Charting the Course: Med-TSO Roadmap to 2030

Presentation to Stakeholders

Med-TSO
MEDITERRANEAN TRANSMISSION SYSTEM OPERATORS

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Index

Executive Summary

The Action Plan 2025-2030 is the strategic document designed to guide Med-TSO's initiatives over the next five years, building on the successful implementation of the previous Action Plan 2020-2025.

The active involvement of the Association's leaders has ensured that diverse perspectives and expertise have been integrated into the development of the Plan. In order to complement the different visions, the Secretariat has involved the Association's regional stakeholders in outlining Med-TSO's positioning and its potential mandate for the years to come.

The objective of this document is to present an overview of Med-TSO's Action Plan for 2025-2030. It aims to support the creation and exploitation of synergies among the stakeholders in light of the Association's goals for the coming years to and to provide a comprehensive framework for:

- the regional integration of electricity systems with increasing shares of renewable energy generation.
- the development of new interconnections to meet the regional energy transition goals.

The document sets forth key initiatives to support long-term planning, infrastructure development, and capacity building among Mediterranean countries, while addressing technical, regulatory and financial challenges.

It is structured to first position Med-TSO within the broader Mediterranean energy context, highlighting its strategic role in facilitating regional cooperation.

This is followed by a chapter that outlines Med-TSO's mission, vision, and strategic objectives, providing the framework for the key initiatives that represent the core of the Action Plan 2025-2030.

The Mediterranean Context: Current Developments in 2030

Energy Perspectives

The Mediterranean Region is predicted to experience a significant rise in energy demand by 2030, fuelled by a confluence of factors. Population growth is a key driver, with estimates from the **United Nations Department of Economic and Social Affairs (UNDESA)** suggesting a potential increase of up to 15% by 2030 compared to 2020. This growth is concentrated in urban areas, further straining energy infrastructure. Economic development is another significant factor. The World Bank forecasts an average GDP growth of 3% per year for the **Southern and Eastern Mediterranean (SEMED)** Region. Moreover, the Mediterranean is characterised by striking contrasts in economic and industrial development, in international coordination, and in energy sector regulation. On the energy front, Southern Mediterranean nations face a sharp increase in demand for electricity, while Northern Mediterranean countries can expect a more moderate growth underpinned by demand for electrification.

The **United Nations Framework Convention on Climate Change (UNFCCC)** reports point to the Mediterranean Basin as one of the areas most exposed to the impacts of climate change. On the other hand, the Mediterranean Region holds great potential for clean energy, which makes it capable of tackling the challenge of energy transition.

The Mediterranean Basin presents exceptional natural and geographical conditions for the development of renewable energies: its solar irradiation and wind potential are among the highest at global level and can be exploited to the benefit of the Region and of neighbouring high-demand areas, provided that the electricity grids are upgraded and fit for purpose.

Med-TSO studies have shown significant complementarities across the Region, both in generation and in load profiles, which could be leveraged through a set of new interconnections.

In addition to these characteristics, it is worth mentioning that the region is highly committed to the energy transition, given that all the Mediterranean States signed the **Paris Agreement**. EU countries are bound by European targets set out in the **European Green Deal** (55% CO_2 reduction in 2030), while MENA countries are committed in accordance with the **Nationally Determined Contributions (NDC)** outlined in the Paris Agreement or through the various agreements established under the **UN Conferences of the Parties on the Climate Change (COPs).**

The power sector is a fundamental pillar of the energy transition: the increasing energy demand should be met with the growing emphasis on clean and sustainable energy sources. Renewable energy, particularly solar and wind power, are poised for significant expansion across the Mediterranean, where RES are expected to triple by 2030. This shift reflects not only environmental concerns about climate change but also the economic competitiveness of RES.

Interconnection projects, which physically link the electricity grids of different countries, are essential to unlock the full potential of RES in the region. These projects allow for trading of electricity and for sharing electricity resources, enabling countries with abundant solar or wind generation to export surplus power to those with limited resources. The development of robust interconnection infrastructure is a key priority for the Mediterranean.

