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A Report of the CSIS Energy Security and Climate Change Program

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Introduction

Geopolitics, Connectivity, and Energy Security: An Athens Conversation

On March 31, 2025, the German Marshall Fund of the United States, in collaboration with the Center for Strategic and International Studies, hosted a conference in Athens, Greece. Sponsored by the Public Power Corporation S.A. (PPC), this meeting was the third in a series of convenings that had begun a year prior in Washington, D.C. But this one came at a precipitous time, as President Donald Trump and his administration were rapidly realigning the foreign policy of the United States and its stance toward Europe. The urgency and uncertainty of the moment forced participants beyond convention and toward a survey of the new ground on which the politics of energy will play out.

"Leverag[ing] technological progress and steep cost curves to produce homegrown renewable electricity . . . coupled with expansion and modernization of our power grids contributes to the affordability and energy security of the region."

– Georgios Stassis, Chairman and CEO, PPC[1]

Georgios Stassis, chairman and CEO of PPC, speaks at the "Geopolitics, Connectivity, and Energy Security: An Athens Conversation" conference on March 31, 2025.

Photo: German Marshall Fund of the United States.

OLD ALLIES, NEW RULES

The Trump administration's approach to transatlantic issues has awed European leaders. In February, Vice President JD Vance gave a speech at the Munich Security Conference that offered a stinging critique of European political leaders and their approach to domestic and international politics. The Trump administration seemed dedicated to withdrawing security support for Europe to force the bloc to stand up for its own defense. The administration's haste to reform the transatlantic relationship, alongside its aim to force peace between Russia and Ukraine, felt to many in Europe like abandonment. Trade conflicts added an economic dimension to the perceived antagonism. Liberation Day, which came just two days after this conference, threatened a 20 percent tariff on European goods entering the United States.

Panelists in Athens agreed on the urgent need for Europe to establish a strategy for engagement with the United States and chart its own path forward in global affairs. With a rapidly receding United States, they pointed out, European leaders will need to find ways to manage internal strife and political dynamics to focus on essential goals: funding defense, ensuring economic competitiveness, and dealing with the new economic nationalism of the United States.

Still, panelists on either side of this reorientation were optimistic about the prospects for Europe and the transatlantic relationship that will emerge under these new conditions. Panelists observed that pressure from the United States could incentivize Europe into deeper internal collaboration around key areas: security, economic competitiveness, and energy. They also noted that the more independent Europe which emerges could be a larger economic and geopolitical force than the Europe of today.

"I think two enduring feature of Trumpism that are not just going to be a feature of this administration, but likely continue going forward is greater transactionalism and more nationalism."

– Peter Rough, Senior Fellow, The Hudson Institute

"I actually think Europe's going to emerge from this stronger definitely on the security front. And I actually think the pressure from Trump is going to drive a lot of economic reforms in Europe that's going to make Europe more competitive. So, I'm actually bullish on Europe. I would buy Europe."

– James Carafano, Senior Counselor to the President and E.W. Richardson Fellow, The Heritage Foundation

"Transatlantic relations is going to go through an incredibly rough patch over the next year and I think it's going to get so bad that we're not sure that we can repair it. And that involves everything from Greenland to trade, tech fights over Twitter, and troop withdrawals. But I think that Europe comes out of this in some ways stronger and it may be actually beneficial to Europe in the long run."

– Max Bergmann, Director of the Europe Program, Center for Strategic and International Studies

"I land where my colleagues land, which is I think that the transatlantic relationship will emerge from this period intact. So be patient. Don't write us off. We will stick around."

– Charles Kupchan, Senior Fellow, Council on Foreign Relations

"The burden sharing point is an old one. Multiple administrations have brought this to Europe with more or less success. His style is perhaps a little different, but nonetheless the message is not that much different, pay more do more, et cetera."

– Ian Lesser, Distinguished Fellow and Adviser to the President, German Marshall Fund of the United States

From left to right: James Carafano, senior counselor to the president and E.W. Richardson Fellow; Max Bergmann, director of the CSIS Europe, Russia, and Eurasia Program; Peter Rough, senior fellow and director of the Center on Europe and Eurasia at the Hudson Institute; Charles Kupchan, senior fellow at the Council on Foreign Relations, and Ian Lesser, distinguished fellow and advisor to the president, speak at the "Geopolitics, Connectivity, and Energy Security: An Athens Conversation" conference on March 31, 2025.

Photo: German Marshall Fund of the United States.

While U.S.-European relations are tumultuous today, panelists thought it would be a mistake to discount the lasting transatlantic alignment, even as the rules and expectations that may govern it will change. The relationship between the United States and Europe is defined by a shared history and deep economic, social, and cultural integration. Shared U.S.-European interests reveal that working together will yield benefits for both. And the core of the new cooperation could be energy security and innovation, where the two blocs have been aligned and able to cooperate across multiple administrations and presidencies. In the near term, such cooperation will likely require a more pragmatic, project-based, approach—where investments in infrastructure and technology innovation can realize benefits for both the United States and Europe.

