

Towards a common playground for Mediterranean Power System integration

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PURPOSE OF THE ACTIVITY AND LESSONS LEARNT

One of the main areas of activity carried out by Med-TSO in the TEASIMED project explores the proposal of Grid Code Guidelines for the key areas of convergence required for efficient and secure operation of interconnected power systems.

Throughout the performed analyses and the interactions with our regional stakeholders, several interesting lessons were learnt and barriers that are hindering the regional integration became evident.

It is clear that not every member TSO of Med-TSO has the same objective when discussing regional integration. This is, however not a disadvantage. Collaboration can very well exist between various regulatory frameworks. It is nonetheless necessary to acknowledge that various objectives exist in the light of this report on developing Grid Code Guidelines.

It is important to note that the development of Grid Code Guidelines in of itself is not the end goal. The guidelines constitute on of the building blocks needed for further integration in the Mediterranean Region. The current lack of a common regulatory framework is, in the opinion of most interviewed stakeholders, not identified as bottleneck of the further development of the region.

The main driver for further regional integration of the electricity sectors is the institutional buy-in. **Support from the political or institutional level is key for conducting projects.** Some form of agreement is needed between the decision/policy makers, justifying the investments. A regulatory framework can take many formats (e.g., a bilateral agreement, a memorandum of understanding, some kind of regional framework...), and will be decided on a case-by-case-basis.

The further development and integration of the electricity sector in the Mediterranean Region, will foster further geopolitical stability, as reliable electricity supply is an important economic driver.



Figure 1. Bricks for the Power Systems integration

SURVEY DIAGNOSIS AND INTERVIEWS

The previous projects carried out by Med-TSO in the 2015-2020 period (Mediterranean Projects I and II) laid the foundations for the development of a common framework for the harmonization of rules in the Mediterranean Region. Thirty-four aspects were identified in the so-called “Common Target Regulatory Framework” (CTRF) developed at that time, whose main outcomes are shown in Figure 2.

