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# Green Electricity Bridges to Europe and the Middle East



**12<sup>th</sup> Arab-Hellenic Economic Forum**  
Athens, 12/2023

# Powering Greece: Greening the energy mix

## Energy mix in Greece October 2023

55% of electricity generation came from carbon-free sources (RES & Hydro)



ΟΚΤΩΒΡΙΟΣ 2023

Από καθαρές πηγές  
το **55%** της ηλεκτρικής  
ενέργειας



### Πόση ενέργεια

καταναλώσαμε

**3.665 MWh**

⬆️ **+0,57%\***

ανταλλάξαμε μέσω

των διεθνών διασυνδέσεων

⬇️ Εισαγωγές

**429 GWh**

⬆️ **+39%\***

⬆️ Εξαγωγές

**528 GWh**

⬆️ **+141%\***



⬆️ Μέγιστη ζήτηση

**6.308 MW**

📅 05/10/2023 ⌚ 14:00

⬆️ Ελάχιστη ζήτηση

**3.481 MW**

📅 29/10/2023 ⌚ 05:00

\* Σε σύγκριση με τον Οκτώβριο 2022  
\*\* Μη πιστοποιημένες μετρήσεις



# Interconnections as Projects of Energy Transition

- ✓ Reliable, stable and quality power supply from the mainland
- ✓ Retirement or stand-by of costly local power stations
- ✓ Drastic reduction of CO<sub>2</sub> emissions

In the coming years, with the completion of the electrical interconnections developed by IPTO in the Aegean region, **carbon dioxide emissions will be reduced by 1.8 million tons annually**

- ✓ Improved quality of life, reduced nuisance to both islanders and visitors as well as upgraded touristic product
- ✓ Reduced power cost through reduction of SGI Charges (Services of General Interest)
- ✓ Increased RES penetration

**IPTO goal → to interconnect all major islands in Greece by 2030**



# IPTO invests 5B€



interconnecting the future

## National Development Plan Major Projects

Project description	Expected commissioning
Dodecanese interconnection	2028
Crete - Attica interconnection	2024
Northeast Aegean interconnection	2029
New interconnection with Italy	2031
Southern & Western Cyclades interconnection Santorini, Folegandros, Milos, Serifos	2025
Equipment renovation	2026
1 <sup>st</sup> 400kV branch to Peloponnese	2023 (completed)
2 <sup>nd</sup> 400kV branch to Peloponnese	2025
EHV S/S Thesprotia and its connection to the 400kV System	2030
System stability & control / BESS	2024
Fiber Optics	2024
New interconnection with Turkey	2029
New interconnection with Albania	2030
New 400kV interconnector to Bulgaria	2023 (completed)



# Existing international interconnections

## Seven 400kV interconnections

### Italy

- Submarine HVDC link, 500MW, Arachthos - Galatina

### Albania

- 400kV OHL, 1,400MVA, Kardia - Zemblak

### North Macedonia

- 400kV OHL, 1,400MVA, Meliti – Bitola
- 400kV OHL, 1,400MVA, Thessaloniki - Dubrovo

### Bulgaria

- 400kV OHL, 1,400MVA, Thessaloniki – Blagoevgrad
- 400kV OHL, 2,000MVA, Nea Santa – Maritsa