THE ESSENTIAL ROLE OF SOUTHEAST EUROPE

A central theme in the conversations was how countries in Europe could transform the now three-year energy crisis into an opportunity to establish a comprehensive, long-term, energy framework for the continent. The challenges to doing so are significant. Europeans still pay high prices for energy, and the threat of energy insecurity looms. The costs of investment in energy

now must be weighed against the need to invest in economic security and reestablish a defense industrial base. And Europe maintains a legal and political mandate to respond to climate change.

Panelists highlighted three key tools for addressing those challenges: policy alignment, innovation, and interconnection. On policy, panelists pointed to the need to align energy strategies at the European level, so that the 27 EU member countries could act together. With more cross-border mechanisms for exchanging energy, Europe can plan to use its resource endowments more efficiently, reducing costs and leveraging technology and markets to develop energy in line with climate goals. With sufficient interconnection, Europe could capture wind or solar when each is most available and reduce the high prices that have plagued smaller markets like those in eastern and southeastern Europe. In adding innovative energy storage technologies and complementary gas infrastructure, Europe can realize a more secure energy sector and economic competitiveness. To execute this will take the same level of coordination and commitment of purpose that Europe displayed after the 2021 energy crisis.

A European approach to energy will have to extend beyond European borders. The conference's location in Athens gave panelists the opportunity to explore the ever-changing geopolitical landscape in southeastern Europe and the role the region will play in broader energy and geopolitical events in the coming years. Greece already acts as a connecting point between the Mediterranean and the countries of eastern Europe, providing trade in oil and refined products, access to gas via the ports on the Mediterranean, and exports of plentiful electricity. As renewable capacity in the region increases, Greece also has the capacity to play a key role in the supply of clean electricity into Europe.

Policymaker Highlight: Nikos Tsafos, Deputy Minister of Energy

"The challenge that we face is on the one hand we have a climate pressure, but we also have the pressure of energy costs and competitiveness. And so a big part of our job as policy makers is how do you juggle those different things? Because the more you do in one way, the more difficult it might be to do something else."

"The trouble for a country like Greece in thinking about the connectivity with especially essentially North Africa is the scale of North Africa is so much greater than what we can absorb. So if you bring electricity from Egypt and you just bring it to Greece, there's just too much. So really for us, it's about refashioning the European network."

From left to right: Gabriel Mitchell, policy fellow at Mitvim; Nikos Tsafos, chief energy adviser, Office of the Prime Minister of Greece; and Joseph Majkut, director of the CSIS Energy Security and Climate Change Program, speak at the "Geopolitics, Connectivity, and Energy Security: An Athens Conversation" conference on March 31, 2025.

Photo: German Marshall Fund of the United States.

Several interconnections that will link southern Europe to North Africa and the Middle East are already being planned and promoted. These proposed interconnections will serve not just one market, but all of Europe via connections through countries like Greece. In shifting the conversation from supplying Greece to supplying much of Europe, regional and international connections will emphasize the significant political and geopolitical advances that come from deeper power integration. Large interconnections require trust, stability, and security at either end. And they can bring economic opportunity and investment to developing or conflict-damaged societies. By fostering energy partnerships across traditional boundaries, Europe has an opportunity to build more than infrastructure. It can build lasting frameworks for regional cooperation, economic development, and security. Southeastern Europe, and Greece, will be at the heart of this revolution. As Alexandros Paterakis of PPC has observed,

> Greece is where it is. It's at the southeastern tip of Europe and it's in the middle of the crossroads . . . whether it's North Africa or Middle East, I think at this point in time there's no going back. Integration or connectivity as we mentioned before will have to happen at this level.

INNOVATION AND INTEGRATION: THE PATH FORWARD

Globally, it has become increasingly evident that the economic frontier is heavily reliant on the expansion of the electricity system.[2] The expansion of data centers to power artificial intelligence (AI) is the most immediate concern, as companies and countries are chasing opportunity in a brand new industry. Speaking of one recent PPC initiative in West Macedonia, Georgios Stassis remarked,

> We announced just last week the development of a mega data center in the area of West Macedonia, an area where our former mines were located. Initially, our mega data center will have the capacity of 300 megawatts and gradually we'll move to the level of 1,000 megawatts.

Following on, however, is energy demand growth that will come from multiple sources. Improving productivity from AI portends potentially rapid economic growth and energy demand growth to match.[3] Meanwhile, rerouting and reshoring manufacturing supply chains for defense, energy, and other products will accompany electrifying large parts of the economy in putting upward pressure on demand. The very same areas where Europe must invest to meet its economic, geopolitical, and energy priorities will put new demands on electricity.

Panelists in Athens emphasized the growing interconnectedness of the digital and energy economies, presenting both challenges and opportunities for Europe. One such opportunity lies in the convergence of these two sectors, which offers numerous avenues for generating efficiencies and new revenue streams, as well as balancing electricity grids with innovative economic activities. Data centers, anticipated to be substantial energy consumers, can contribute to both economic growth and geoeconomic cooperation with the United States, a global leader in this technology. As the infrastructure necessary for developing these data centers and providing them with power and digital infrastructure is constructed, new investment can go to redeveloping industrial areas to the benefit of local communities, countries, and the global community.