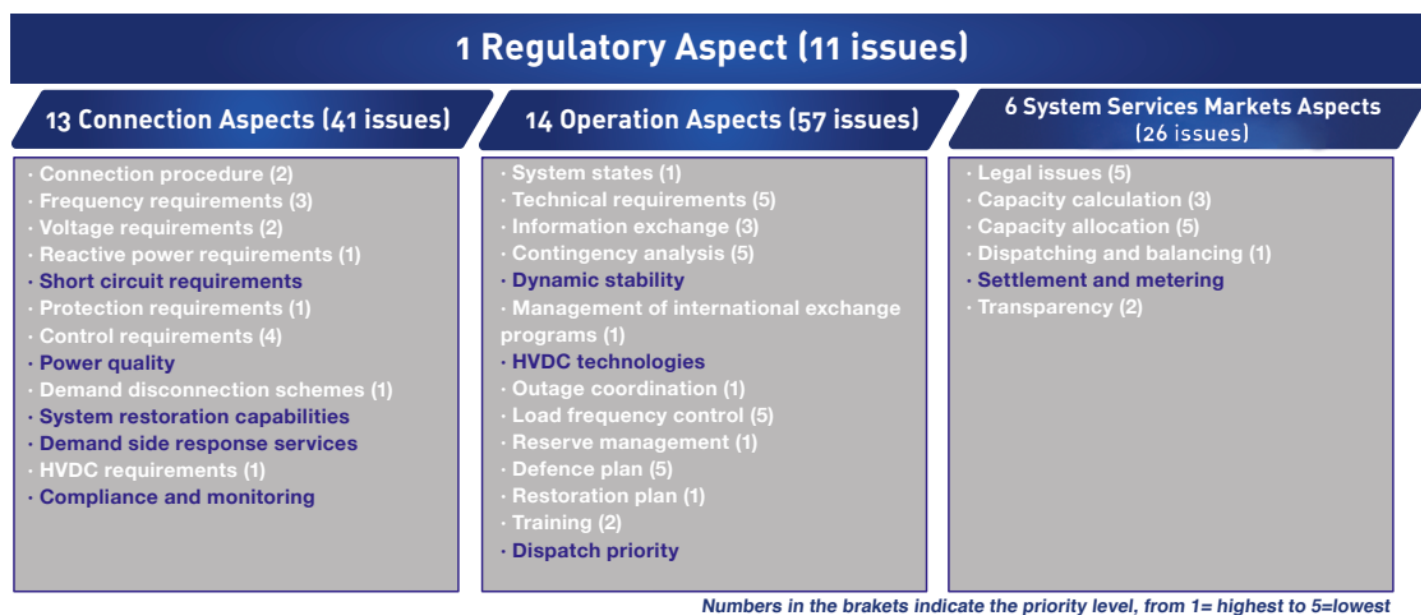


Figure 2. Priority Areas of the CTRF

In line with the previous work – which relied mainly on contributions from the TSOs – , a survey was launched, targeted to the various regional stakeholders in the electricity sector (governments/institutions, TSOs, Regulators, DSOs, developers...) to confirm that the proposed CTRF is representative of all the involved points of view. The survey considered the same four broad categories; **Legal & Regulatory, Connection, Operation and System Services Market** and aspects identified in the Common Target Regulatory Framework.

A total of 110 contacts (with activities in the Med-TSO area) were reached, covering a broad range of stakeholders types, and some interviews were also carried out .

The panel of involved stakeholders is described in Figure 3.

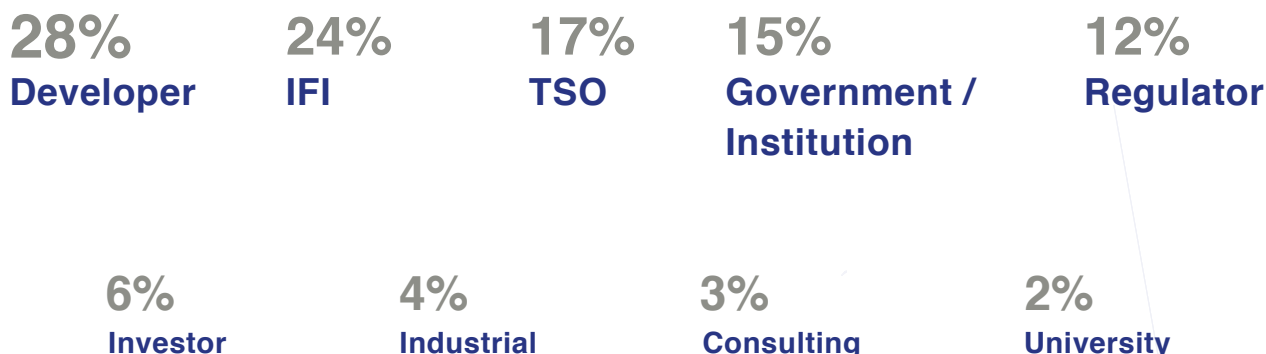


Figure 3. Categories of stakeholders contacted

RESULTS OF THE SURVEY

According to the responses received, the Operation category is the first priority with an average score of 7.4. The three other subjects follow each other very closely – with an average score of between 6.8 and 6.9. In summary, and with respect to the CTRF, we conclude that:

1. Operation is indeed confirmed the main concern for harmonization,
2. Legal aspects are given greater importance in the survey compared with CTRF,
3. Connection and Market categories are considered to have equal importance, in line with the conclusions of the CTRF activity.