### Turkey

- 400kV OHL, 2,000MVA, Nea Santa - Babaeski

## One 150kV interconnection

### Albania

- 150kV OHL with Albania, 138MVA, Mourtos - Bistrica







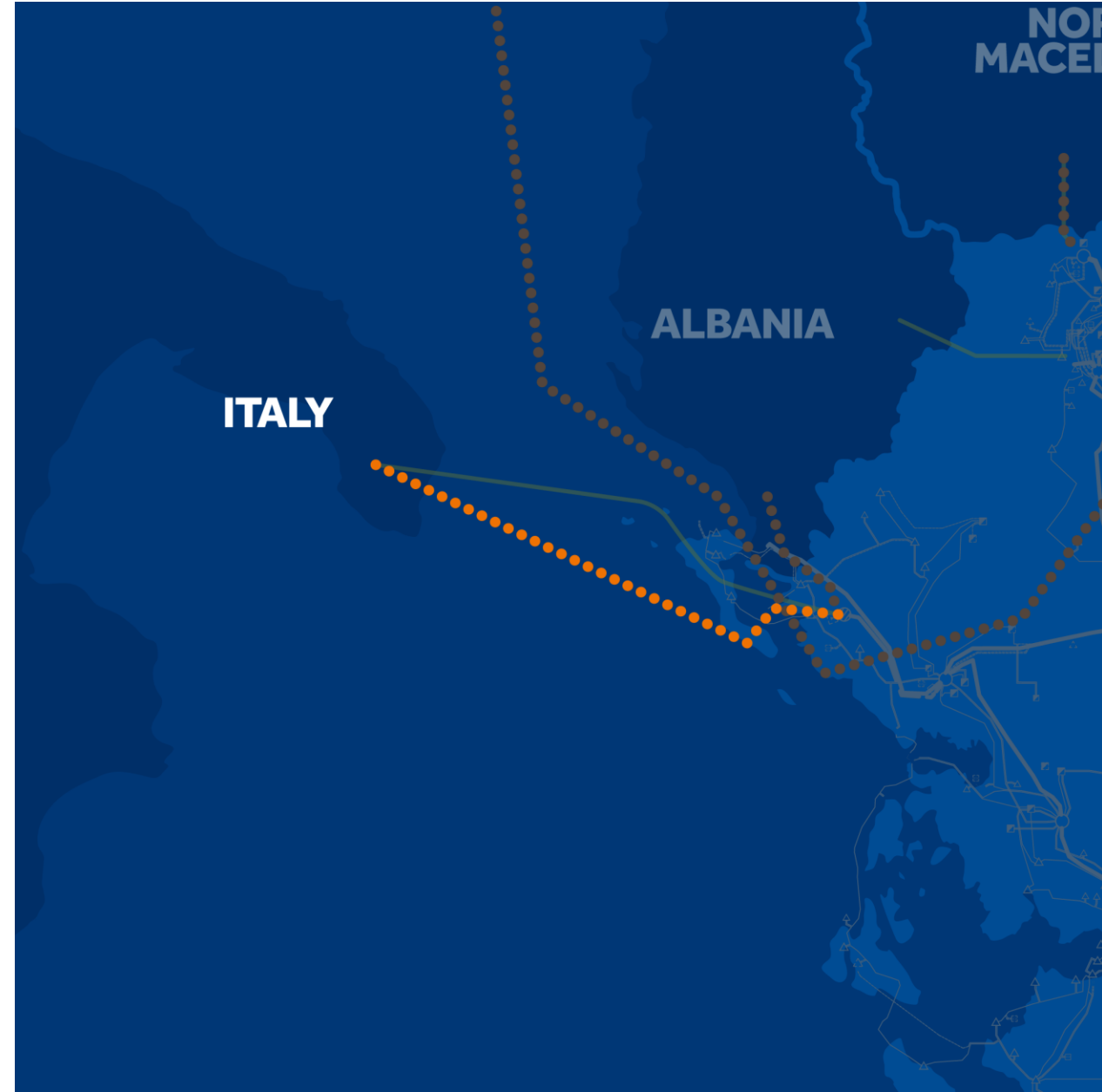
# New international interconnections



# Interconnection with Italy

## 2<sup>nd</sup> interconnection with IT

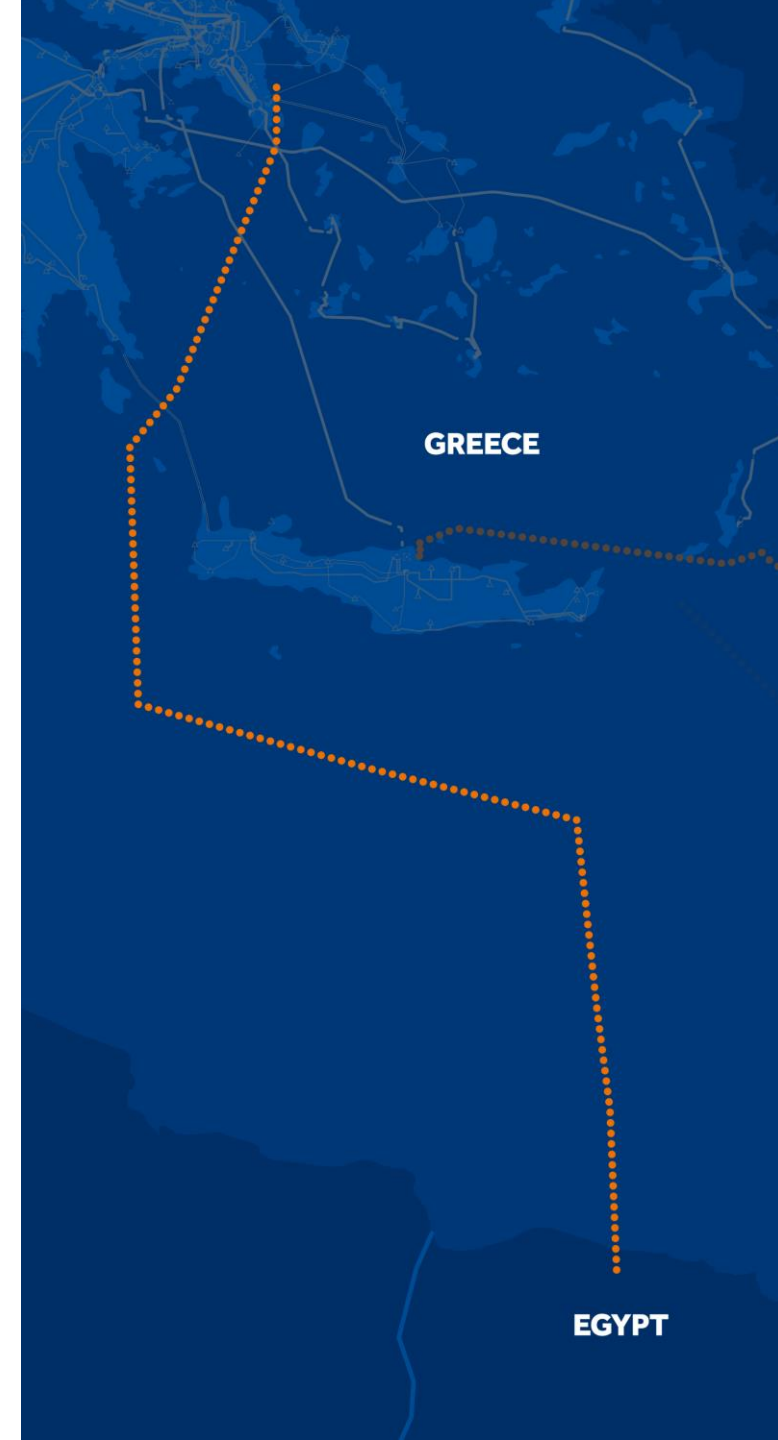
- **Overview:** New HVDC link between Greece and Italy
- **Capacity:** 1,000MW
- **Expected completion:** 2031
- **Status:** Planned, not yet in permitting
  - Included in the Greek NDP
  - Included in the TYNDP of ENTSO-E



# Interconnection with Egypt: GREGY Interconnector

## Interconnection with EGY

- **Overview:** New submarine interconnection between Greece and Egypt
- **Estimated capacity:** 3GW  
3GW from renewables in Egypt
- **Project Promoter:** Elica SA  
Potential participation of IPTO up to 33.3% in the share capital of GREGY
- **Status:** Under consideration  
Ready to carry out the Feasibility Study