The History of Europe's Grid Integration

The European electricity grid is the largest interconnected transmission network in the world. It is overseen by the European Network of Transmission Operators for Electricity (ENTSO-E), which comprises 40 member transmission system operators (TSOs) representing 36 countries (Figure 1).[4] This integration originated across eight western European countries and was initially called the Union for the Coordination of Production and Transmission of Electricity (UCPTE). It arose out of the Marshall Plan, and its purpose was to ensure the most effective use of the limited energy resources remaining after the severe destruction of European infrastructure during World War II.[5]

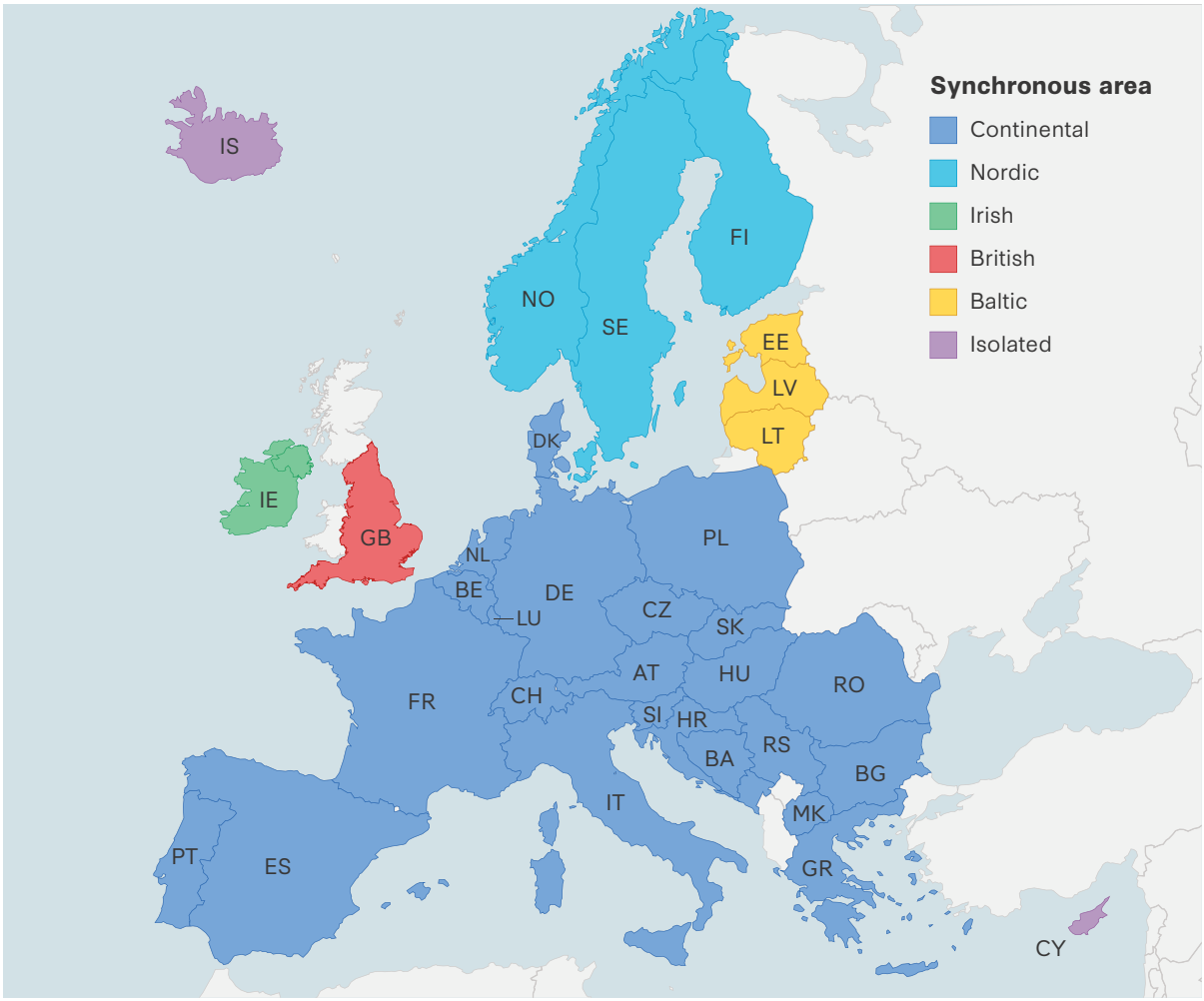
While the UCPTE expanded to include additional western European countries throughout the 1980s, both political and technical constraints limited further west-east synchronous interconnection until 1995, when UCPTE integrated with the CENTREL group of power utilities comprising the Czech Republic, Hungary, Poland, and, Slovakia.[6] Further expansion to North Africa was realized in 1998 when a submarine cable was completed between Morocco and Spain.

