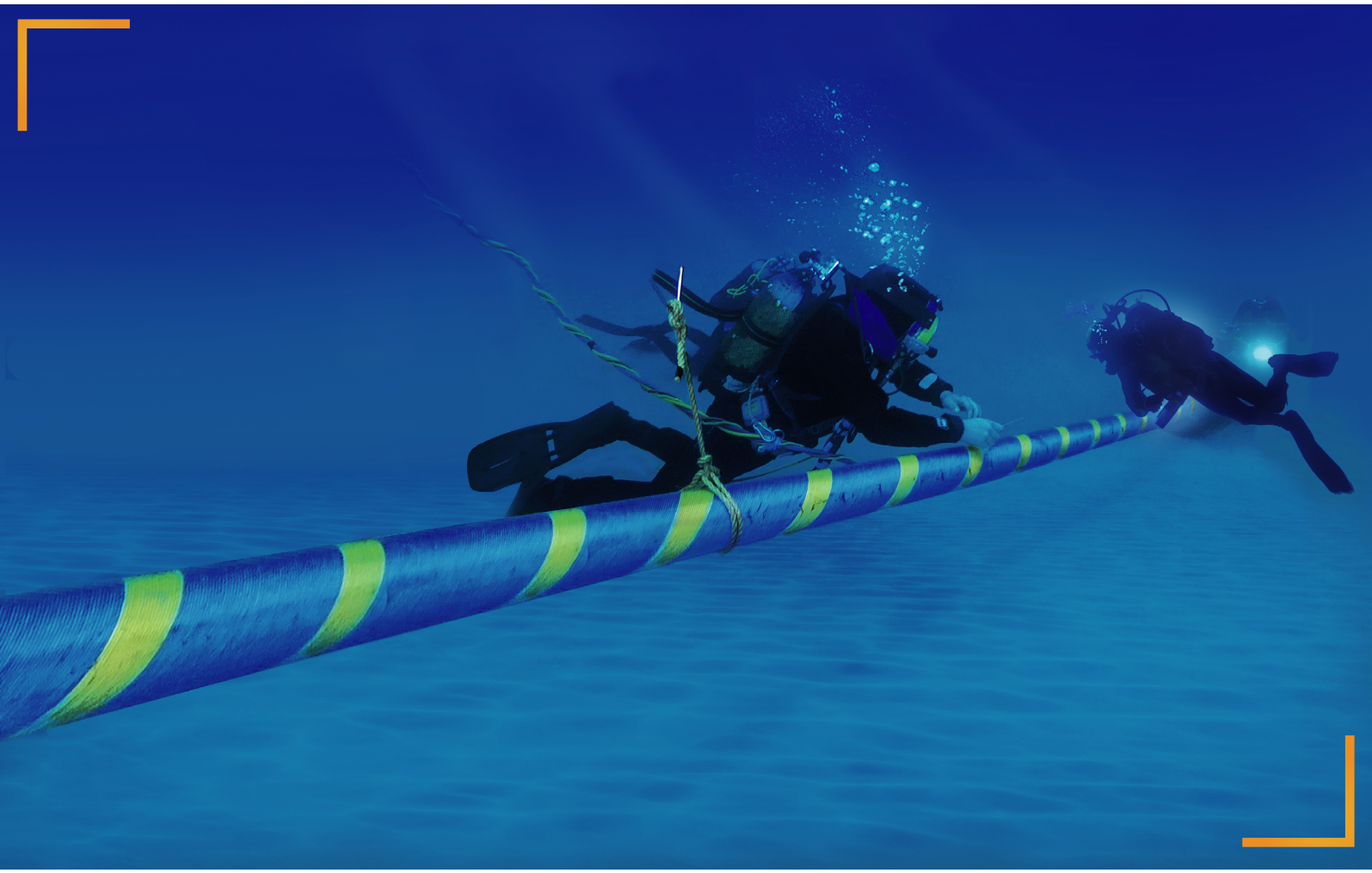
Med-TSO
MEDITERRANEAN TRANSMISSION SYSTEM OPERATORS

PROCEDURE FOR CROSS BORDER COST ALLOCATION APPLICATION (CBCA)

MEDITERRANEAN PROJECT 2 (2018-2020)

May 2020



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Med-TSO is supported by the European Union.

Procedure for cross border cost allocation applicationn technical summary

The objective of this activity, developed in the framework of the Mediterranean project by Med-TSO, is to establish a set of criteria and propose the main guidelines for the application of a Cross Border Cost Allocation (CBCA) mechanism to certain interconnection projects assessed under the framework of Med-TSO's activities.

