



Tunisia-Italy Power Interconnector Project

Environmental and Social Impact Assessment (ESIA)

Section 1 – Document guide

Draft for Consultations

JV HPC – IDEACONSULT – PROGER – ELARD - PLEXUS

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STRUCTURE OF THE ESIA

The ESIA is composed of the following Sections and supporting Annexes:

- Section 1 – Document guide
- [Section 2 – Regulatory and legislative framework](#)
- [Section 3 – Project definition](#)
- [Section 4 - Environmental baseline – Terrestrial domain](#)
- [Section 5 - Environmental baseline – Marine domain](#)
- [Section 6 – Socioeconomic baseline](#)
- [Section 7 – Public Consultation and Information Disclosure](#)
- [Section 8 – Risks and potential impacts assessment – Terrestrial domain](#)
- [Section 9 – Risks and potential impacts assessment – Marine domain](#)
- [Section 10 – Synopsis of impact assessment](#)
- [Section 11 – Environmental and Social Management Plan \(ESMP\)](#)
- [Section 12 – Climate Change Report](#)
- [Annex A – IBAT Assessment Report](#)

ABBREVIATIONS AND ACRONYMS

AAO	Association des Amis des Oiseaux
AC/DC	Alternating Current/Direct Current
ADB	Asian Development Bank
AFI	Industrial Property Agency (Agence Foncière Industrielle)
ANPE	Agence Nationale de Protection de l'Environnement (National Agency for Environmental Protection)
APAL	Agence de Protection et d'Aménagement du Littoral (Coastal Zone Protection Agency)
ASPEN	Association pour la Sauvegarde de Patrimoine Environnemental et Naturel du Cap-Bon
CAPEX	Capital Expenditure
CBA	Cost-Benefit Analysis
CEF	Connecting Europe Facility (for Energy)
CRDA	Commissariat for Agricultural Development (Commissariat Régional de Développement agricole)
CTF	Clean Technology Fund
CVRA	Climate Vulnerability and Risk Assessment
DFI	Development Finance Institution
EC	European Commission
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ENTSO-E	European Network of Transmission System Operators
EHSGs	World Bank Group Environmental, Health and Safety Guidelines
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESCP	Environmental and Social Commitment Plan
ESMP	Environmental and Social Management Plan
ESF	World Bank's Environmental and Social Framework
ESS	World Bank's Environmental and Social Standards
EU	European Union
GCF	Green Climate Fund
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GTC	Grid Transmission Capacity
HVAC	High Voltage Alternate Current
HVDC	High Voltage Direct Current
HDD	Horizontal Directional Drilling
IFC	International Finance Corporation
IPPC	Intergovernmental Panel on Climate Change
JRC	Joint Research center
JV	Joint Venture
MED-TSO	Mediterranean Association of Transmission System Operators
MISE	Ministry of Economic Development (Ministero dello Sviluppo Economico – Italy)
NGO	Non-Governmental-Organization
NIF	Neighborhood Investment Facility (CTF)
NTC	Net-Transfer Capacity
OHL	Overhead Line
OPEX	Operating Expenditure
PCI	Project of Common Interest
PNIEC	Italian Integrated National Energy and Climate Plan (Italy)
PS	Performance Standards
RAP	Resettlement Action Plan
RoW	Right-of-Way
RES	Renewable Energy Source



SAC	Special Area of Conservation
SCI	Site of Community Importance
SEP	Stakeholder Engagement Plan
SEW	Socio-Economic Welfare
SoW	Scope of Work
SSP	Shared Socioeconomic Pathways (SSP)
STEG	Société Tunisienne de l'Electricité et du Gaz
TA	Technical Assistance
T&D	Transmission and Distribution
TEN-E	Trans-European Network Regulations
TERNA	Rete Elettrica Nazionale SpA - private Italian transmission system owner-operator
ToR	Terms of Reference
TYNDP	Ten Year National Development Plan
TSO	Transmission System Operator
TUNITA	Tunisia-Italy Power Interconnector Project
WB	World Bank

1. INTRODUCTION

1.1 Foreword

The ESIA is presently in draft form: supplemental data and additional assessments will be added based on public consultations and supplementary analyses that will be carried out during the month of February, 2023.