The current iteration of ENTSO-E was established in 2008 as part of a cooperative commitment acknowledging the intensive coordination needed between transmission operators, generators, legislators, regulators, researchers, and other stakeholders to meet the European Union's newly announced "20-20-20" targets (20 percent decarbonization, 20 percent increase in share of renewable energy sources, and 20 percent improvement in energy efficiency by 2020).[7]

Today, ENTSO-E spans over 550,000 kilometers of circuits comprising alternating current (AC) lines and cables and direct current (DC) cables. Cross-border exchanges within ENTSO-E member

countries totaled almost 420 terawatt-hours (TWh) in 2023, while exchanges between ENTSO-E member countries and external countries totaled 18 TWh.[8]

Figure 1: ENTSO-E Member Countries



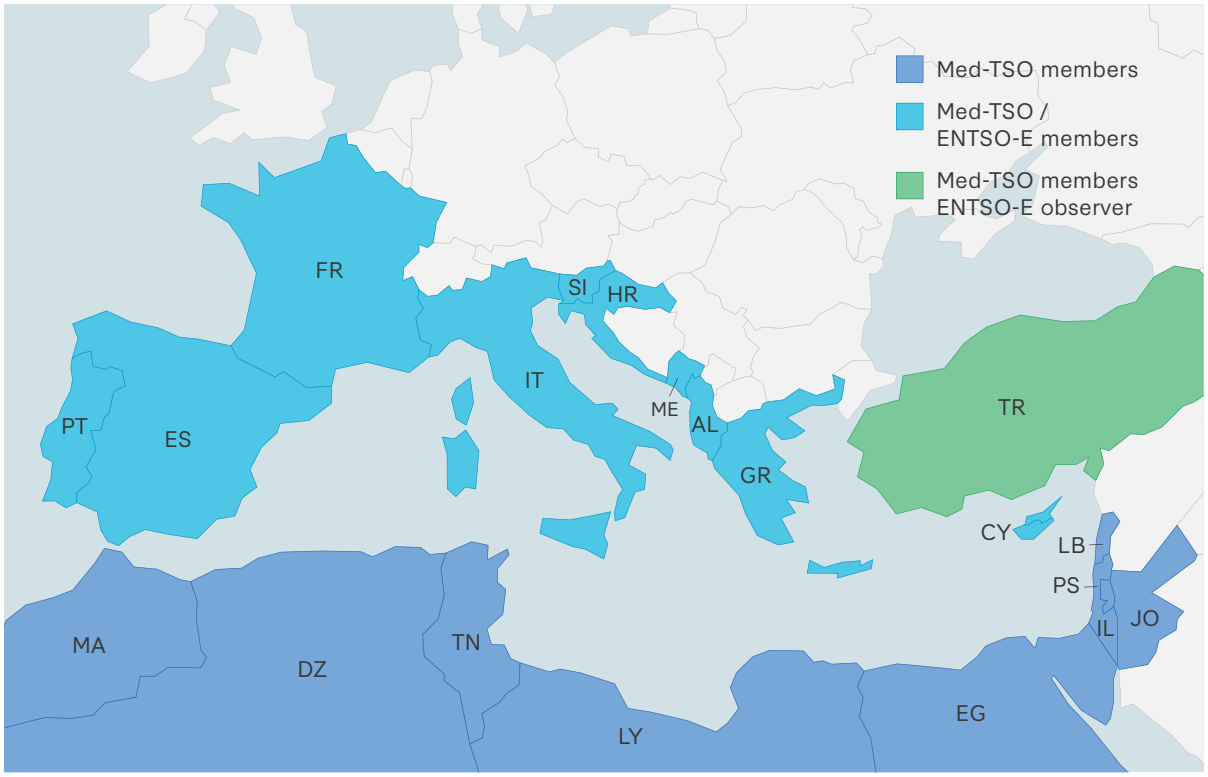
Source: Krum Gerasimov, Konstantin Gerasimov, and Nikolay Nikolaev, "Advanced Tools for Stability Improvement of Interconnected Electric Power Systems," International Scientific Symposium Electrical Power Engineering, September 2024, https://www.researchgate.net/publication/280546326_Advanced_Tools_for_Stability_Improvement_of_Interconnected_Electric_Power_Systems.

A Vision for an Interconnected Mediterranean Grid

In 2012, 14 TSOs from 12 countries established the Association of the Mediterranean Transmission System Operators for electricity (Med-TSO) to use multilateral collaboration to facilitate the integration of the Mediterranean power systems and to foster security and socioeconomic development in the region.[9] Today, it has expanded to include 20 TSOs from 20 Mediterranean countries (Figure 2), some of which are also ENTSO-E member countries.

The European Commission has supported several of the recently completed and proposed future projects in the Med-TSO, in recognition of their benefits for energy security, renewable energy integration, and political and economic stability.

Figure 2: Med-TSO Member Countries



Source: "About Us," Med-TSO, accessed May 15, 2025, https://med-tso.org/en/members/.

