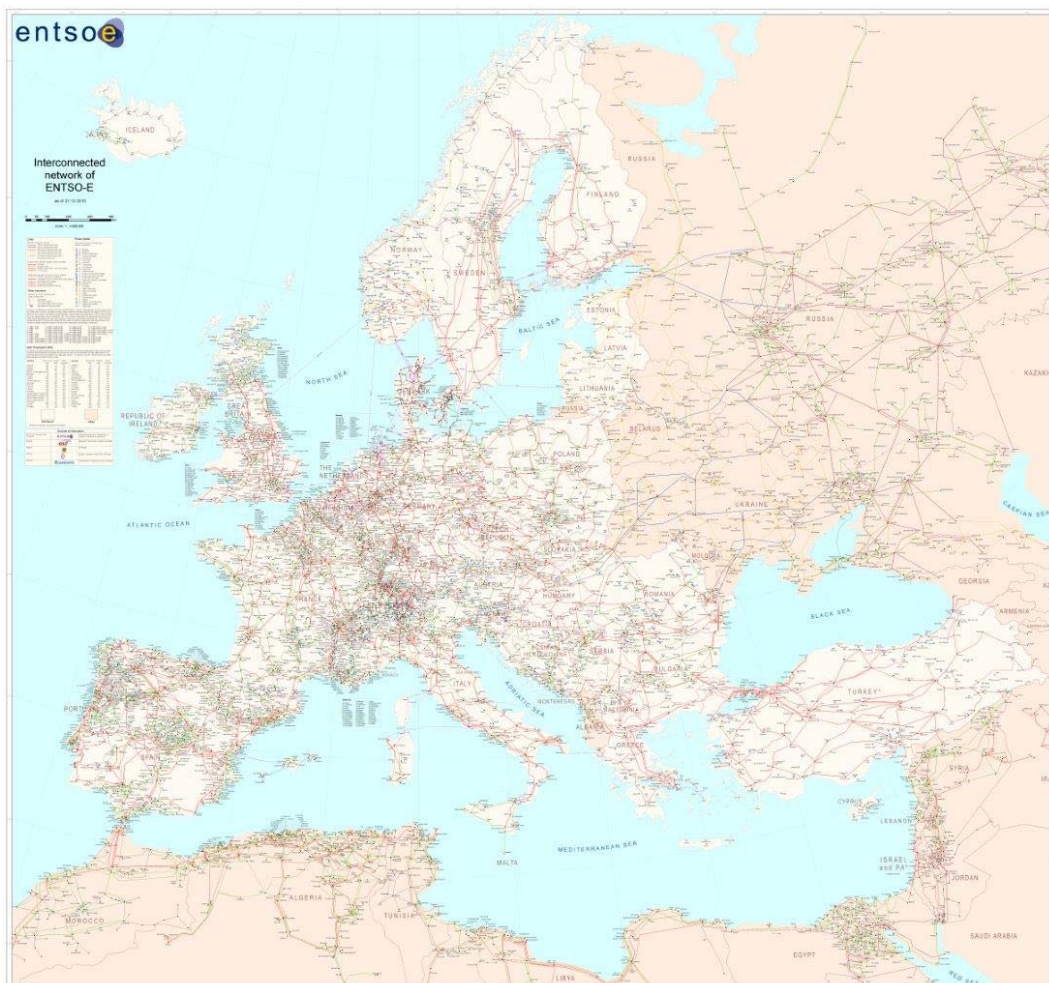




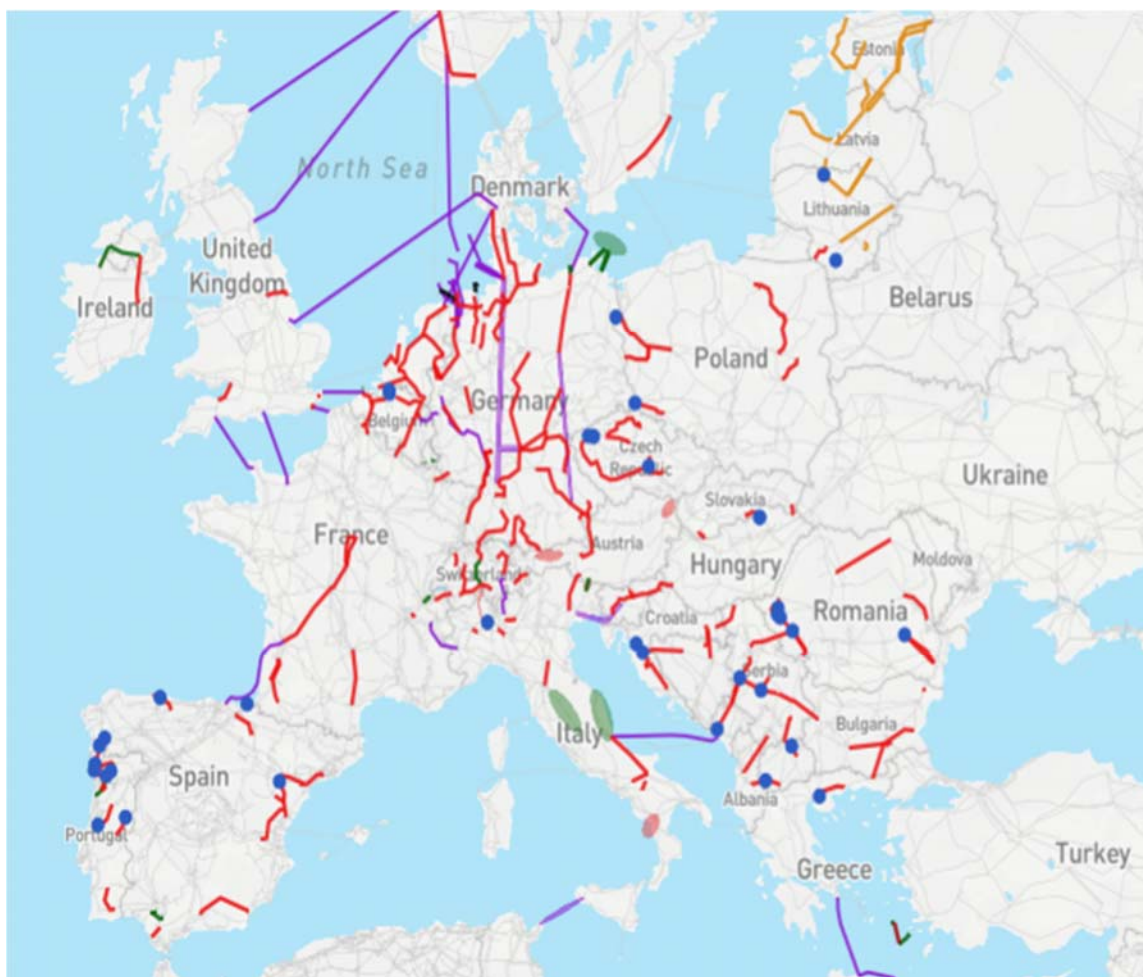
# STUDIES & CONSULTING FOR ENTSO-E TYNDP/PCI PROCESSES AND PROJECTS



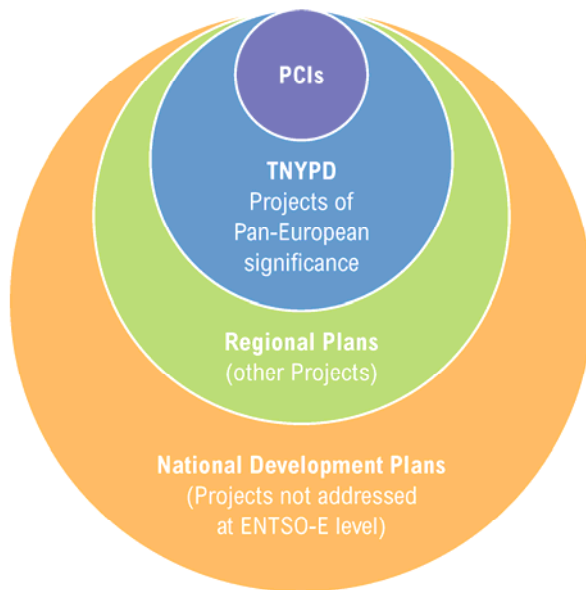
Interconnected Network of ENTSO-E (2015)