1.2 The Tunisia-Italy Interconnection Project

The **Tunisia-Italy Power Interconnector Project** (hereafter “the Project” or “TUNITA interconnector”) is a 200 km, 600 MW interconnection between Tunisia and Italy (Sicily) to be primarily realized through an HVDC submarine cable.

Once built, the Project will determine significant benefits for the electricity systems of both countries and, overall, for the European and North African energy systems. The Project aims to improve the security of supply while increasing Renewable Energy Sources (RES) penetration both in EU and Nord Africa thus contributing to the achievement of the EU and global climate objectives.

The Project will link the European and North Africa energy markets with a direct current interconnection between the electricity grids of Tunisia and Italy.

The infrastructure components consist of a 200 km long subsea HVDC cable connecting the Italian and Tunisian coasts, and short stretches of underground transmission line (HVDC cables) between shore landfall points and converter stations (10 km underground cable in Tunisia and 16 km in Italy). In addition, the Project entails constructing two Alternating/Direct Current (AC/DC) converter stations: one in Mlaâbi municipality, in the Cap Bon area of Tunisia, and the other in Partanna municipality in Sicily, Italy.

At the Italian side, the new AC/DC converter station will be connected through a 2 km underground cable (HVAC 220 kV) to Partanna HV Substation. The Tunisian side infrastructure components require a new DC/AC converter station in Mlaâbi. Associated works include facilities required during construction (work sites, crossings, construction sites, access roads).