The Case for Further Integration

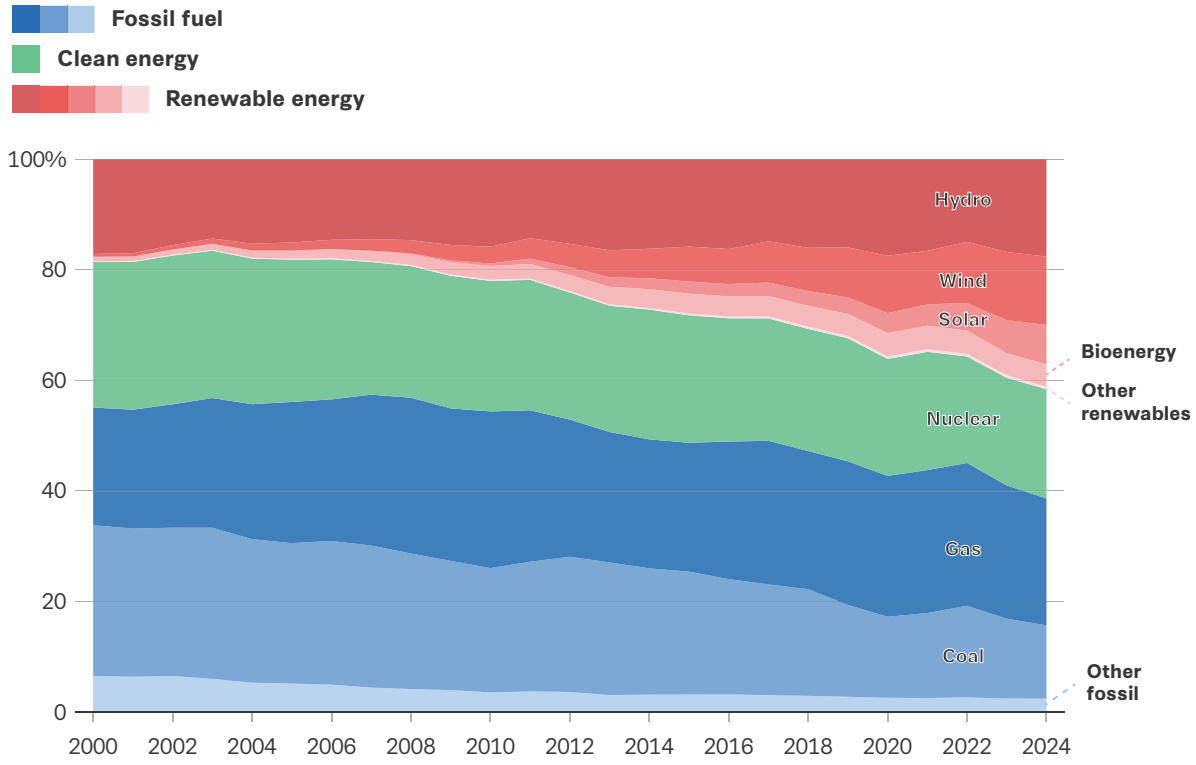
Renewable Resources

The Mediterranean region has untapped potential for deploying renewable energy sources. Harnessing these resources is essential both to decarbonize the Mediterranean region—where fossil fuels make up 65 percent of the energy mix in northern states and 92 percent in the south—and to generate clean electricity and hydrogen to export to the European Union to help meet Europe's climate goals.[10]

The European Union's "Fit for 55" laws obligate the reduction of greenhouse gas emissions by at least 55 percent by 2030 and require the European Union to be climate neutral by 2050. Among other provisions, Fit for 55 includes a revised renewable energy directive that increases the EU-level target of renewable energy sources in the overall energy mix from at least 32 percent to at least 40 percent by 2030.[11] Additionally, Fit for 55 includes a hydrogen and decarbonized gas market package that aims to shift to 66 percent of natural gas demand being met by renewable and low-carbon gases, up from 5 percent today.[12] To meet both of these targets, the European Union will have to rely on imported electricity and fuels from the Mediterranean region, where there is high renewable potential (Figure 4 and Figure 5) and a relatively high degree of available land.

Many countries in the southern Mediterranean region have ambition to expand renewable capacity, in part to mitigate climate impacts in the vulnerable region and in part to take advantage of opportunities to meet Europe's clean energy demand. For example, Tunisia and Morocco have signed the Global Renewables and Energy Efficiency Pledge. The region has also supported the Pan-Arab Sustainable Energy Strategy 2030, which aims to reach 12.4 percent renewable energy

Figure 3: EU Electricity Generation Mix



Source: "Electricity Data Explorer," Ember, accessed May 15, 2025, https://ember-energy.org/data/electricity-data-explorer/.

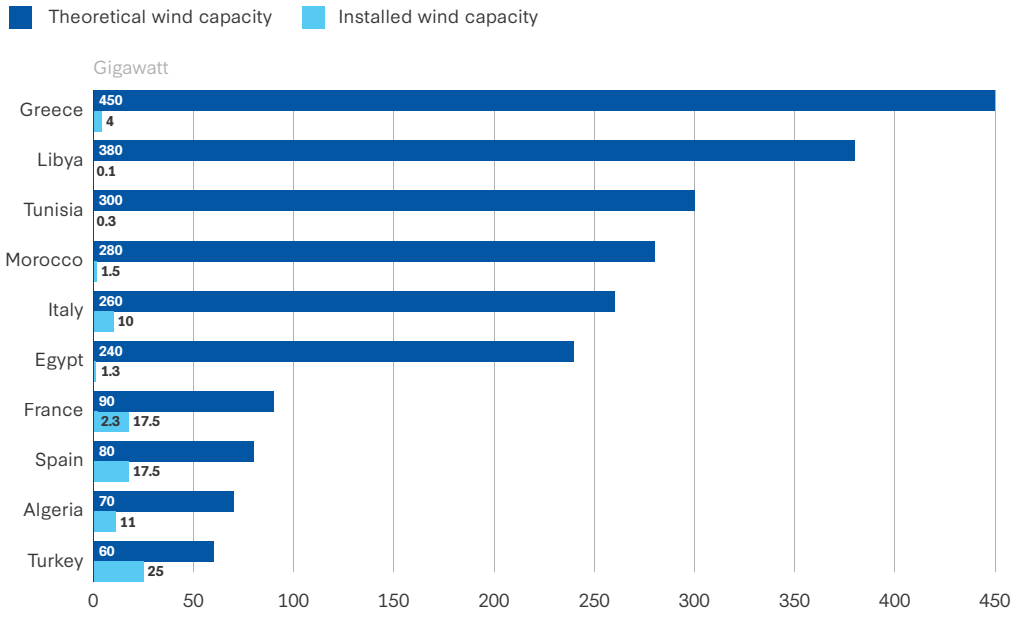
share in the Arab region's electricity mix. Furthermore, several of the countries in this region have submitted nationally determined contributions (NDCs) with renewable energy targets as part of the Paris Agreement (Table 1).