**PROTASIS** is an **Independent Electrical Engineering and Consulting Company**. With a dynamic, flexible and highly competent Engineering team **PROTASIS** is an ideal partner for Independent Power Producers (IPP), Utilities and Industrial Clients seeking high quality power systems consulting and systems integration services. The company is divided in three departments, the **Power System Studies & Consulting Department (PSS&C-D)**, the **Power System Applications Department (PSA-D)**, and the **Metering & IT Applications Department (M&ITA-D)**.

Below is a detailed list of expert services and solutions provided by **PROTASIS** for **key infrastructure transmission system projects** to be included in European Network Development Plans and wishing to receive financial assistance from the European Commission (EC) in the form of grants and innovative financial instruments. These services apply to Transmission Project Promoters as well as Transmission System Operators.



*Public Consultation Map TYNDP 2016*



**Projects of common interest (PCIs)** are key infrastructure projects which are the primary European tool to accelerate the deployment of the infrastructure necessary for the completion of the European energy market and to ensure that the European Union meets its goals of affordable, secure and sustainable energy. Electricity PCIs selected for the PCI list enable the EU to meet its energy policy objectives of market integration and sustainability through an integration of renewable energy, boost security of supply through an increased grid resilience and flexibility and allow for the attainment of the 10% electricity

interconnection target.

The **Ten-Year Network Development Plan (TYNDP)** of the *European Network of Transmission System Operators for Electricity (ENTSO-E)* acts as the sole basis to derive the list of PCIs following its publication. The TYNDP is a biennial package developed by ENTSO-E, which presents a transparent overview of the transmission development plans that are identified as necessary to ensure that the transmission grid enables to meet EU energy policy goals. The TYNDP for Electricity is the most comprehensive and up-to-date pan-European reference for the transmission electricity network. It identifies and assesses all relevant pan-European projects in a set of defined Scenarios (2020 and four visions of 2030) based on a robust pan-European Cost-Benefit Analysis (CBA) methodology.