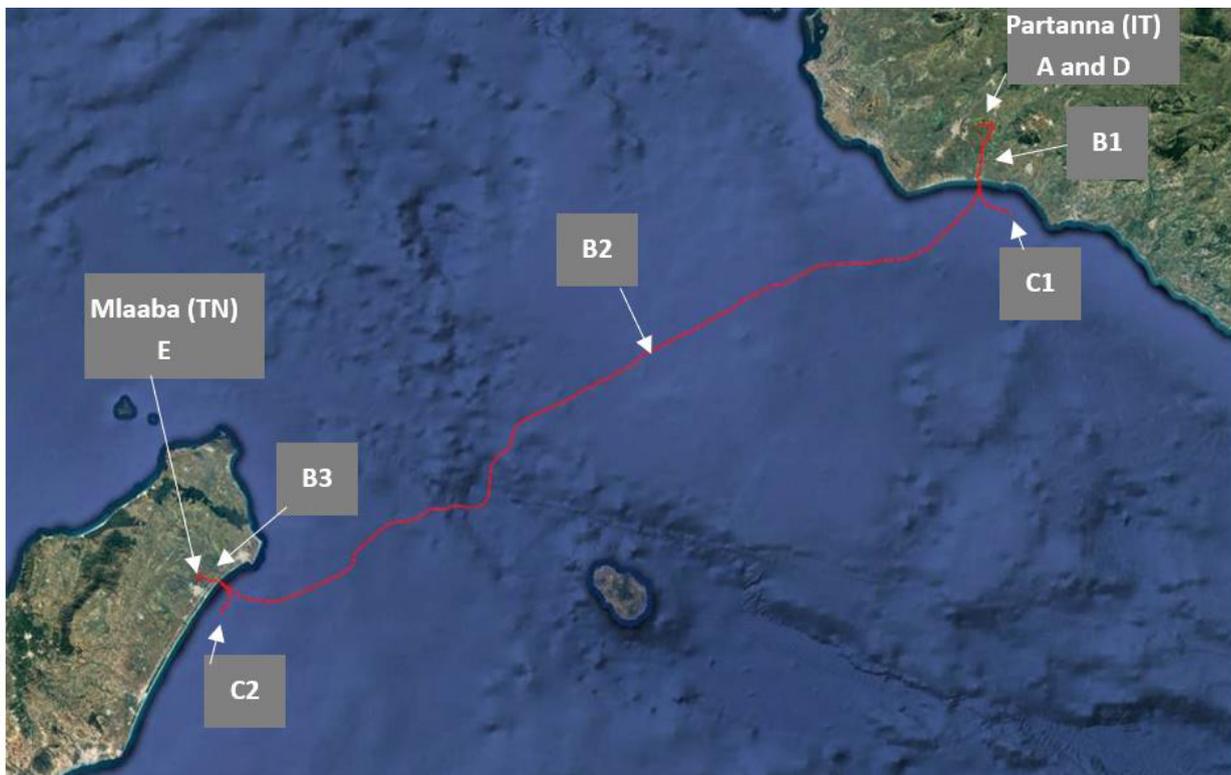


Figure 1-1: Overview of the Project

More specifically, the TUNITA Interconnector will be composed of the following installations:

Table 1-2: Summary of project components

TUNISIAN SIDE – TERRESTRIAL COMPONENTS	
Converter substation	DC/AC converter station in Mlaâbi municipality of Menzel Temime, Nabeul Tunisia (Work E)
Land routing section	DC underground cable between the landfall point and the Mlaâbi converter station (6 km) (Work E);
Landfall	Transition point between DC marine cables and terrestrial cables in Kelibia
MARINE COMPONENTS	
Marine HVDC cable	HVDC cable between the two landing points in Tunisia and Italy (200 km) (Work B2);
Marine electrode cables	n.2 electrode cables between each landing point and one electrode to be located at the sea-side (Work C1 and C2).
ITALIAN SIDE – TERRESTRIAL COMPONENTS (associated facilities)	
Converter substation	AC/DC converter station near the HV substation in Partanna; (Work A)
Land routing section	DC underground cable between the landfall point and the converter station (16 km) (Work B1), and Ac cables between the AC/DC converter station and HV substation in Partanna (2 km) (Work D);
Landfall	Transition point from DC marine cables to DC terrestrial cables in Marinella di Selinunte

The project is currently in permitting phase through Phase 2 of World Bank’s technical assistance to the Republic of Tunisia to prepare technical feasibility studies. Commissioning is expected in 2028 for the HVDC interconnection between Italy and Tunisia. The Elmed interconnector and the converter stations will be designed for a technical lifetime of 40 years.

Further details on the Project are provided in Section 3: Project definition.

1.3 Project Foundation

The Italian Transmission System Operator (TSO), TERNA (Rete Elettrica Nazionale S.p.a) and the Tunisian energy utility STEG (Société Tunisienne de l’Électricité et du Gaz), started cooperating for the development of a project connecting the Italian and Tunisian electrical networks at the end of 2000s.

In 2007, the Governments of Italy and Tunisia signed a Joint Declaration instructing TERNA and STEG to develop the Project to interconnect the electrical systems of the two countries. To reach this purpose, STEG and TERNA (Project Sponsors) established the company ELMED Etudes Sarl (a 50:50 joint venture) to carry out the necessary studies and activities preceding the construction of the infrastructure.

Since then, significant work was undertaken by ELMED Etudes during the Pre-Feasibility phase of the project to refine the approach to the interconnector and prepare its implementation. This phase identified the connection through a High Voltage Direct Current (HVDC) - 600 MW marine cable as the preferred project technological solution. Optimal site locations for building two conversion stations were identified near

					
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Partanna (Sicily – Italy) and Mlaâbi (Menzel Temime area in the Cap Bon peninsula – Tunisia), along with the AC cable routing from the converter stations to the respective countries’ grid nodes. Currently, under a Technical Assistance (TA) grant agreement signed by the Government of Tunisia with the World Bank, the project is preparing the studies establishing the technical, environmental, social, and financial feasibility, including the Climate Proofing assessment – this document.

Given its strategic importance for the Italian and EU energy supply and the sustainability goals of the two countries and the creation of a Euro-Mediterranean electricity network, the project was included in the TYNDP (Ten Year Network Development Plan) of the European Network of Transmission System Operators (ENTSO-E) and the Ten-Year Mediterranean Network Development Plan (TYMNDP) of the Mediterranean Association of Transmission System Operators (MED-TSO).