Economics

In addition to helping to meet climate goals, grid integration between Europe and the Mediterranean will help reduce reliance on volatile natural gas markets and allow for more cost-effective integration of renewable resources with higher capacity factors in North Africa than in many parts of Europe. Additionally, interconnected grids facilitate price convergence across the connected regions, which will be economically favorable to countries with isolated grids and high costs of electricity, such as Cyprus. Grid integration also disadvantages countries with low electricity costs by causing local electricity prices to increase, although generally larger integrated markets are likely to drive innovation and efficiency gains.

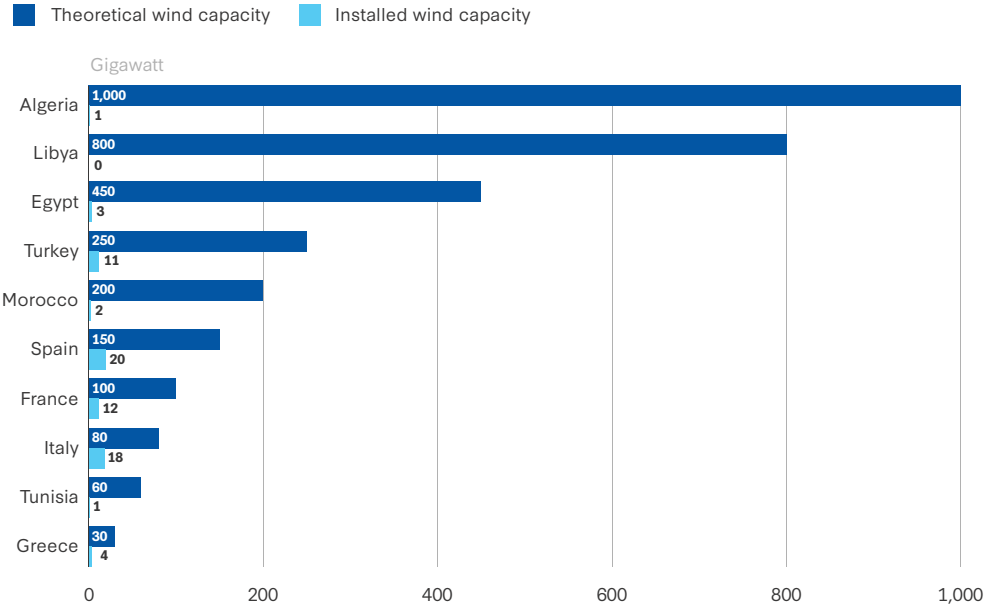
For the Mediterranean region, integrating with Europe will allow for new export opportunities for green electricity and hydrogen, which will diversify and expand the economy while reducing dependence on traditional fossil fuel exports. Additionally, interconnection projects and associated infrastructure and supply chain development create jobs in manufacturing, installation,

Figure 4: Theoretical Wind Potential vs. Installed Capacity in Select Mediterranean Countries[13]



Source: Gabriele Cassetti and Filomena Annunziata, *Setting the Scene for an Interconnected, Renewable Mediterranean Energy System* (ECCO, October 2024), https://eccoclimate.org/wp-content/uploads/2024/10/The-basis-for-an-interconnected-mediterranean-energy-system_Research-paper_ECCO.pdf.

Figure 5: Theoretical Photovoltaic (PV) Potential vs. Installed Capacity in Select Mediterranean Countries



Source: Gabriele Cassetti and Filomena Annunziata, *Setting the Scene for an Interconnected, Renewable Mediterranean Energy System* (ECCO, October 2024), https://eccoclimate.org/wp-content/uploads/2024/10/The-basis-for-an-interconnected-mediterranean-energy-system_Research-paper_ECCO.pdf.

Table 1: Renewable Targets for Selected Southern Mediterranean Countries

Country	2030 Renewable Target
Algeria	27 percent renewable share of generation
Morocco	52 percent renewables share in installed capacity
Egypt	42 percent renewable share of electricity generation
Tunisia	35 percent renewable share of generation

Source: "2030 Global Renewable Target Tracker," Ember, https://ember-energy.org/data/2030-global-renewable-target-tracker/; and "Tunisia Country Commercial Guide: Electrical Power Systems and Renewable Energy," April 15, 2024, https://www.trade.gov/country-commercial-guides/tunisia-electrical-power-systems-and-renewable-energy.

maintenance, and related services. Import demand from Europe also de-risks renewable energy projects, which can further attract foreign investment into the region.

