMER 2025 Report: recommendations

3. COST-BENEFIT ANALYSIS develop proportionate CBA frameworks with appropriate thresholds and standardized methodologies for multiple benefit categories



4. SCENARIO PLANNING Enhance long-term planning with multiple scenarios to address fundamental uncertainty and cross-sectoral integration

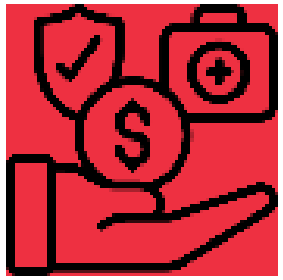
EMER 2025 Report: recommendations



5. STAKEHOLDER ENGAGEMENT Strengthen consultation processes with adequate duration and multiple engagement methods

6. INVESTMENT RECOGNITION Design tariff treatment approaches that balance risk allocation while incentivizing timely implementation

EMER 2025 Report: recommendations



7. EXECUTION INCENTIVES Implement balanced mechanisms with reasonable deadbands for timelines and reference costs for efficiency

8. MONITORING SYSTEMS Establish monitoring frameworks with clear amendment thresholds and regular reporting requirements

THANK YOU FOR YOUR ATTENTION!

luca.loschiavo@erranet.org