Further, having demonstrated positive effects in the mid and long-term scenarios for Italy, Tunisia and other EU Member States, the Project was included in the PCI list (Project of Common Interest), to benefit from accelerated planning and permit granting. By its inclusion in TYNDP and, subsequently in the PCI lists, the Project will be candidate for the Connecting Europe Facility (CEF) funding program.

The TUNITA interconnector is also included in the Italian National Energy and Climate Plan (PNIEC), the Republic of Tunisia’s Development Plan 2016-2020 and “Vision Stratégique du Secteur de l’Energie 2050”. The project is also endorsed by the Governments of Malta, France, Germany and Algeria. Moreover, in April 2019, the Italian Ministry of Economic Development (MISE) and the Tunisian Ministry of Industry signed an intergovernmental agreement to support the project's development, which entered into force on January 25, 2022.

The Project aligns with the European Green Deal key policy areas and new EU Taxonomy, and with the EU’s New Strategy for Africa. Other specific drivers include quality and security of supply, market integration and competition, and related socio-economic benefits for the two interconnected countries.

1.4 Project Benefit and Need

The implementation of the TUNITA Interconnector presents several direct and indirect benefits:

- **Energy efficiency:** the TUNITA HVDC interconnection allows electricity to be transmitted across large distances and between countries with minimal technical line losses, cutting down on energy waste and copper use. Increased efficiency of HVDC reduces losses from 5 - 10% in an AC transmission system to around 2 - 3% for the same application in HVDC. At the same time, it also improves the performance and efficiency of the connected AC networks.
- **Emissions reductions:** as a result of the cross-border interconnection and more efficient transmission, power can be distributed among the interconnected areas (EU-Nord Africa), with a significant reduction of the electricity that needs to be generated to satisfy electrical demands. This entails generating less carbon emissions (higher RES production and share) and operating at lower emission levels than expected to prevail or materialize under “without-project” conditions, contributing to global emission reduction targets. In addition, the Project has undertaken a climate neutrality assessment (“Climate Proofing study”), including a detailed mitigation analysis. Specifically, the carbon footprint assessment of the project and other climate-mitigation indicators elaborated from ENTSO-E cost-benefit analysis methodologies, following Regulation (EU) No 347/2013, show that the project is expected to be operating at lower emission levels than would be expected to prevail or materialize under “without-project” project conditions, or to maintain the same level of output while reducing related GHG emissions.
- **RES (Renewable Energy Source) Integration:** T&D systems interconnecting electricity markets are increasingly seen as an enabler for renewable energy and climate neutrality objectives, and as such, a mean to help achieve the dedicated goal of sustainable energy. The TUNITA project contributes to

					
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scaling up, diversifying and helping the deployment of RES between the two countries and overall in the Mediterranean region. The HVDC TUNITA Interconnector also reduces overgeneration and the need for frequency regulation that comes with a high penetration of renewable electricity sources. Further, the TUNITA project may allow more exchanges of green energy from an area where an excess of renewable generation is available to areas where only a small fraction of RES is generating energy. This contributes to avoiding the need to curtail renewable sources that cannot be used locally and increases the total amount of RES generation capacity that can be integrated into the electrical systems (EU-North Africa).

- Climate targets: the TUNITA project has gained increasing support from the Italian and Tunisian Governments, the EU and other international organizations, also with respect to the benefits it can offer to climate mitigation efforts. The IPCC's climate projections underscore the importance for mitigation efforts to be mainly centered on the energy sector through a substantial increase of RES generation to reach national and global climate targets in the energy sector, with possible spillovers in other industry segments.
- Socio-economic benefits: the project may reduce socio-economic gaps in Europe and North Africa. Potential social and economic outcomes of the TUNITA project include (i) employment and income-generating opportunities; (ii) enhanced government capacity to provide reliable and competitive energy services; (iii) productivity gains in both public and private sector, associated with cost reductions and reliability/security of supply for buyers and consumers, improving "Social Economic Welfare" (SEW); (iv) improved electricity provision to the Cap Bon area of Tunisia.

Finally, the project could also encourage the role of Sicily as a European energy hub in the Mediterranean basin. Sicily, a lagging European region with low economic growth, could be favorably affected by the RES transition to overcome economic constraints. Economic progress of a similar scale can also sustain Tunisia's political progress.