CBCA represents a subsequent step towards the Cost Benefit Analysis (CBA), aiming to assign the costs and risks of interconnection projects.

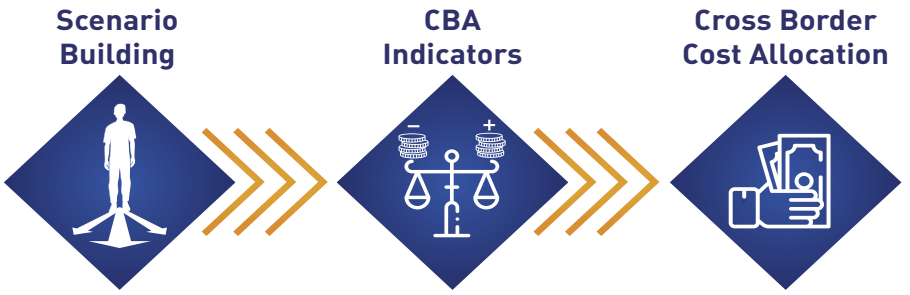

Figure 1: From Scenario Building to CBCA through CBA

As illustrated in the figure above, the process begins with an important step dedicated to scenario building. Indeed, CBA as well as CBCA are impacted by assumptions on energy demand and generation.

The reference scenarios taken into account in CBA and CBCA explore possible future scenarios in terms of electricity demand and generation. These scenarios constitute the basis on which interconnection projects are evaluated and their definition takes into account six factors: i. economy and population, ii. renewable energy development, iii. technology development, iv. new load, v. electricity market integration and vi. technologies without thermal carbon. Considering these factors, four scenarios, the characteristics of which can be seen in the figures below, have been defined by 2030:

