

Identification and Quantification of Long-Term Sectoral Perspectives in Mediterranean Region

Executive Summary



GRANT CONTRACT - EXTERNAL ACTIONS OF THE EUROPEAN UNION - ENI/2020/417-547

TASK 1 *Update of the Mediterranean Master Plan and improvement of methodologies for its delivery*

Activity 1.3 *Med-TSO Very Long-Term Scenario*

Deliverable 1.3 *Med-TSO Very Long-Term Scenario*



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Disclaimer

Please note that the five parts that compose the report Med-TSO Very Long-Term Scenario reflect the findings of a benchmark and literature review conducted by our consultant independently of Med-TSO and its members. We would like to emphasize that the opinions and views expressed in these reports are solely those of the consultant and do not necessarily represent the views of Med-TSO or its members.

1 Introduction

TEASIMED (“Towards an Efficient, Adequate, Sustainable and Interconnected **MED**iterranean electricity system”) is the third project developed by Med-TSO with the co-financing support of the European Commission, following the Mediterranean Project I (2015-2018) and the Mediterranean Project II (2018-2020). One of the main streams of activity undertaken in the frame of TEASIMED is the **update of the Mediterranean Masterplan (MMP), i.e., the multi-annual HV Transmission Network Development plan and improvement of methodologies for its delivery** which consists in developing long-term frameworks by seeking regional coherence.

2 Background

More than ever, the energy sector observers are fully aware of an ongoing transition that will profoundly reshape the evolution of human activities for decades. This transition is of course forced by the obligation to act for climate change mitigation, but it is also largely the consequence of major technological developments and the generally declining perspectives on fossil fuels production.

Many countries in the Mediterranean basin have been experiencing average yearly growth rates in their electricity consumption from 4 to 7% over the last decade. These high growth rates (which can be equivalent to doubling the demand every 10 to 15 years) were generally experienced by Western European countries until the 1990s and are closely linked to economic growth, as a result of the diffusion of electricity end uses in the residential sector, in the development of the industry, and even in the tertiary sector.

Although the prolongation of recent trends can represent a practical and relevant method for forecasting the Power System evolution at a time horizon of 5 to 10 years, this approach cannot be adopted for longer time horizons. This is particularly true in these years, characterized by the need to electrify sectors that were traditionally based on other energy sources (e.g., fossil fuels) and also by the development of new technology-driven electricity usages (e.g. Electric Vehicles).

Moreover, some key technologies may significantly impact the electricity demand in the future, especially on the long term. Electric vehicles, hydrogen generation as well as other applications such as digital technologies and digitalization may have broad impacts on how people and industries use electricity. These technologies will also likely see different penetration levels across the countries, due to the variability of geographic, cultural, and political conditions. For

example, the penetration of EVs is currently showing very different levels across countries, mostly due to existing incentives and the deployment of charging infrastructure.

Therefore, historical trends cannot consider these “rupture” factors, and, furthermore, the simple transposition of the development trajectories followed by the more mature Mediterranean countries to the evolving ones in the region may not be right.

The Mediterranean is at the crossroads of this transition as it brings together in a tight space all the players in this new global game, from the countries of North Africa and the Middle East, producers of hydrocarbons but as rich in renewable resources as nature may offer without limits, and a rich but energy-dependent Europe, with a powerful industry to be reinvented, all people sharing hope for peace and well-balanced relations.

3 Scope of the work

Within Med-TSO, the Technical Committee Economic Studies & Scenario (TC ESS) is in charge of defining and building scenarios for the development of the Mediterranean Power System, as a reference framework for the implementation of the Mediterranean Master Plan. This activity is carried out in a context of uncertainty, which is normally inherent to any long-term projection, increased by changes required by the energy transition. The general organization of the activity is based on a bottom-up approach, meaning that all the members of TC ESS work together to define the scenarios, based on data collected by the members, each of them responsible for its own country; this procedure ensures an overall consistency of the process.

For the preparation of scenarios at 2040 and beyond, TC ESS highlighted mainly due to lack of common vision for the countries in the south, uncertainties for some factors (such as EVs and Hydrogen) are significantly high and are not depending on TSOs only. The association decided to implement the activity 1.3 “Med-TSO Very Long-Term Scenario” as a support to all the members having as objective to explore how various factors can affect the evolution of the national electricity systems in the Mediterranean region by 2040, covering economic and demographic, technological, societal, governance and energy policy aspects.

The work was performed by a consortium led by ENERDATA in strict collaboration with a dedicated Taskforce (E-highway) and TCESS members.

Objective was to produce five different parts focusing each at one of the topics below:

- 1. *Electric mobility development and impact, both in terms of energy & peak demand.***
- 2. *Power-to-gas perspectives (focus on hydrogen production).***
- 3. *New energy usages (e.g., desalination, data centers, industries, etc.).***
- 4. *Economy Demography Industry and Energy efficiency improvement.***
- 5. *New storage technologies, development perspectives and price evolution.***

The reporting of the works is split into two groups of countries as following:

- MENA countries: Morocco, Algeria, Tunisia, Libya, Egypt, Jordan, Palestine, Israel, Lebanon, Syria, and Türkiye.
- European countries: Portugal, Spain, France, Italy, Slovenia, Croatia, Montenegro, Albania, Greece, and Cyprus.