Nonetheless, the Mediterranean still suffers from a non-deployed integration potential, due to:

- the lack of a coordinated regional policy and financial framework: while the northern-shore countries are gathered under an enforcing framework defined at the EU level, in which decarbonisation targets are defined and incentive mechanisms for the development of the grids are set forth by the national regulatory authorities, the same level of integration does not exist in the South and East Mediterranean countries.
- the limited extension and non-efficient use of the electricity infrastructure: currently, among them, only two have a Southern and Eastern Mediterranean border, Türkiye and Morocco. The same weakness exists regarding the South-South interconnections.
- the lack of a harmonised regulatory framework.
- limited technological and digital integration.

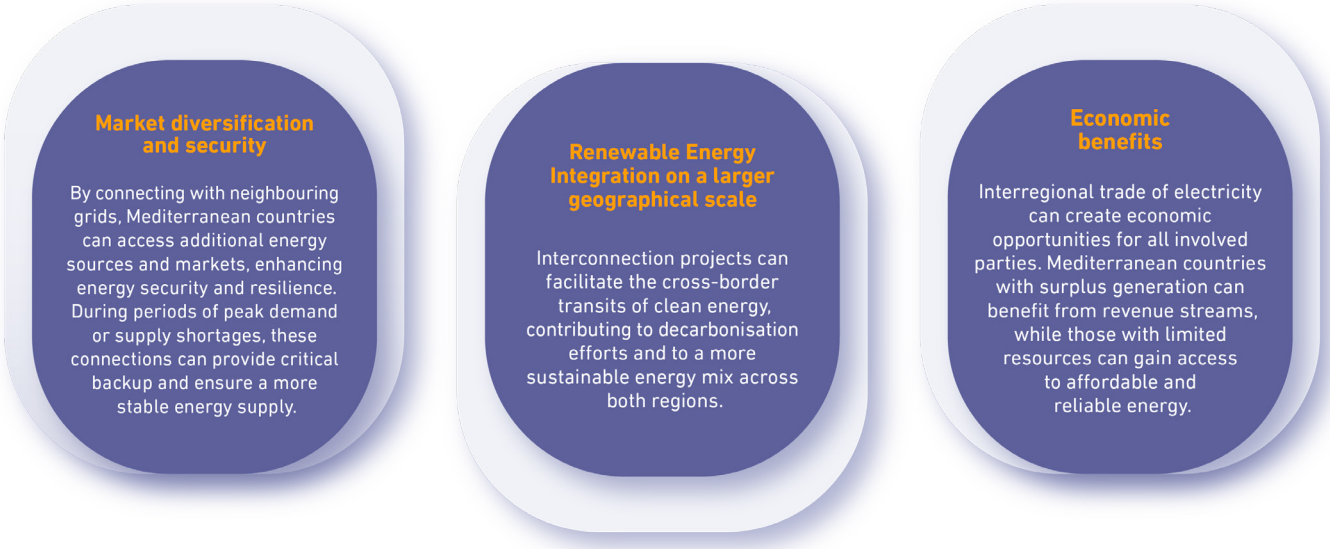
Interactions Beyond the Mediterranean: Interconnections with Neighbouring Regions

The Mediterranean Power System is not isolated and there is growing potential for interconnection projects that extend beyond the region itself, fostering electricity exchanges with neighbouring regions like the Arabian Peninsula.

A prominent example of such potential is the ongoing 3 GW Egypt-Saudi Arabia interconnection project. This project, together with the Euro-Africa interconnection (linking Egypt with Cyprus and Greece) and the GR-EGY project (linking Greece and Egypt, recently included in the list of EU Projects of Mutual Interest) will connect the european electricity network with those of the Gulf countries in the Arabian Peninsula.

Through these interconnections, mediterranean countries can achieve significant strides in energy security, market resilience, and the pursuit of a sustainable, greener energy future that aligns with both European and Regional objectives.

By fostering these interregional connections, the Mediterranean countries can unlock new opportunities for energy security, market diversification, and a cleaner energy future.



Institutional Initiatives

Recognising the interconnected nature of energy challenges, regional institutions are playing a vital role in promoting cooperation and integration. Here, we see a multi-pronged approach. Bridging these initiatives is vital in order to streamline efforts and build synergies to catalyse potential outputs.