					
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2. SCOPE OF WORK

2.1 Scope of the ESIA

This report presents the Tunisia-Italy Power Interconnector (“TUNITA Interconnector”) Environmental and Social Impact Assessment (ESIA) for the Tunisian components of the Project.

The World Bank has commissioned the ESIA study as part of the E&S instruments for the whole Project (Italian and Tunisian sides) funded under the Technical Assistance (TA) grant agreement signed with the Government of Tunisia for project investment financing of the Tunisian components. Under the TA the ESIA covers both the Tunisian and Italian sides of the Project.

The environmental and social objectives of the Project are to identify and mitigate potentially negative impacts that may result from the Project. E&S impacts will be minimized through adherence to the Government of Tunisia and the World Bank’s Environmental and Social Framework (ESF), with the application of the most stringent standard in case of any dissonance between the two. The Project policies and standards will also align with GIIP, and other relevant international standards, regulations and guidelines.

Of note, the TUNITA activities on the Italian side are considered Associated Facilities as per the Environmental and Social Standard 1 (ESS1) of the World Bank’s ESF, because even though the Bank does not finance them, they are directly and significantly related to the Project, necessary to its viability and will be carried out contemporaneously with the Project preparation.

These Associated Facilities include: (i) Italy HVDC converter station and (ii) Under Sea Cable (99km); (iii) Under Ground Cable –pole (22-44 km); and electrode cable (18 km) connecting the new converter station in Italy and the landing site situated in Marinella di Selinunte in the municipality of Castelvetrano; and (iv) Joint Box. The ESF will not apply to the associated facilities, as the Borrower (Government of Tunisia) has no control or influence over the Italian section. This could create challenges for E&S reputational risks, coordination and reporting. The World Bank’s appraisal stage Environmental and Social Review Summary (ESRS) will provide information on how such potential reputational risk to the Bank will be managed. In addition, the borrower will establish an appropriate coordination mechanism to ensure that the Associated facilities are materially consistent with the ESF requirements. The possibility of a common approach / MoU under World Bank’s ESS1 will also be considered for coordination and consistency as soon as other financings Partners' participation in the Project is confirmed during project preparation.

While the associated facilities in Italy do not require strict compliance with the WB’s ESSs *per se*¹, two separated ESIA- one for Tunisia and one for Italy, have been prepared, with the Italian ESIA aiming for the greatest possible alignment of the Italian components with World Bank’s ESF. This report presents the ESIA for the Tunisian components of the Project, with key reference/interactions with the Italian section, as required throughout the document.

The project proponents are:

- STEG: the Tunisian energy utility and Electricity Transmission System Operator, for the Tunisian components of the Projects financed by the World Bank TA
- TERNA: the Italian Electricity Transmission System Operator, for the Italian components of the Project (associated facilities).

¹ The Project is not seeking external financing that requires application of the ESSs, and therefore would not be obliged to comply with WB’s ESF.

					
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2.2 ESIA and Tunisian Permitting Requirements

Of note, the Project is not subject to Environmental Impact Assessment procedure per national law: the Tunisian legislation do not require EIA for a project with these characteristics.

The non-applicability of Tunisian legislation on ESIA derives from the fact that power lines are not included in ANPE (Agence Nationale de Protection de l'Environnement) project lists, i.e. lists of projects to be submitted to the EIA procedure. Decree No 91-362 of 13 March 1991 regarding the preparation of environmental impact assessments, modified by the Decree No 2005-191 of 11 July 2005, provides the legislative framework regarding EIA in Tunisia. However, powerlines are exempt from this legislation. However, the Project will inform ANPE in case of any potential E&S major impacts derived from the Project. Further details are provided in Volume 3, Section 3.2 (Tunisian permitting process).

Hence, the ESIA for the TUNITA Project does not derive specifically from Tunisian legislations' requirements but from World Bank's Environmental and Social Framework requirements. This framework sets out the World Bank's commitment to sustainable development through a set of Environmental and Social Standards (ESSs), constituting mandatory requirements for the Borrower and the Project. More to the point, whenever international standards differ from national requirements, the Project will meet the most stringent applicable standard, while always respecting Tunisian laws and procedures.