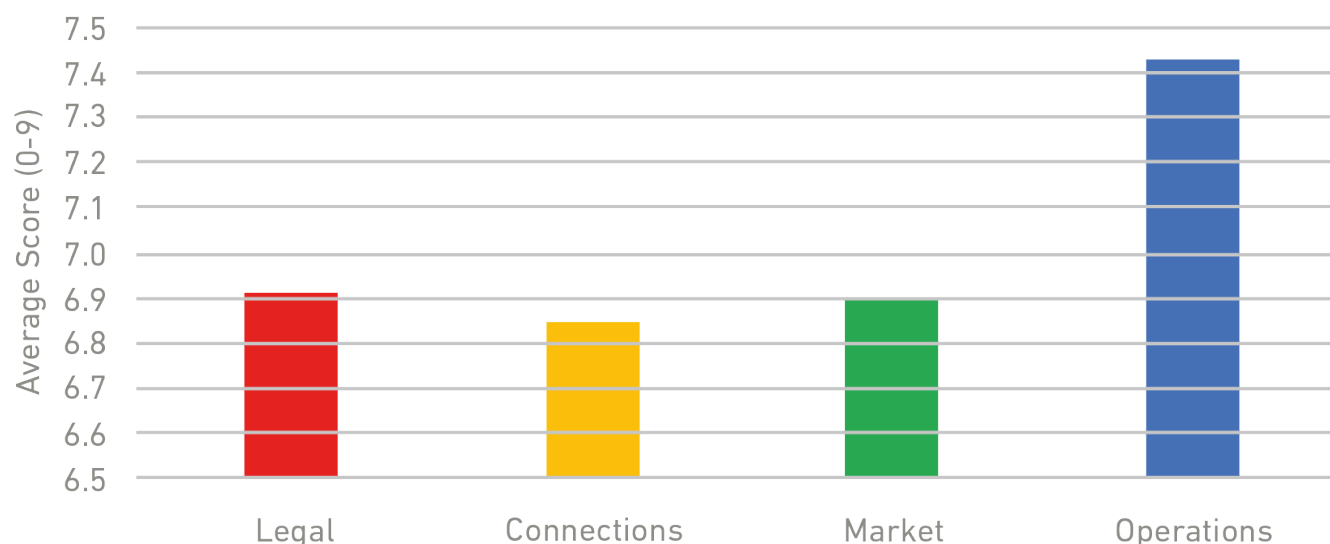


Figure 4. Priorities of the CTRF identified by the stakeholders

Additional answers to the open questions of the survey gave meaningful insights into each participant's vision. General trends are summarized below and confirmed by explicit statements where relevant:

- ◆ **Key takeaway 1:** Most participants accredit legal harmonization in the short term, which they see as a quick win to encourage investments and to improve reliability.
- ◆ **Key takeaway 2:** Most participants confirm that they see low attractiveness for investment as a direct consequence of a lack of harmonization inside a geographical area.
- ◆ **Key takeaway 3:** Most participants recommend capitalizing on successful harmonization initiatives (such as ENTSO-E), and adapting and extending these rules to other Mediterranean countries.

GRID CODE GUIDELINES & DEGREE OF INTEGRATION

The Mediterranean is not a homogeneous region. Different levels of regional integration should be reasonably expected to be achieved in the next years and therefore it is not realistic to envisage in the short-mid term, a level of integration as we have seen in Europe, where through EU, EC and ENTSO-E, regional integration has been high on the agenda for several decades).

Several regulatory aspects and technical requirements are specifically linked to what we can call the existing “degree of integration”, a new concept Med-TSO wants to propose, that defines the level at which the national power systems are regionally interconnected and integrated with each other. This **degree of integration** can be defined in two dimensions:

- ◆ **Cross-border grid development:** this indicator shows the level of physical interconnection between countries;
- ◆ **Power market development:** this indicator shows how trade and/or energy exchange are organized between countries.