European Commission (EC)

The EC recently presented in Brussels the 5th list of Projects of Common Interest / Projects of Mutual Interest (PCIs/PMIs), which includes key infrastructural projects considered essential for completing the European internal energy market for achieving the Union's energy and climate policy objectives. Within this list, an agreement for a €307 million grant was signed in the frame of the Connecting Europe Facility (CEF) to be allocated to the ELMED-TUNITA project. The grant agreement marks the first time the CEF finances an infrastructural project between an EU Member State and a partner country and shows the growing interest in the Mediterranean Region and its role in the energy transition.

The European Commission's renewed focus on the Mediterranean Region is evident under its current administration, which took office in 2024. Key developments include:

- Designation of a Mediterranean Commissioner: for the first time, the EC has appointed a dedicated Commissioner for the Mediterranean, underscoring a change of pace and strategic view towards the region.
- Creation of DG MENA (Directorate-General for Middle East and North Africa): this new entity is tasked with coordinating policies and initiatives to foster integration and cooperation between Europe and its Southern Neighbourhood and beyond to the Gulf Region.
- The New Pact for the Mediterranean: this strategic initiative emphasises regional integration through consistent and ambitious policies and initiatives, such as the T-MED, which focuses on boosting renewable energy deployment and clean-tech collaboration to meet climate mitigation goals in the Mediterranean.

League of Arab States (LAS)

The League of Arab States, through its Pan-Arab Electricity Market initiative, is working to establish a regional electricity market across the Arab countries. This initiative aims to promote regional energy cooperation, enhance energy security, and encourage the development of interconnected grids.

Union for the Mediterranean (UfM) and other organisations

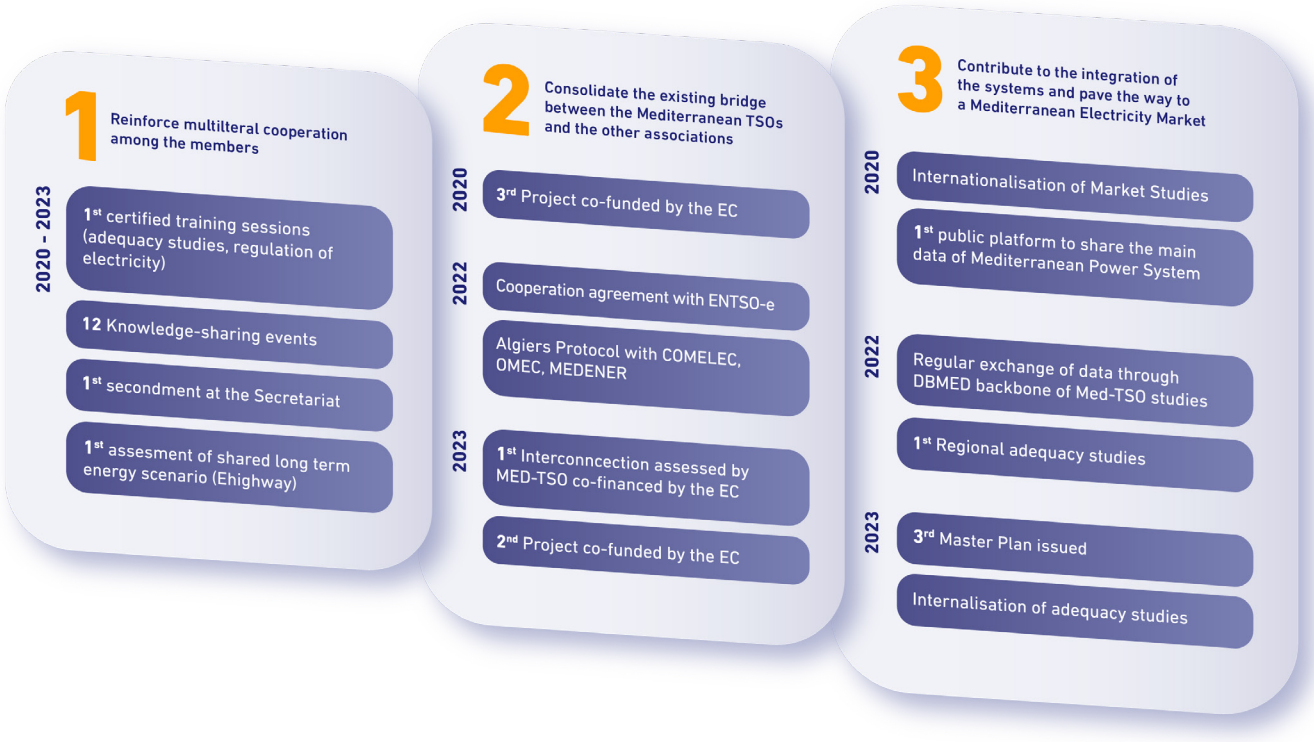
In addition to the above-mentioned efforts, UfM and other organisations are facilitating dialogue, knowledge-sharing, and joint initiatives aimed at a more sustainable and secure energy future. These efforts create a supportive environment for attracting investment and advancing the development of critical infrastructure.