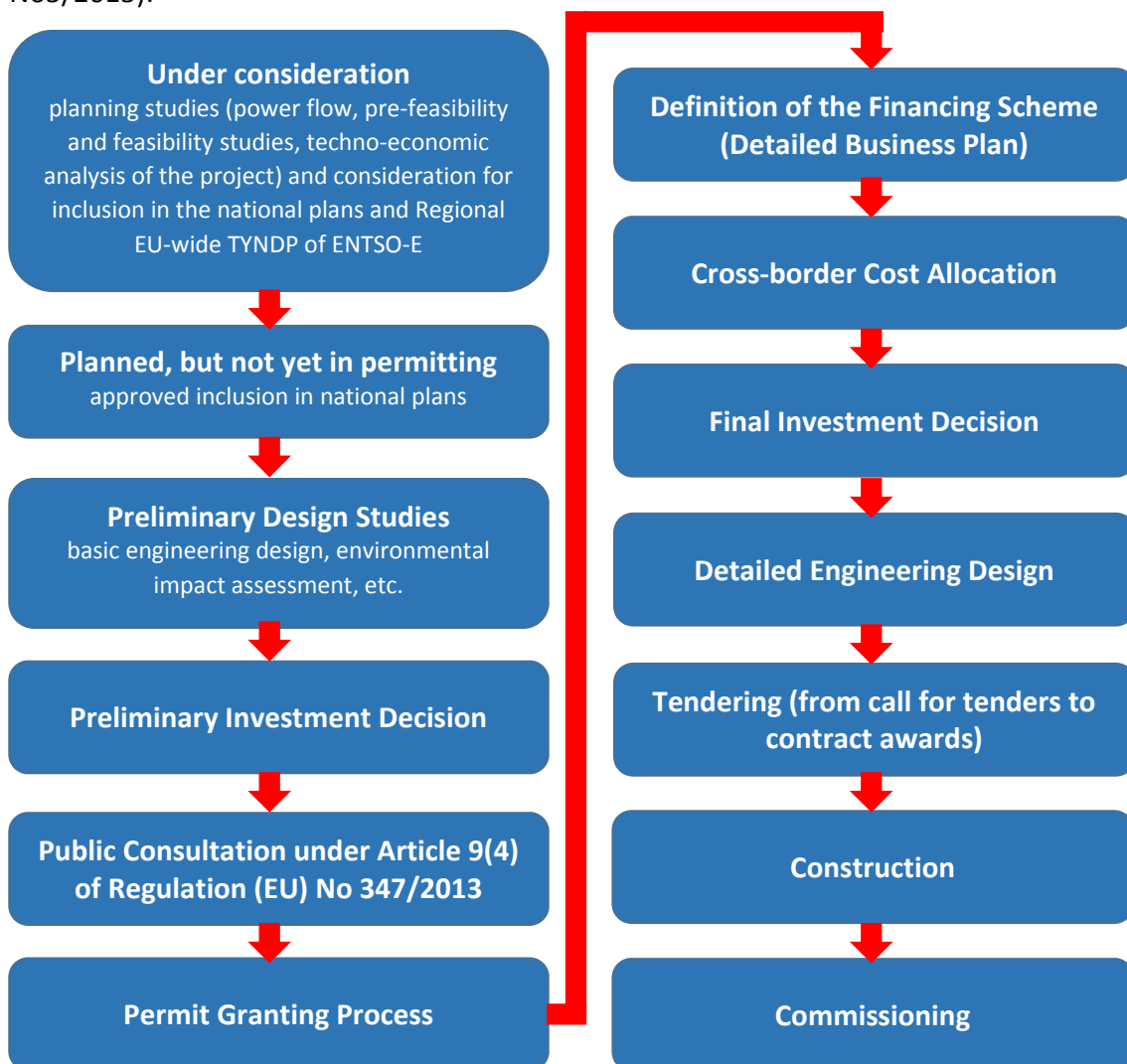


Visualized process linking TYNDP development and PCI selection

According to Regulation (EU) 347/2013 all investments of the projects included in the TYNDP are classified according to the following **statuses**:

- under consideration: projects in the phase of planning studies and consideration for inclusion in the national plan(s) and Regional / EU-wide Ten Year Network Development Plans (TYNDPs) of ENTSOs;
- planned, but not yet in permitting: projects that have been included in the national development plan or completed the phase of initial studies (e.g. completed pre-feasibility or feasibility study), but have not initiated the permitting application yet;
- permitting: starts from the date when the project promoters applied for the first permit regarding the implementation of the project and the application is valid;
- under construction.

In line with the infrastructure monitoring activities of the *Agency for the Cooperation of Energy Regulators (ACER)* the following **progress steps** are identified in the development of electricity transmission projects of EU-wide importance (ACER Recommendation No5/2015):



**PROTASIS** can provide **supporting services** to the Client throughout the TYNDP and PCI processes which include:

- Provision of information on overall TYNDP and PCI schedules;
- Close monitoring of application processes and deadlines;
- Reporting of necessary legal criteria regarding Project's promoters;
- Reporting of necessary technical criteria regarding the candidate Project;
- Communication with all European TSOs involved regarding requirements for additional data and inquiries for the progress of the Project's assessment;
- Acquisition of all necessary technical data which require interaction with the Greek Independent Power Transmission Operator (IPTO), the Greek Regulatory Authority of Energy (RAE) and other Greek authorities.