The methodological approach and the main tasks for each report can be summarised as shown in Figure 1.

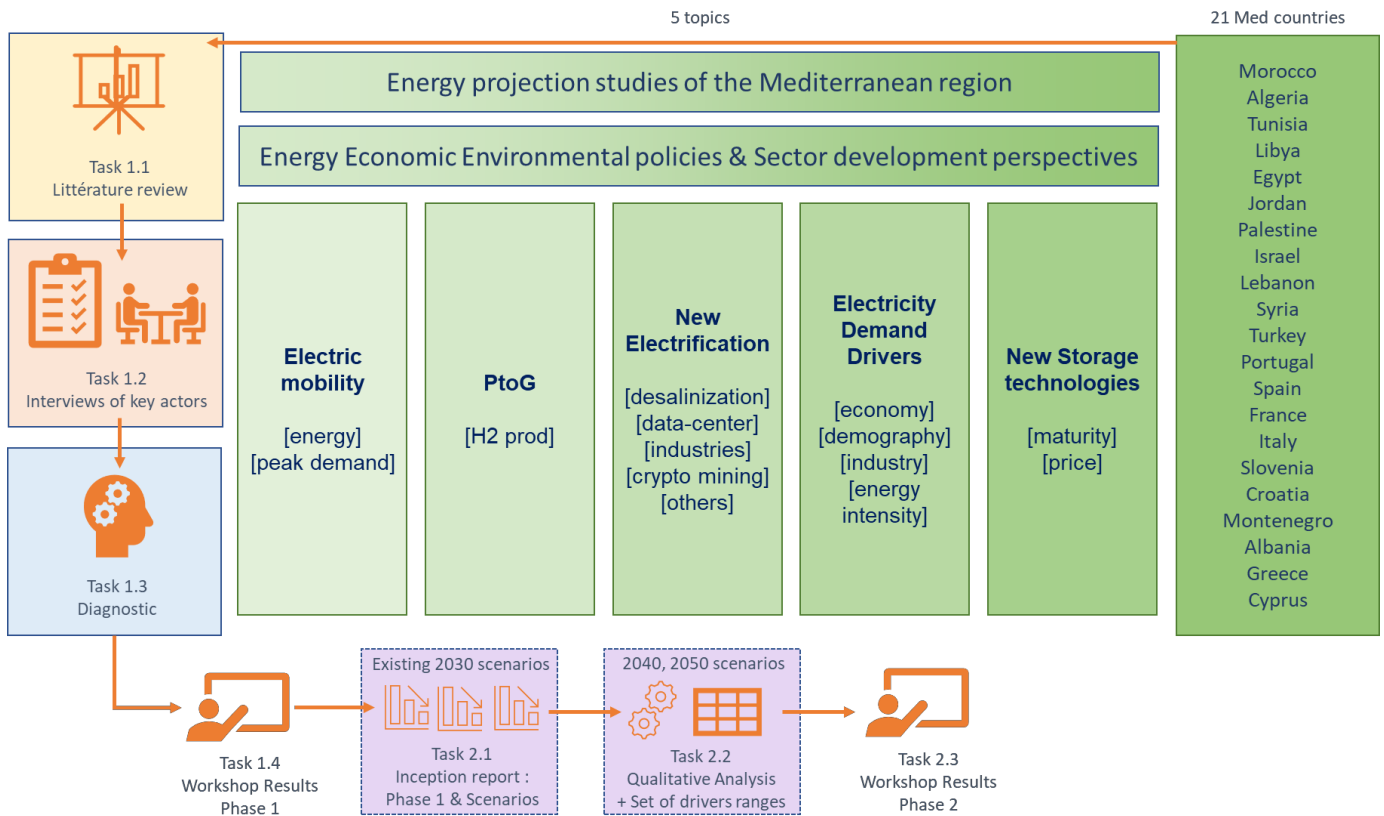


Figure 1 Schematic representation of the project steps

For each of the five topics, and for every Med-TSO member country, the following steps were implemented:

1. Literature review

The overall goal of this step consists in gathering sources of information and data for each country, Special attention is paid to distinguish strong trends (trends that are strong and/or have been present for many years and seem to be established) from weak trends or factors that could lead to disruption (technological, regulatory, economic, etc.) in the future.

2. Interviews of key actors

The purpose of the interviews step is to verify and complete the understanding of the phenomena or to request additional information, but also to look for reliable sources of information for country that are poorly documented.

3. Diagnostic & Report

The objective of this task is to identify the main drivers of each country, summarizing the main trends identified for each group of drivers based on the quantitative and qualitative data collected when available.



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