Med-TSO's Positioning in the Mediterranean Context

Mission and Vision

Med-TSO is the multilateral cooperation platform of the Transmission System Operators within the Mediterranean Region, uniting a unique mix of EU and non-EU companies from three continents.

Throughout the execution of the 2020-2025 Action Plan, the Association has achieved significant results, detailed in the following image for each of the three strategic objectives outlined in the Plan.



The new Action Plan 2025-2030 builds on the Association's mission *"[…] to foster the development of an integrated, secure and sustainable regional electricity transmission grid, by supporting all the institutional initiatives aiming at facilitating the creation of a Mediterranean energy market."*

It also embodies Med-TSO's vision, *"to be a professional and strategic reference body for every technical, market and policy issue related to the Mediterranean electricity system: a competent and proactive guide for European and Mediterranean institutions and stakeholders."*

The aim of this renewed strategy is to reaffirm Med-TSO's mission and vision, aligning them with the evolving energy landscape and with the role the Association will play in the coming years.

Transmission System Operators at the Heart of the Energy Transition

Med-TSO Members have identified a spectrum of challenges posed by the ongoing energy transition, significantly impacting the activity of the Transmission System Operators (TSOs) in the region.

The massive integration of Renewable Energy Sources (RES), expected to triple by 2030, emerges as a central challenge, requiring huge efforts to maintain system stability. In addition, resilience to climate-related risks, cybersecurity threats and geopolitical instability will be paramount for maintaining the reliability and security of the energy system during the transition. Weak interconnection development due to lack of investments, funding uncertainties and public acceptance, represents a major challenge to be addressed, also considering the development of third-party cross-border projects, where relevant.

The integration of various sectors and the new uses of electricity increase this complexity, demanding a comprehensive approach that considers these factors when building realistic long-term scenarios that can be understood and endorsed by all relevant stakeholders.
The overarching concern of overall costs, coupled with the critical issue of cost allocation amidst the transition and evolving regulations, poses the pressing question of how to finance the transition.

Med-TSO acknowledges these challenges as pivotal driving points, urging concerted efforts from its Members to navigate the evolving TSO business environment amidst the global energy transition.

Med-TSO and its Stakeholders in the Mediterranean Context

In defining the strategic action plan, Med-TSO has implemented a comprehensive stakeholder engagement strategy.

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Recognising the dynamic landscape of the Mediterranean Region and the evolving energy sector, consultations included key institutional and technical stakeholders.

This effort aimed to discern the challenges that impede electrical infrastructure integration and to identify strategic actions to be prioritised in the period from 2025 to 2030.

The following stakeholders were engaged in the preparation of the Action Plan 2025-30:

European Commission

DG ENERGY and DG MENA

Energy Division of the League of Arab States

omec
Organisation Méditerranéenne de l'Energie et du Climat

entsoe

RCREEE
Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

MED ENER

MEDREG

These stakeholders, who all play significant roles in shaping energy policy and infrastructure, provided critical insights to identifying challenges and opportunities in the Mediterranean electricity sector.

Stakeholders highlighted several primary and secondary challenges that Med-TSO should address.

Primary Challenges

- Current non-harmonised regulatory frameworks for the electricity sector
- Lack of coordination of the institutional initiatives
- Insufficient understanding of integration benefits
- Reluctance to develop national and regional markets
- Political and economic instability

Secondary Challenges

- Business and investment climate
- Infrastructure disparities and insufficient cross-border connections

Med-TSO recognises the interdependence of these challenges and is committed, together with the regional stakeholders, to implement and support targeted strategies that foster regulatory cohesion, promote collaboration, and create a stable environment for investment, ultimately driving the integration of the Mediterranean electrical infrastructure. In practical terms, this intention translates into:

- The organisation of capacity-building programmes
- Active participation and organisation of events to foster dialogue in the region.