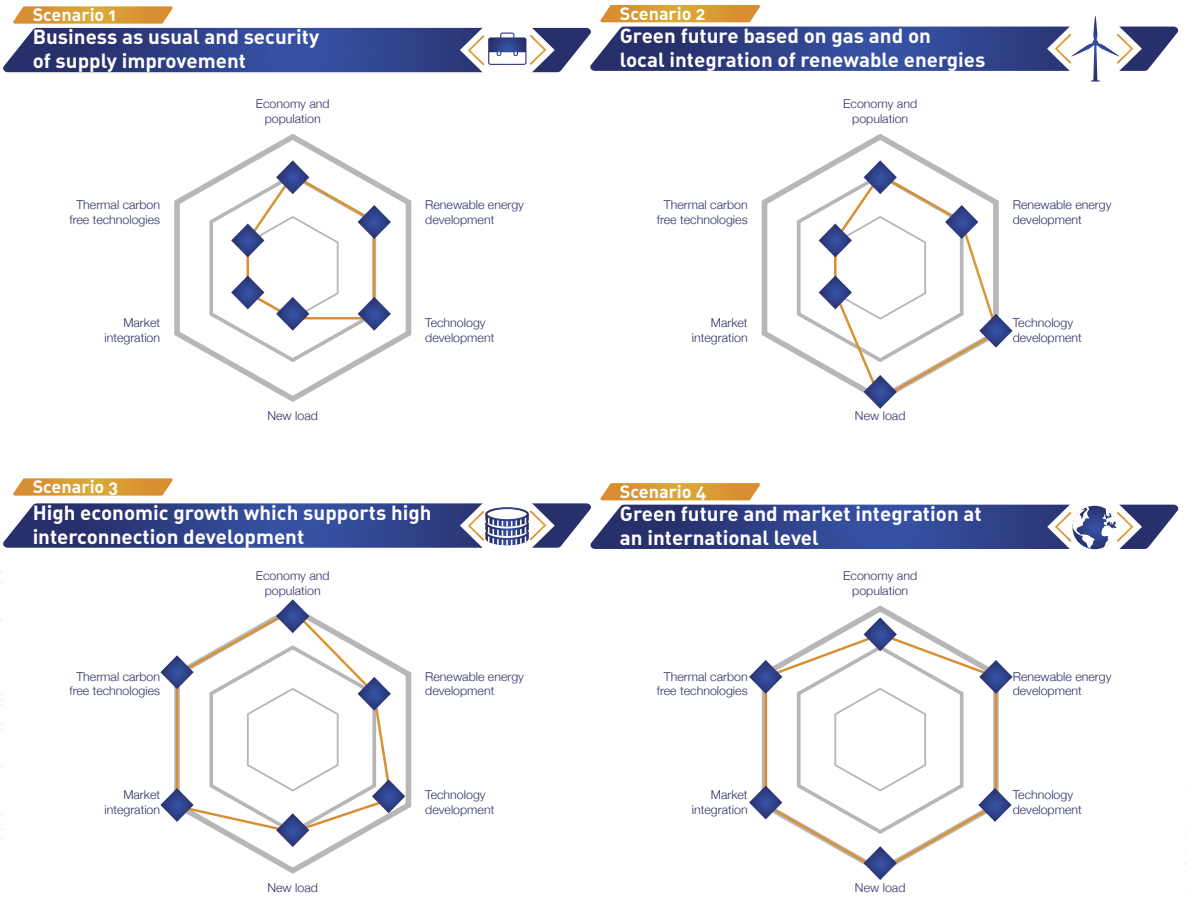

Figure 2: Description of the scenarios

Before going over the description of the CBCA and its practical application, it is worth recalling the benefits expected from developing interconnection within the Mediterranean Region, which can be stated as follows:

- improve the security of supply;
- optimize the generation costs;
- increase social welfare by facilitating cross-border trade;
- allow the better integration of renewable energy;
- create a coupled regional energy market.

A specific CBA methodology[1] based on the ENTSO-E proposal has been developed within Med-TSO for the assessment of the interconnection projects considered in the context of the Mediterranean Project 1. The main implementation steps of this CBA methodology are presented in the following figure:

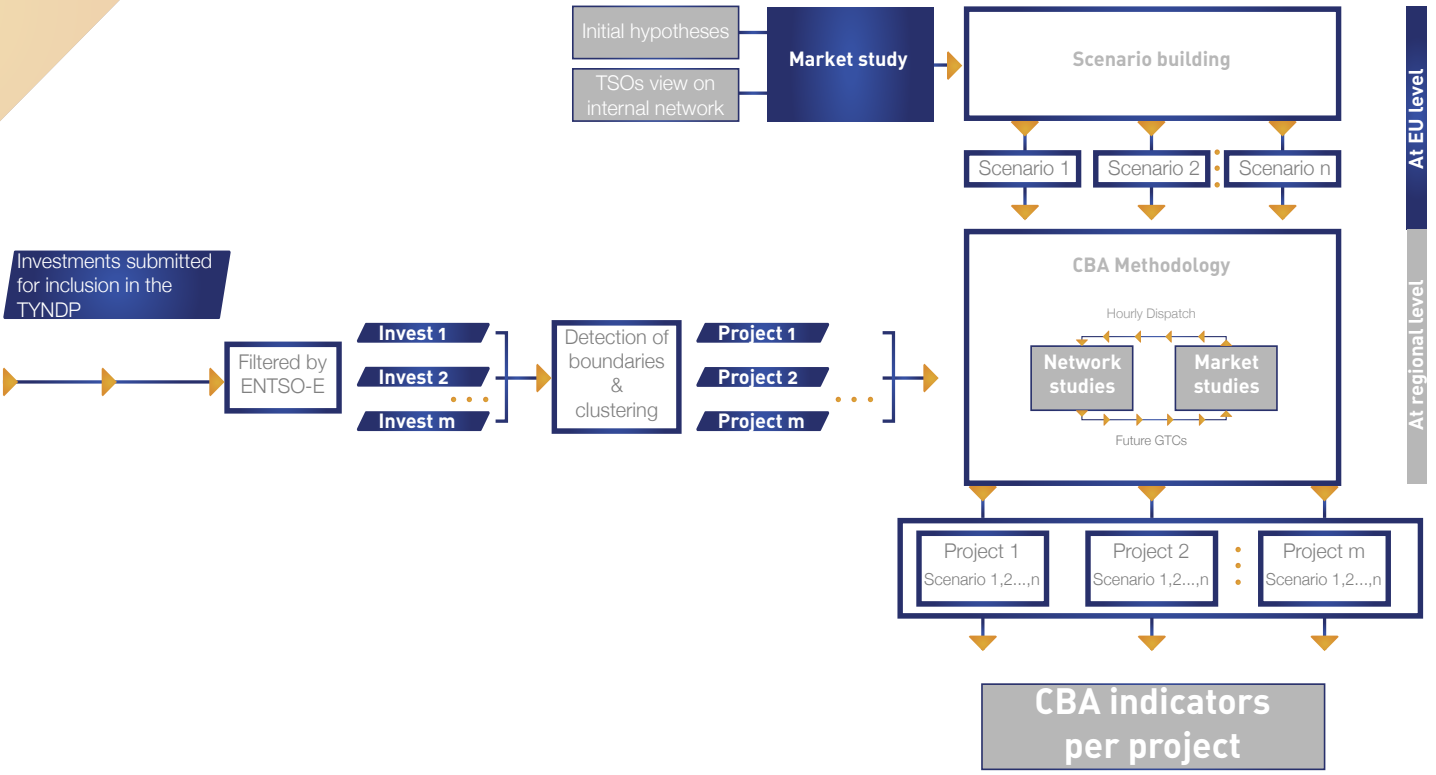

Figure 3: Implementation of CBA methodology within MP1

The first step of the procedure for CBA to CBCA Application has already been achieved with the common paper proposed by Med-TSO and MedReg in the frame of the Mediterranean Project 1(MP 1), which identified the main issues for consideration in the CBCA analysis. Based on this, Med-TSO Technical Committee "International Electricity Exchanges" defined a set of preliminary criteria and a mechanism to perform a CBCA exercise.

More specifically, the main issues (criteria) identified, a priori, for consideration in the CBCA analysis include:

1. the location of hosting TSOs in the Mediterranean Region and the implications resulting from different regulatory frameworks
2. the identification of participating countries/TSOs, i.e., identifying if only hosting countries are participating or if there are also other beneficiary countries/TSOs that should participate
3. the level of participation and the associated rules for sharing costs, benefits and risks

[1] Proposal of a CBA Methodology for transmission projects assessment

4. the perimeter of the interconnection projects' costs to be shared, i.e., if and which internal reinforcements are to be included
5. the allocation of interconnection capacity, namely whether it is based on market rules or not; and finally
6. the identification of additional transmission costs, including transmission losses and hosting flows.

For what concerns the level of participation of each TSO/country in sharing costs and revenues related to the interconnection project, it is possible to identify the following cases:

Table 1: Principles of sharing for interconnection projects

	Traditional	Asymmetric	Unilateral
Cost sharing	Geography- and grid topology- dependent	Real costs-reflective	Born only by interested party (= importing country)
Benefit sharing	50-50 due to mutual "indispensability"	Consistent with costs	Capacity 100% to investing party, but other TSO enjoys windfall benefits
Risk sharing	Unrelated to benefits; partner risk unbalanced	Consistent with benefits; partner risk balanced	No investment partner risk, but country risk (asset abroad)
Agreements	MoU non-binding	Binding contracts	Connection contract
Remarks	In general, not rational	Flexible, can be case-tailored	Can create complex implementation problems

Med-TSO Technical Committee "International Electricity Exchanges" applied the preliminary CBCA criteria to selected case study clusters, using as input the results of the CBA performed in the frame of MP 1 (Figure 4).