In particular, ESS1 requires the Borrower to "conduct an environmental and social assessment of the proposed project, including stakeholder engagement".

The present document has thus been developed according to this requirement and to all other provisions of the Bank's ESF.

2.3 ESIA Consultants

The World Bank engaged the Joint Venture composed of the following companies to prepare the ESIA:

- HPC ITALIA S.r.l. (Joint Venture Leading Member): an Italian company with a registered office and fiscal domicile in Via Francesco Ferrucci 17/A, 20145 Milan, Italy
- IDEACONSULT: a Tunisian company with a registered office in Immeuble Equinox-Bloc B, Rue de la Bourse, 1053- Lac 2, Tunis – Tunisia
- PROGER S.p.A.: an Italian company with a registered office and fiscal domicile in Piazza della Rinascita n. 51 – 65122 Pescara, Italy
- EARTH LINK AND ADVANCED RESOURCES DEVELOPMENT S.A.L. (ELARD): a Lebanese company with a registered office and fiscal domicile in Amaret Chalhoub – Zalka Highway, Fallas Building – Lebanon
- PLEXUS ENERGY Ltd.: a British company with a registered office and fiscal domicile at 20 Leighton Road, London NW5 2QE, UK.

2.4 ESIA Project Team

2.4.1 HPC ITALIA

Key Account Manager	Alfredo Cappellini
Project Manager / Coordinator of JV team	Roberto Andrighetto
Senior environmental specialist	Marco Pellegatta
Senior Social Specialists	Michele Pecora, Paola Camisani
Social Specialists	Valentina Vieri, Anna Dossena, Flavia Cervelli, Francesca Cane
Environmental Specialists	Luca Rufini, Tiziana Giannetto
Underwater noise specialist	Sophia Marinos
Air quality specialist	Valentina Capiaghi
Mapping specialists	Fabio Colin, Mirella Raimondo

**2.4.2 IDEACONSULT**

Project Manager	Sadok Ben Jemia
Environmental Specialist	Mehdi El Hrizi
Lead Social Development and Resettlement Specialist	Ahmed Amine Bahri
Social Specialists	Mahmoud Chihaoui, Mohamed Cherif
Archaeologist	Karem Dassy
Mapping/GIS Specialist	Sameh Chaabani

2.4.3 PROGER

Project Manager	Cesare Di Michele
Lead environmental specialist	Marco Sandrucci
Senior environmental specialist	Antonio Scognetti
Environmental Specialists	Monica Agostinone, Alessia Marinelli, Francesca Di Girolamo
Ecology and biodiversity specialist	Francois Salomone
Landscape architect	Dante D'Agostino
Land acquisition expert	Mauro Monaldi