Security, Reliability, and Resilience

One of the greatest advantages of cross-border interconnections is the enhanced reliability of electricity supply; power outages are reduced, as failures of a generating unit can be immediately compensated for by neighboring systems.[14] Integrated grids allow for easier ability to control frequency stability and voltage levels, as the total system can be controlled without each separate system having to maintain its own frequency. In an integrated setup, the total reserve capacity only needs to match the highest single-system loss, instead of each grid holding enough reserves to cover its own worst-case scenario. This is because power imbalances in one area can be offset by adjustments in generation or load elsewhere within the interconnected network.

Additionally, longer-term reliability and resilience against both natural disasters and geopolitical tensions are strengthened by grid integration. A greater diversity of primary energy sources and more spatially dispersed generators contribute to greater supply security. For example, if one area is impacted by an extreme event that causes power disruptions, a geographically expansive network allows for the loss of generation to be supplemented by plants in other regions not impacted by the event. This will become especially important as the Mediterranean region increasingly experiences extreme heat and precipitation events exacerbated by climate change.

Recent and Planned Integrations

Interconnecting energy systems is of great strategic importance. Europe is a leader in this field, with close to 12 percent of member states' electricity consumption coming from a neighboring country. [15] The EU target is to reach a cross-border capacity ratio of least 15 percent by 2030.[16] Most recently, in 2022 Ukraine and Moldova's grids were connected and synchronized; while this connection had already been planned for 2024, the project was expedited in response to Russia's invasion of Ukraine. In February 2025, Estonia, Latvia, and Lithuania successfully disconnected from the Russian-controlled BRELL energy system and synchronized their electricity grids with Europe to strengthen their geopolitical position and boost long-term energy security and competitiveness.[17] The synchronization initiative received over 1.2 billion euros in grants from the European Union's Connecting Europe Facility.

Further European grid expansion will primarily come in the form of new long-distance high-voltage transmission lines, primarily subsea cables. To meet the stated interconnection target while simultaneously meeting EU climate targets, many of these interconnections must link the European grid to Mediterranean countries with abundant renewable energy potential. The only current interconnection between Europe and North Africa is between Spain and Morocco, consisting of two cables with an expansion expected by 2026.

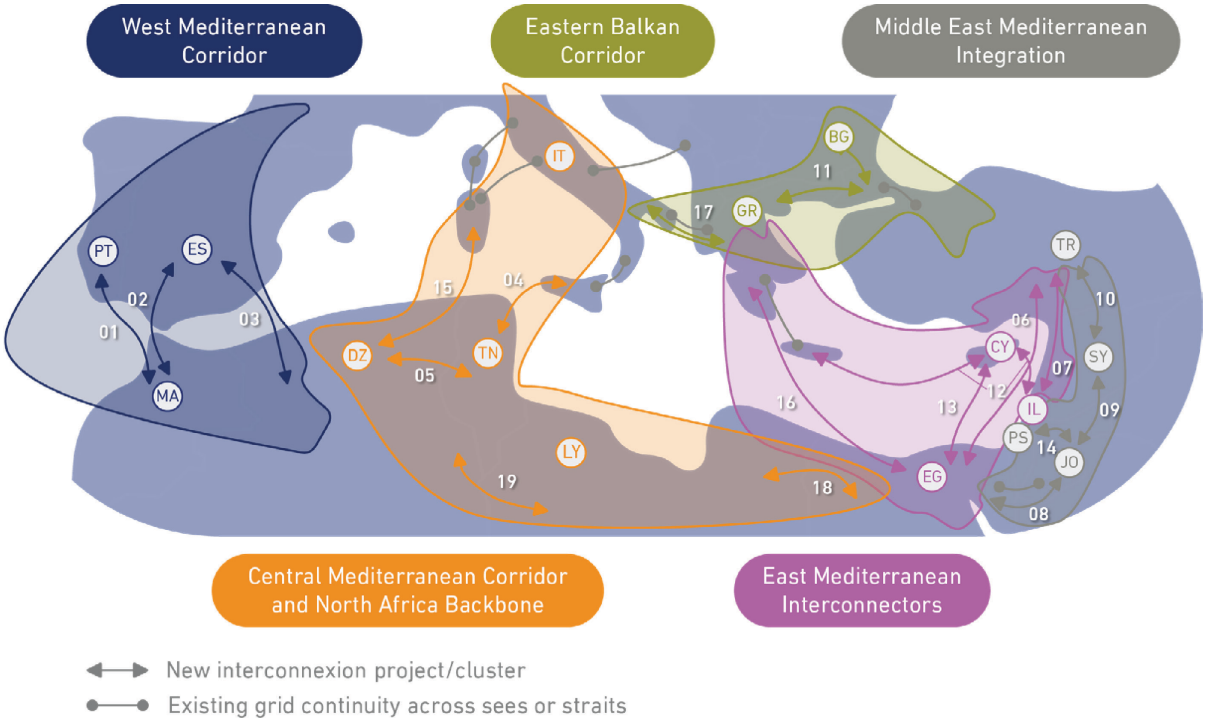
The Med-TSO published a masterplan in 2022 that proposes 19 interconnection projects across five envisioned corridors (Figure 6):[18]