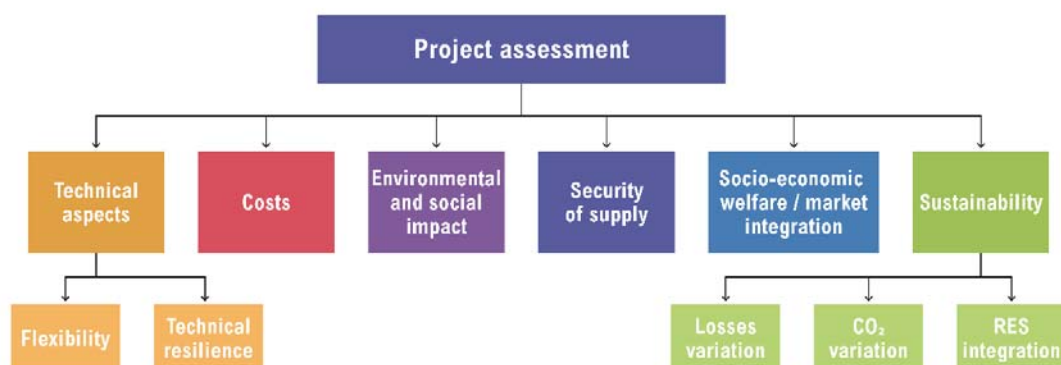
Apart from the above supporting services **PROTASIS** can undertake the following **power flow, pre-feasibility and feasibility studies, including techno-economic analysis of the project**, which are crucial for promoting the candidate Project at the EC and the affected TSOs and will provide the necessary technical and financial confidence to further pursue the Project's realization:

**1. Preliminary Network Study for the TSOs.**

The Scope of this Study is to assess the impact of the candidate Project on the affected TSOs. This Study includes a load flow analysis (under normal and contingency conditions), a short-circuit analysis, a voltage collapse analysis and a stability analysis (only in cases where problems with stability can be expected). This Study pre-requisites the development of a detailed network model of the existing power systems of the affected TSOs.

**2. Preliminary Cost-Benefit Analysis (CBA) using the latest ENTSO-E Methodology.**

The Scope of this Study is to provide a preliminary cost-benefit assessment of the candidate Project by estimating the CBA indicators of the latest ENTSO-E CBA Methodology. According to this methodology the conduction of market studies and network calculations results in General as well as Scenario-specific CBA Indicators.



*Project Assessment under the pan-European CBA Methodology by ENTSO-E*

After the implementation of the pre-feasibility studies the following **Preliminary Design Studies** have to be performed (in order of performance):

3. Survey to determine the Preferred Route Corridor
4. Technical Study for the Design of the Project.
5. Environmental Impact Assessment Study.

In addition to the studies relating to the technical feasibility of the project the following **Financial Feasibility Studies** have to be prepared and submitted to the National Regulatory Authorities:

6. Project-specific Cost-Benefit Analysis (ENTSO-E methodology).
7. Detailed Business Plan.
8. Cross-Border Cost Allocation proposal (if applicable).

The project's **Detailed Engineering Design** phase includes at least the following studies:

9. Project Front-End Engineering Design (FEED) Study.
10. Project Detailed Geophysical and Geotechnical Route Study.
11. Project Cable/Line Installation Study
12. Project Civil Works Study

**PROTASIS** can undertake the Financial Feasibility Studies (Studies No 6-8) and provide technical supportive services for the Technical Study for the Design of the Project (Study No 4) and Project FEED Study (Study No.9).

**PROTASIS** has built an international reputation for technical expertise through constant innovation, with Clients in several regions worldwide including European, North African and Middle East Countries.

*Contact our company for more information and details on how we can better serve your key infrastructure Project needs and how we can solve important aspects challenging your operations.*



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