The Association is currently recognised for its operational role, its competence and its potential as an enabler for the energy transition in the Mediterranean countries.

Stakeholders suggested that the Association focus on the following initiatives and actions:

- Support policy prioritisation, by engaging in advocacy actions with policymakers.
- Actively involve financial institutions, development banks, and private investors.
- Expand the current regional focus to connected neighbouring regions.

Taking into consideration the market, institutional and geographical contexts, Med-TSO is called by its Members and by the regional stakeholders to activate the following priority actions.

1 Collaborative Integration Initiatives

Reinforce Med-TSO as a collaborative hub, fostering dialogue and partnerships to overcome geopolitical challenges and promote an integrated electrical infrastructure.

2 Regulatory Harmonisation

Work closely with MEDREG, European Commission and League of Arab States to drive the harmonisation of regulatory frameworks, ensuring a conducive environment for cross-border energy trade.

3 Investment Promotion

Advocate for increase investment from both regional and international sources, focusing on bankable energy infrastructure projects that enhance connectivity and mobilise the necessary private investments in the region.

4 Knowledge Sharing and Capacity Building

Launch initiatives for knowledge-sharing, capacity-building, and training programmes, aligning with stakeholder priorities and the goal to create a skilled workforce.

5 Public and Stakeholder Engagement

Through proactive communication strategies, Med-TSO aims to build broad-based public support and raise awareness of the regional energy integration vision, thereby fostering community trust and cooperation.

Med-TSO for its Members

Association Members have highlighted national priorities and challenges that Med-TSO could support in addressing.

Key points include:

- The need to consider also connected neighbouring regions (especially the Gulf countries) in the studies through a closer cooperation, including potential membership for relevant TSOs.
- Difficulty that some Members face in developing long-term national scenarios, due to unclear targets and lack of relevant data.
- Development of interconnections as a crucial tool for ensuring energy supply security and reducing renewable energy sources (RES) curtailment.
- Importance of enhancing energy system flexibility and addressing technical challenges, such as high losses and voltage fluctuations.
- The need to understand impact and actions required to comply with the new EC's Carbon Border Adjustment Mechanism (CBAM) regulation.

In addressing these priorities, Med-TSO could play a pivotal role, by promoting capacity-building programmes, facilitating knowledge sharing, and assisting non-EU members in managing the CBAM regulation. Additionally, Med-TSO can advocate for interconnection development, support flexibility assessments, and promote interoperability among Mediterranean power systems, while also considering extending its regional scope to the connected neighbouring regions.

Sharing best practices and resilience studies for cybersecurity threats and providing assistance in implementing projects aligning with national priorities are further roles that Med-TSO could assume.

The 2030 Mandate for the Association: Strategic Objectives

The mandate for the Association, as identified by the Members and confirmed by the stakeholders' feedback, is to support real energy transition in the Mediterranean Region and in neighbouring connected regions.

In order to fulfil this mandate, the Association should focus the 2025-30 period on achieving three strategic objectives to be divided into five different work-streams of activity.

Med-TSO 2025-30 Strategic Objectives

5 work-streams

Long-Term Planning Studies

1

Preparation for Massive RES Integration

2

3

Promoting Power System Integration

4

Enhancing Data and Knowledge Sharing

5

Enhancing Med-TSO's Positioning

Strategic Objective 1

Enhancing Interconnections

Med-TSO aims to support infrastructure development by identifying critical interconnection projects that facilitate electricity exchange among Member Countries. For example, the **Mediterranean Planning Studies** will produce a Masterplan for medium- and long-term interconnections. By leveraging harmonised methodologies and stakeholder collaboration, Med-TSO seeks to improve cross-border energy trade, reduce RES curtailment, and strengthen energy security.