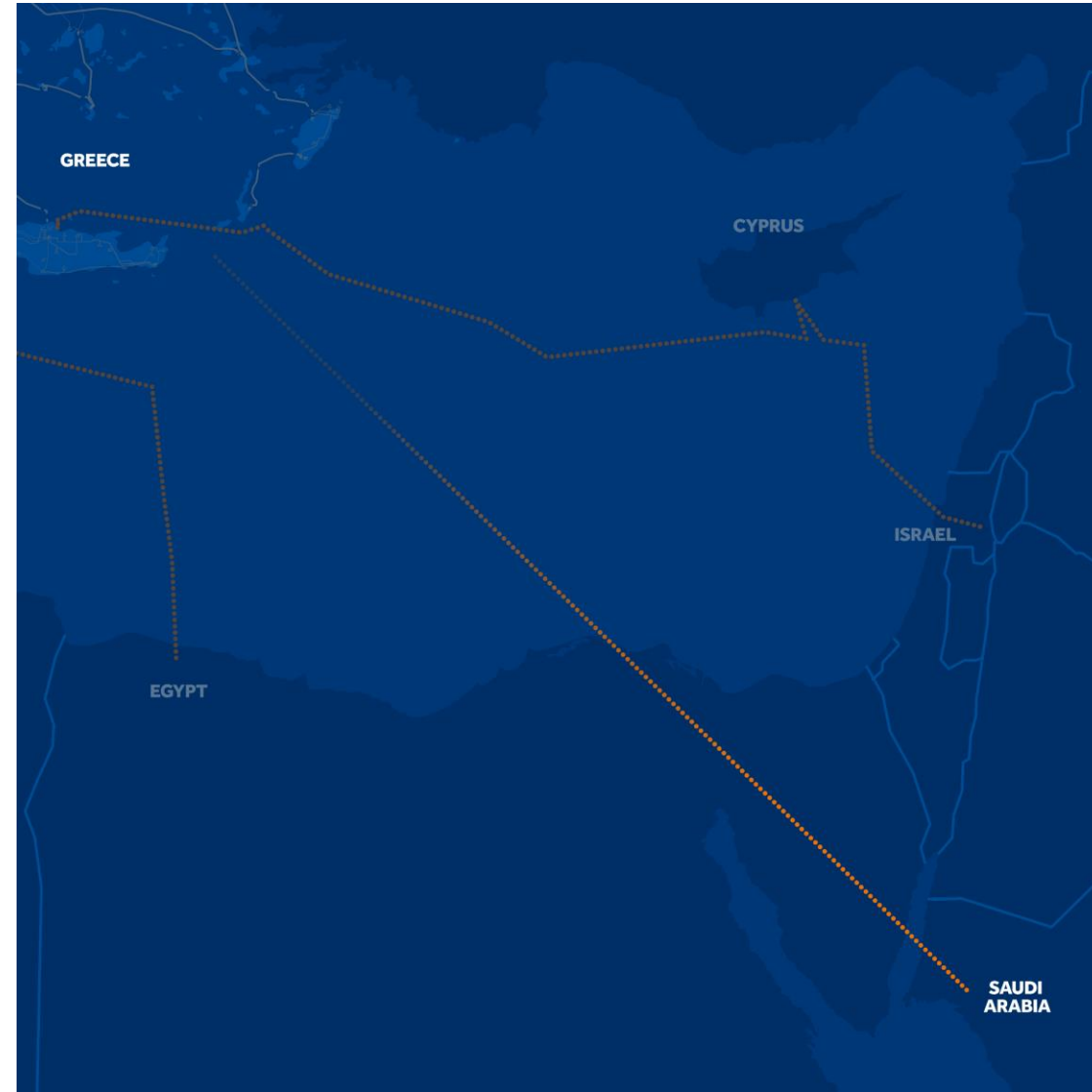




# Interconnection with Saudi Arabia: Saudi Greek Interconnection

## Interconnection with KSA

- **Overview:** New interconnection with Saudi Arabia
- **Collaborative initiative:** SPV under establishment by the two TSOs to conduct studies for the feasibility of the project  
IPTO & National Grid S.A - Saudi Electricity Company
- **Focus:** Transmission of clean energy from North Africa and the Middle East to Europe
- **Status:** Under consideration



# Dive in Saudi Greek Interconnection (I)

## Benefits of the new interconnection

- Further strengthening the fundamentals of the cooperation between GR and KSA
- Significant enhancement of both Systems' resilience
- Paving the way for clean energy exchange between Europe and the Middle East
- Contribution to achieving the EU major objectives *Fit for 55* and *RePowerEU*

## Saudi Greek Interconnection S.A.

- SPV under establishment by NG and IPTO
- Its initial step is to assess and analyze the feasibility of developing an international power interconnection between GR and KSA

# Dive in Saudi Greek Interconnection (II)

## Background

- MoU signed between GR and KSI regarding the mutual collaboration on the energy sector in 7/2022

## SGI project initiation

- SHA signed between NG and IPTO in 9/2023

## Setting the foundation

- Kickoff meeting took place in 10/2023
- Teams for project management were formed