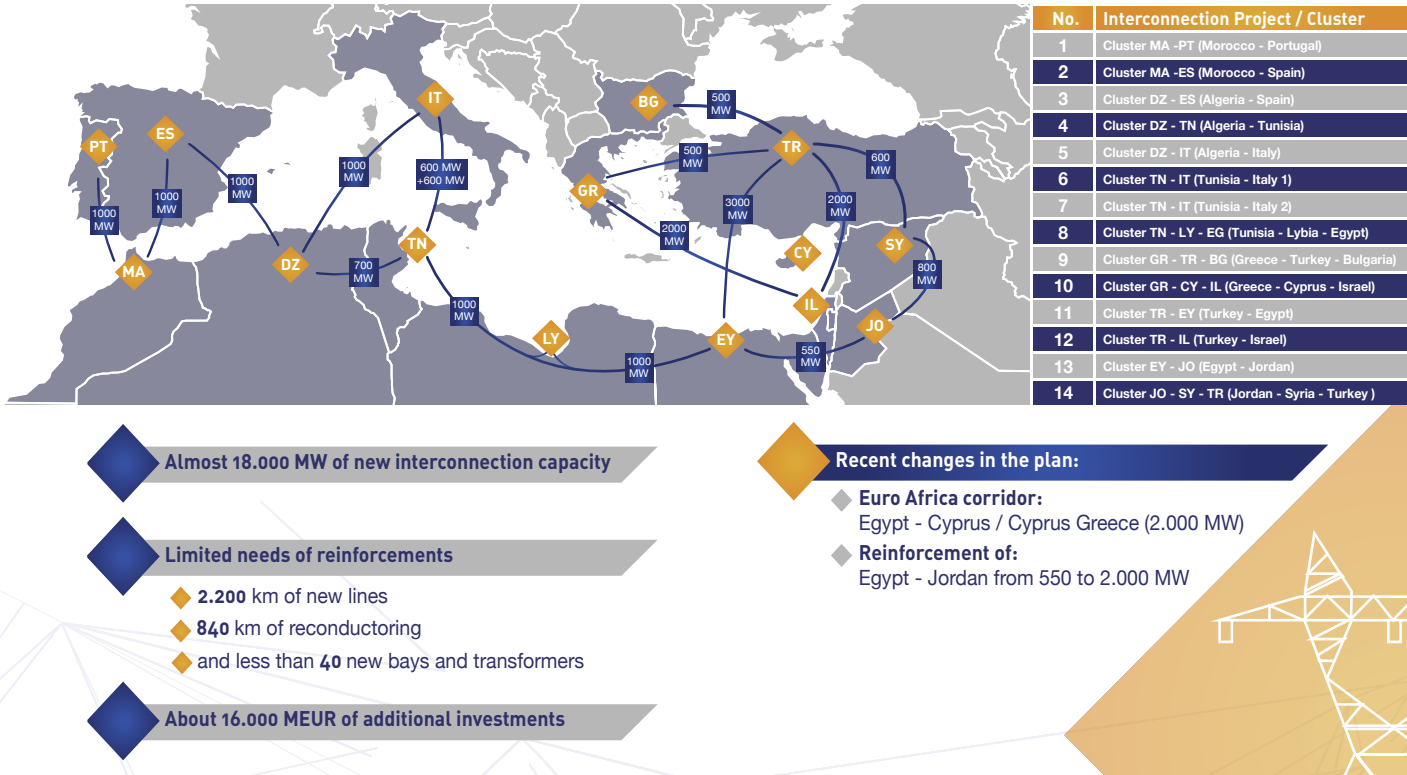

Figure 4: Proposed Interconnections across the Mediterranean (MP1) and recent changes (MP2)

The methodological approach implemented follows ACER's recommendations for National Regulatory Agencies[2], according to which an asymmetric rule should be implemented for the identification of participating TSOs and the calculation of the level of their participation. This rule considers the allocation of cost to the countries presenting a net positive impact, which exceeds a significant threshold equal to 10% of the sum of net impacts of all beneficiary countries. Moreover, in order to request such allocation for third countries, it is also necessary that at least a proponent country presents a negative net impact in at least one scenario.

For the purpose of the CBCA exercise, two methods have been considered and applied to the referred case-study clusters, both in accordance to ACER's recommendations:

METHOD 1

Uses the net impact of a project, calculated as a project's Social Economic Welfare (SEW) minus its associated losses.This method defines a threshold of 10% of the sum of all the national net impacts and identifies the participating (contributing) countries by filtering those with a net impact above such threshold.

METHOD 2

Defines the net impact of a project as the Net Present Value (NPV) at the national perimeter, i.e. the NPV of the cash flows associated with SEW, losses, CAPEX and OPEX. The need for contribution is quantified based on the sum of the negative net impacts of the hosting countries. According to this method, the threshold for participation (contribution) is 10% of the sum of positive net impact and the level of participation is calculated proportionally to each country's excess of net impact over the defined threshold for participation.

The main conclusions of the application of these two methods to the case-study projects of MP1 can be summarized as follows:

- In terms of identifying the potential participating countries and the level of participation, both methods produce compatible results.
- The second method (NPV method) provides additional information about the need of compensation and its quantification.
- Concerning the identification of participants, both methods produce rather consistent results (for at least 3 scenarios).
- Concerning the level of participation, both methods are very scenario dependent.
- Application of the NPV method figures out cases where the net impact could be negative or positive for one hosting country depending on the scenario.
- In most cases non-hosting TSOs are also selected as participating.
- In most cases non-hosting TSOs identified as participating are neighboring countries.

The results of this preliminary CBCA application can be used as a basis to collect comments from MedReg, which in turn can potentially lead to a revised set of CBCA criteria. This would ideally be based on a final application with Med-TSO Mediterranean Project 2 results on the updated list of proposed interconnections.

[2]ACER Recommendation Number 5/2015 on 18th December 2015

Med-TSO

MEDITERRANEAN TRANSMISSION SYSTEM OPERATORS

Med-TSO is the Association of the Mediterranean Transmission System Operators (TSOs) for electricity, operating the High Voltage Transmission Networks of 19 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.

Med-TSO Legal Headquarters
Viale Egidio Galbani, 70 - 00156 Rome,Italy

Operational Headquarters
Via della Marcigliana, 911 - 00138 Rome, Italy

Telephone +39 06 8313 9431 - Email: info@med-tso.com

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