Addressed in work-stream 1

Strategic Objective 2

Preparing for Massive RES Integration

As renewable energy sources (RES) are set to triple in the region by 2030, **Med-TSO's initiatives** play a critical role. By focusing on technical requirements, market design, and power system organisation, Med-TSO will enable Members to adapt their systems to the complexities of high-RES penetration. This includes integrating advanced forecasting tools and flexibility measures like energy storage systems and demand-side management.

Addressed in work-streams 2, 3

Strategic Objective 3

Strengthening Collaboration

To address the dynamic challenges of the energy transition, Med-TSO emphasises collaboration among policymakers, TSOs, regulators, and other stakeholders. **Capacity-building programmes** and **advocacy actions** aim to harmonise regulations, share knowledge, and foster a collective vision for the Mediterranean energy sector. Examples include workshops on regulatory harmonisation and joint advocacy campaigns for infrastructure investment.

Addressed in work-streams 4, 5

Action Plan 2025-2030: Key Initiatives and Potential Initiatives with stakeholders

The Med-TSO Action Plan 2025-2030 is structured around five key work-streams, each addressing specific challenges and opportunities in the Mediterranean energy transition.

For each work-stream, the plan has identified possible synergies with the regional stakeholders. In fact, these work-streams are designed to foster collaboration by pooling the different experiences, objectives and knowledge with the aim to support the integration of the Region.

1 Long-Term Planning Studies

This work-stream ensures the development of robust planning frameworks for the mediterranean energy grid. Key reports like the **Mediterranean Masterplan of Interconnections** will guide the alignment of national development plans with regional priorities. Additionally, the analysis of third-party projects will provide insights into external investments, while far-reaching long-term scenarios will forecast energy needs and integration strategies up to 2050.

To ensure the development of robust planning frameworks for the mediterranean energy grid, Med-TSO relies on strategic collaborations with technical associations and institutional stakeholders. Med-TSO collaborates with **ENTSO-E, OMEC, RCREE,** and **MEDENER** to align energy scenarios, share methodologies, and develop planning frameworks. These partnerships enable robust infrastructure planning and integration of renewable energy. Institutionally, Med-TSO serves as a technical advisor to assess the necessary investments and measures for integrating the two shores of the Mediterranean, playing a crucial role to the **European Commission** for assessing cross-border projects. The coordination with the **League of Arab States (LAS)** further expands the regional focus of planning studies by aligning with the **Pan-Arab Electricity Market (PAEM)** and leveraging consolidated methodologies for regional integration studies.

2 Preparation for Massive RES Integration

Addressing the challenges of integrating massive RES, this work stream focuses on technical and organisational solutions. For instance, the Technical Requirements Guide will outline standards for grid stability and forecasting, while studies on market dynamics will explore pricing mechanisms and incentives that support RES deployment. Case studies from other regions with high-RES penetration will provide valuable insights.

To address these challenges, collaboration with regional technical associations, international organisations, and policymakers is of paramount importance. Partnerships with RCREE and MEDENER, representing renewable energy agencies, provide platforms for data sharing, energy planning, and modern power technology exchanges. These collaborations foster the development of effective market mechanisms and grid management practices to accommodate high levels of RES integration.

Cooperation with MEDREG is equally important, as its focus on harmonising regulatory frameworks ensures fair access to energy markets and facilitates the cross-border integration of RES. Joint workshops and guidelines for grid codes create a unified approach to overcoming regulatory challenges, such as balancing costs and incentivising energy storage solutions.

Cooperation with the EC is essential to support these efforts, by aligning regulatory frameworks and promoting funding opportunities for RES-related infrastructure, emphasising the Mediterranean's crucial role in achieving the EU's climate targets.

3 Promoting Power System Integration

This work-stream targets the creation of **Interconnected Electricity Exchange Zones (IEEZs)** and the enhancement of communication protocols among **Supervisory Control and Data Acquisition (SCADAs)** and dispatch centres. These efforts aim to optimise the use of existing infrastructure, improve system resilience, and prepare the region for future integration scenarios. Adequacy studies will complement these endeavours by assessing supply-demand balances across different timeframes.

Collaborations with MEDREG are critical for developing regulatory frameworks and market rules that ensure fair access and reliable system operations. Additionally, it would be important to organise joint capacity-building initiatives addressed to policymakers and stakeholders on the adjustments needed for integrated electricity markets, aligning efforts with institutional priorities like the PAEM.