## Status

- Legal procedures for SGI's notarial incorporation in progress
- SGI's Articles of Association in progress

## Upcoming milestones

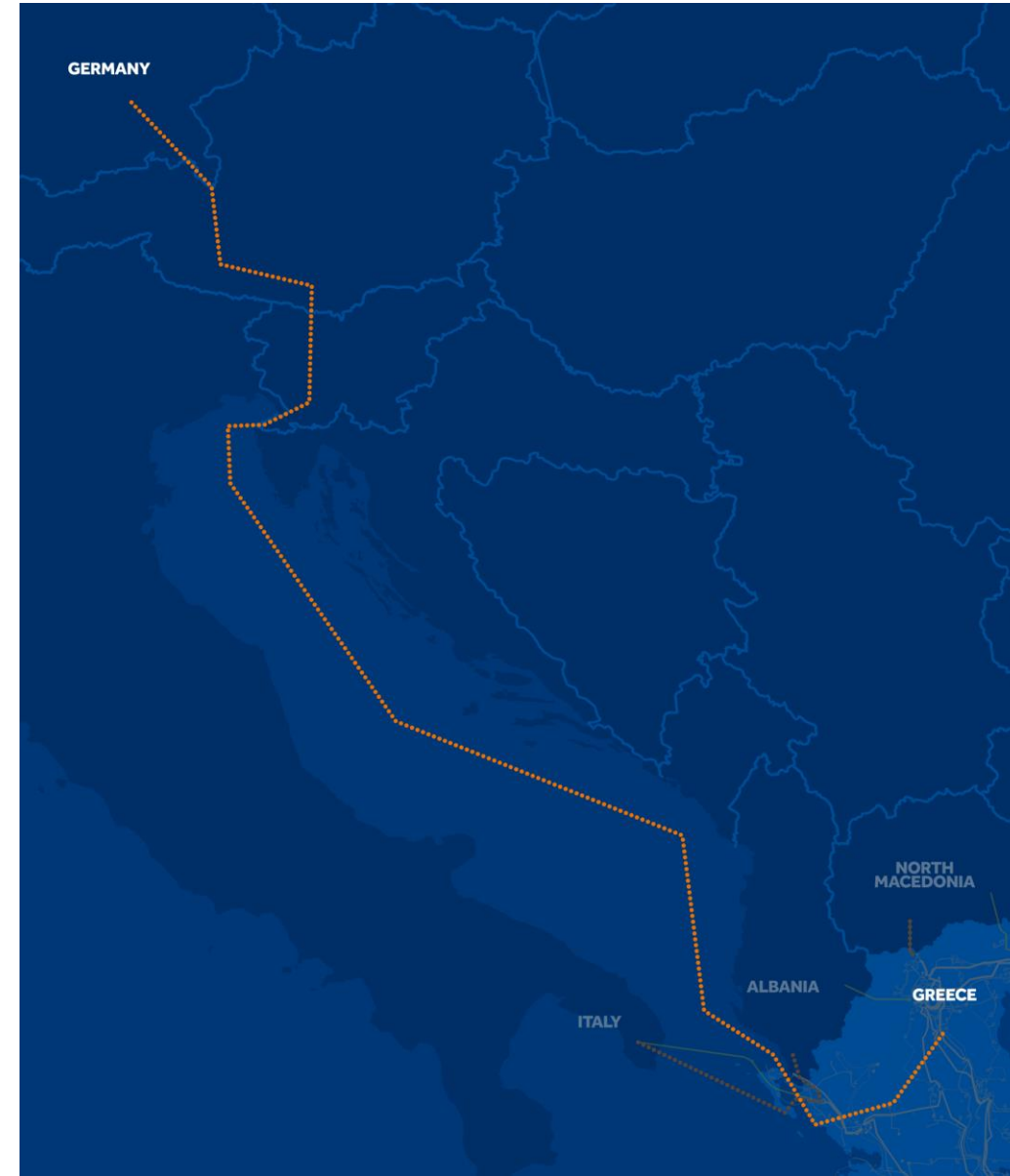
- Technical specifications formulation / meeting of the technical teams
- IPTO BoD meeting to appoint members of the new entity's BoD in 12/2023
- Key milestones of the "initial phase" (SGI incorporation and share capital deposit) expected to conclude in mid 1/2024