2.4.4 ELARD

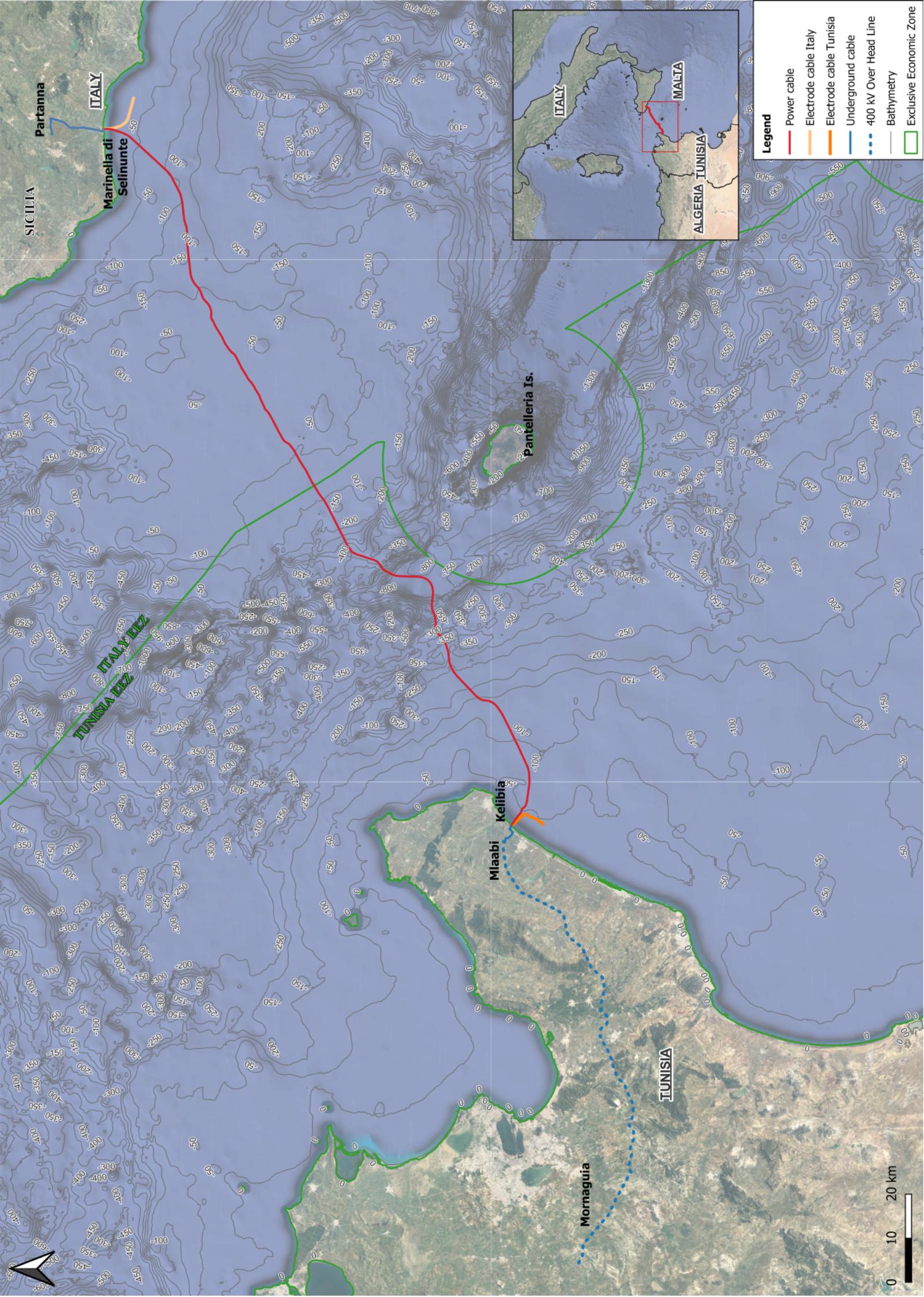
Project Manager	Ricardo Khoury
Marine ecologist / Biodiversity specialist	Manal Nader
Environmental Specialist	Nadine Kanaan

2.4.5 PLEXUS ENERGY

Project Manager/Senior Social Specialist	Jay Wagner
Senior RAP Specialist	Renè Ford

2.4.6 SAP (Subcontractor)

Project Manager	Alberto Manicardi
Archaeologists	Marco Correra, Teresa Saitta



SICILIA

Partanna

ITALY

Marina di Selinunte

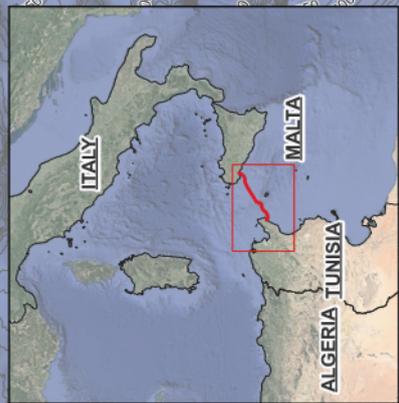
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TUNISIA EEZ

Pantelleria Is.

Mlaabi
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TUNISIA

Mornaguia



Legend

- Power cable
- Electrode cable Italy
- Electrode cable Tunisia
- Underground cable
- 400 KV Over Head Line
- Bathymetry
- Exclusive Economic Zone