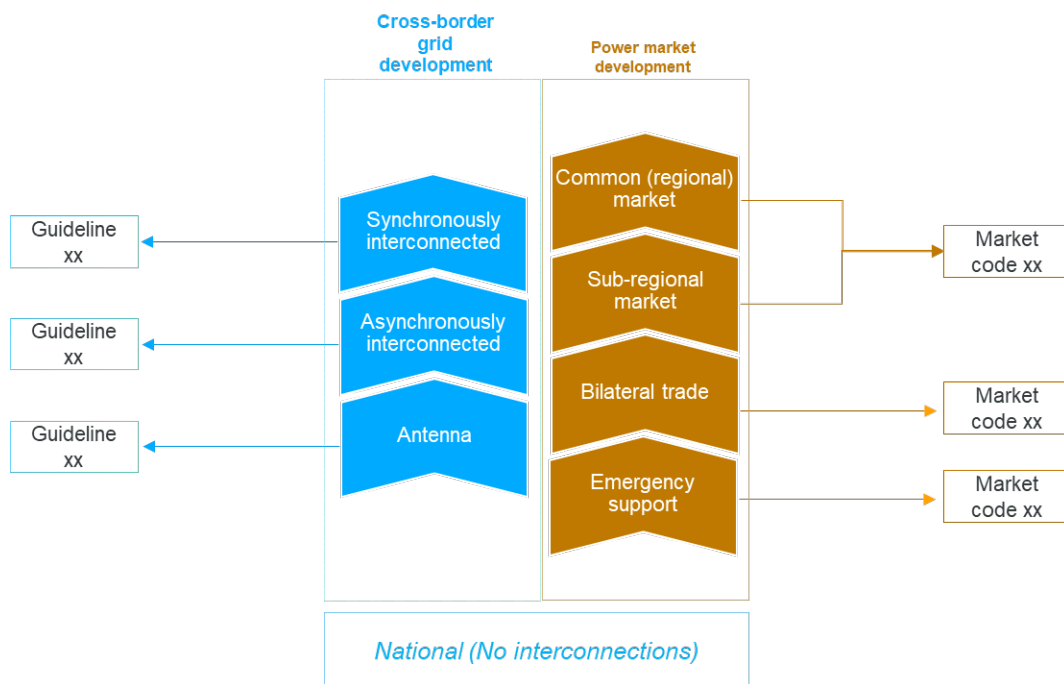


Figure 5. Degree of integration

It is worth highlighting that countries do not necessarily need to evolve towards the same level in both dimensions. This means that it would be possible to have two meshed synchronous interconnections trading only through bilateral agreements, without developing a common market. On the other hand, these dimensions are not completely independent of each other. Interconnection is needed if energy is exchanged. With a further degree of market integration, a more developed level of cross-border interconnection is expected, as summarized in the figure below:

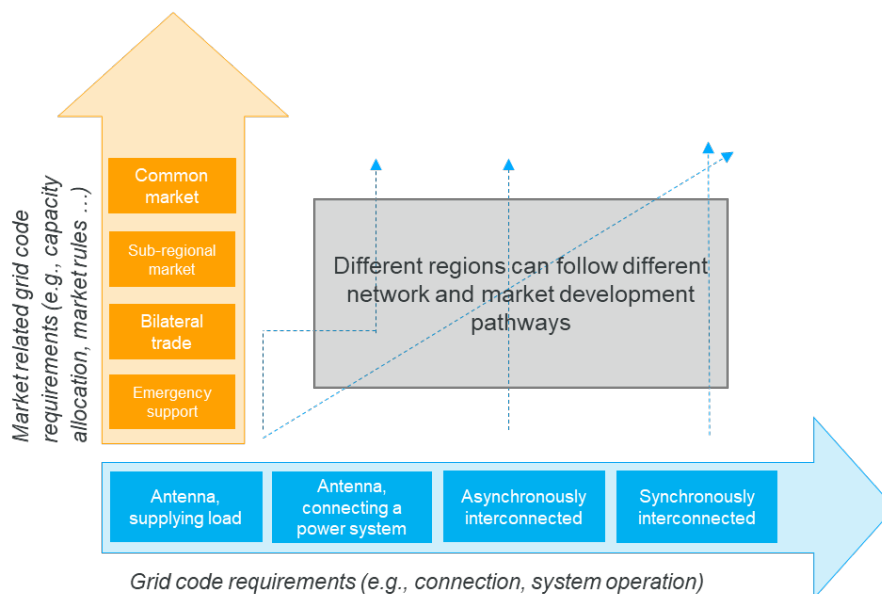


Figure 6. Link between the two dimensions of degree of integration

An indicator has been prepared showing which clauses and grid code articles are relevant to each degree of integration, based on the outcomes of the previous Mediterranean Projects 1 and 2.

The concept of “degree of integration” can be used in several ways:

- ◆ To identify whether there are gaps in the current regulatory framework that limit the integration between two or more power systems, also addressing clauses and grid code articles needed for governing such collaboration.
- ◆ To define which parts of the Grid Code Guidelines should be further developed, in case integration between two power systems is to be further developed.



Read the full document in the website's reports section



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.

Med-TSO members share the primary objective of promoting the creation of a Mediterranean energy market, ensuring its optimal functioning through the definition of common methodologies, rules and practices for optimizing the operation of the existing infrastructures and facilitating the development of new ones.

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