# Interconnection with Germany: Green Aegean Interconnector

## Interconnection with DE

- **Overview:** New HVDC interconnection with Germany
- **Estimated capacity:** 3GW (Stage 1)  
Including possible additional Stages: 6-9GW (Stages 1, 2 and 3)
- **Route:** Greece, Adriatic Sea, Slovenia, Austria, Germany
- **Status:** Under consideration  
Submitted for inclusion in the TYNDP of ENTSO-E

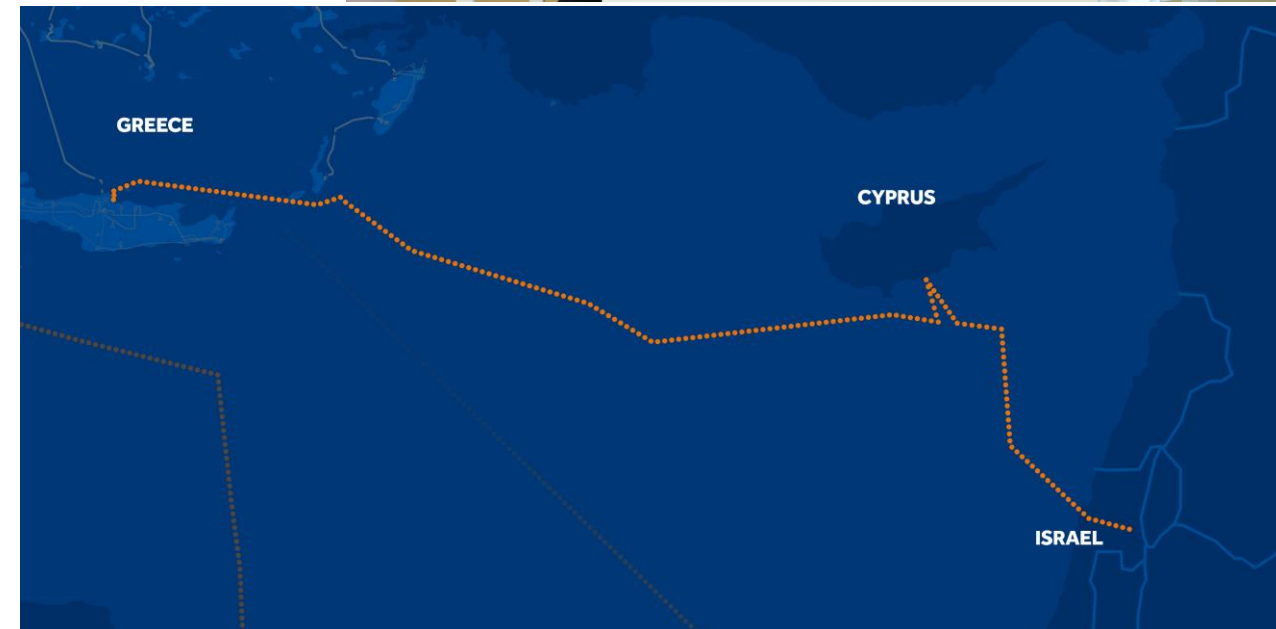




# Interconnection with Cyprus & Israel: Great Sea Interconnector

## Interconnection Greece - Cyprus - Israel

- **Overview:** New submarine HVDC interconnection between Greece (Crete), Cyprus and Israel
- **Capacity:** 1GW (Stage 1)
- **Expected completion:** Stage 1 in two phases  
Phase 1: Crete - Cyprus (2029)  
Phase 2: Cyprus - Israel (yet to be defined)
- **Status:** In progress  
Cables contract signing completed  
Licensing process in final stages  
Basic studies in progress



# IPTO highlights

**4.7B€** investments up to 2033

Experience in **record-breaking** projects of **high technical complexity**

Use of **cutting-edge equipment**

**Excellent track record** in implementing projects on time or ahead of schedule

**Leader in Greek infrastructure sector**

Leading TSO as **Strategic Investor**

New **local** and **international interconnections** that will **double the Transmission System**

Joining forces with international **leading manufacturers**

Energy projects with significant **financial, social and environmental footprint**

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**Thank you!**