ENTSO-E's expertise in adequacy studies and real-time system coordination provides valuable insights into grid operations and data transparency. Shared methodologies and tools for adequacy studies enhance Med-TSO's ability to predict supply-demand balances and promote seamless cross-border coordination. Furthermore, joint efforts to establish a real-time data-sharing platform strengthen transparency and improve the resilience of interconnected grids.

Institutionally, the European Commission and LAS play crucial roles in addressing barriers to power system integration. The EC's influence facilitates consensus among Mediterranean countries, while with LAS the synergies between IEEZs and the Pathfinders projects is evident.

4 Enhancing Data and Knowledge Sharing

Data transparency and knowledge sharing are crucial for regional collaboration. By enhancing its centralised Mediterranean database and organising training programmes, Med-TSO will equip stakeholders with the tools needed to navigate the energy transition. Collaboration with academic institutions and industry experts will further enrich these initiatives.

ENTSO-E's extensive experience in managing data platforms and cybersecurity standards provides Med-TSO with the tools to upgrade its existing infrastructure. These enhancements ensure robust data-sharing systems that meet current and future regional needs while safeguarding against cyber risks.

Collaborations with RCREE, MEDENER, OMEC, and MEDREG promote the exchange of technical expertise, methodologies, and best practices. Joint knowledge-sharing programmes and capacity-building initiatives target both public and private stakeholders, equipping them with the skills to navigate energy transition challenges.

International organisations like the European Commission and LAS help address regulatory barriers to data exchange. The EC's promotion of regulatory convergence ensures a unified approach across Mediterranean countries, while LAS facilitates alignment with the Pan-Arab Electricity Market's goals. Together, these efforts foster operational knowledge-sharing and strengthen cross-border cooperation for a more integrated

5 Enhancing Med-TSO's Positioning

To strengthen its role as a regional leader, Med-TSO will focus on advocacy, member support, and strategic communication. Roadshows, technical articles, and partnerships with academic institutions will amplify the Association's visibility, while tailored support programmes will address the unique needs of its members. By partnering with regional stakeholders, Med-TSO can develop joint campaigns that promote the integration of power systems across the Mediterranean. These campaigns aim to highlight the economic, environmental, and social benefits of integration, supporting national and regional institutions in addressing the barriers that hinder progress.

Conclusions

The Action Plan 2025-2030 represents Med-TSO' a commitment towards the energy transition in the Mediterranean Region, underscoring the necessity for collaboration, innovation, and a strategic vision that leverages cooperation with stakeholders to support institutional initiatives.

Through its structured work-streams and actionable objectives, the plan not only addresses the immediate challenges of renewable energy integration, regulatory harmonisation and infrastructure development, but also positions Med-TSO as a key enabler in the regional and interregional energy landscape.

As the Mediterranean strives to balance growing energy demand with sustainability goals, Med-TSO's initiatives provide a comprehensive framework for fostering regional cooperation, enhancing energy security, and advancing decarbonisation. By leveraging synergies with technical associations, institutional stakeholders, and global organisations, Med-TSO aims to overcome regulatory, financial, and technological barriers, paving the way for a resilient and interconnected region in the future.

The commitment to long-term planning, capacity building, and knowledge sharing ensures that Med-TSO will continue to be a cornerstone for strategic energy initiatives in the Mediterranean. The Association's focus on inclusivity and adaptability enables it to support its members and stakeholders effectively, aligning with global energy objectives while addressing local and regional priorities.

In conclusion, the Action Plan 2025-2030 not only reaffirms Med-TSO's mission and vision but also sets the stage for transformative change. It calls for integrated efforts across all levels—technical, regulatory, and institutional—to achieve a secure, sustainable, and integrated Mediterranean energy market. As the region embraces this ambitious plan, the collective actions of Med-TSO and its partners will undoubtedly drive meaningful progress toward a greener and more resilient energy future.

Med-TSO is the Association of the Mediterranean Transmission System Operators (TSOs) for electricity, operating the High Voltage Transmission Networks of 20 Mediterranean Countries.

It was established on 19 April 2012 in Rome as a technical platform that, using multilateral cooperation as a strategy of regional development, could facilitate the integration of the Mediterranean Power Systems and foster Security and Socio–economic Development in the Region.

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