1. Western Mediterranean Corridor (Algeria, Morocco, Portugal, Spain)

2. Central Mediterranean Corridor and North Africa Backbone (Algeria, Egypt, Italy, Libya, Tunisia)
3. East Mediterranean Interconnectors (Cyprus, Egypt, Greece, Israel, Turkey)
4. Eastern Balkan Corridor (Bulgaria, Italy, Greece, Turkey)
5. Middle East Mediterranean Integration (Egypt, Jordan, Palestine, Syria, Turkey)

The portfolio of interconnections is estimated to span about 10,000 kilometers of new transmission lines, allowing for almost 20 GW of new transfer capacity among Mediterranean countries. The flexibility from these interconnections is estimated to reduce carbon dioxide emissions by 24 metric tons (MT) per year.

Figure 6: Proposed Interconnections and Corridors in the 2022 Med-TSO Masterplan



Source: Med-TSO, "Chapter 1: Executive Summary," in *Masterplan of Mediterranean Interconnections* (Med-TSO, 2022), https://masterplan.med-tso.org/MPreport_split.aspx.

Integration Projects Planned by 2030

In addition to the expansion of the Spain-Morocco interconnection, the planned projects anticipated to be completed by 2030 include the GREGY interconnection (linking Europe to Egypt), the Great Sea Interconnector (linking Europe to Israel), and the ELMED project (connecting Italy and Tunisia).

GREGY: CLEAN ENERGY FROM EGYPT TO GREECE

GREGY is a proposed project to link Egypt to Europe via Greece by a 3,000-megawatt (MW) submarine cable spanning almost 1,000 kilometers. Once completed, the cable would carry renewable energy generated in Egypt and is estimated to displace 4.5 billion cubic meters (bcm) per year of natural gas consumption, thereby reducing carbon dioxide emissions by about 10 million MT annually.[19] Approximately one third of the renewable electricity from Egypt would be used by Greece directly, while another third is anticipated to be used by Greece as input to produce low-carbon fuels; the final third will likely be transferred to other European countries.[20] At an estimated cost of 4.2 billion euros, developers seek a final investment decision by the end of 2025 and to be fully operational by 2030. While not yet fully financed or green-lit, the project has already been included in the European Union's Global Gateway initiative focused on mobilizing investments to promote sustainable infrastructure development in partner countries.[21] GREGY is also under consideration as a European Commission project of mutual interest.[22]

THE GREAT SEA INTERCONNECTOR: CONNECTING GREECE, CYPRUS, AND ISRAEL

Construction on the Great Sea Interconnector subsea cable between Greece, Cyprus, and Israel (formerly called the EuroAsia Interconnector) began in December 2023 and is expected to be completed by the end of 2030 at an estimated cost of 2 billion euros. A grant of almost 660 million euros has been promised by the European Union toward the section connecting Cyprus with Crete. The two-way high-voltage direct current (HVDC) line will span over 1,200 kilometers at a depth of over 3,000 meters to deliver 2 GW of energy to Europe, supplying electricity to over 3 million homes.[23] The idea of connecting the power grids between Greece, Cyprus, and Israel has been discussed for over a decade, primarily to mitigate energy security risks for Cyprus and Israel, which currently each operate under isolated grids.

ELMED: CONNECTING ITALY AND TUNISIA

The ELMED project would span almost 225 kilometers, 200 of which would be offshore at a depth of 800 meters. The interconnection is anticipated to reduce generation costs and renewable curtailment in Italy in the near term and allow Tunisia to export renewable energy to Europe in the long term. Studies have also shown that the interconnection would contribute to increased energy security and improved resilience of the Tunisian power system.[24]

Financing European–Mediterranean Interconnection Projects

While specific project costs vary depending on the length of the interconnection and the depth of the subsea cables, cost estimates for electricity grid projects connecting Europe to the Mediterranean are on the order of billions of euros. Commercial loans and equity investments are important funding mechanisms for electricity grid interconnection projects, but such large projects may also require government support. A range of financing mechanisms have been leveraged to raise capital from public sources, demonstrating the potential benefits of developing such infrastructure.

EU FUNDING

- The Connecting Europe Facility for Energy is the main source of EU funding for energy interconnection projects.[25] The European Union has allocated over 5.8 billion euros to the energy sector between 2021 and 2027 for projects that help the transition toward clean energy, with a focus on cross-border renewable energy projects, interoperability of networks, and better integration of the internal energy market.[26]
- The European Union introduced a temporary instrument in 2021 called the Recovery and Resilience Facility, which designates over 180 billion euros for clean energy projects that help EU countries make critical reforms and investments needed to rapidly end their dependence on Russian fossil fuels.[27] It also channels funding for the implementation of the REPowerEU plan to accelerate the clean energy transition and boost EU competitiveness.

INTERNATIONAL FINANCIAL INSTITUTIONS

- The European Investment Bank (EIB) plays a role in cross-border infrastructure projects. The EIB provided loans totaling 3.5 billion euros for cross-border electricity infrastructure from 2010 to 2022, covering 40 percent of these projects' total investment costs.[28]
- The European Bank for Reconstruction and Development (EBRD) provides financing for transmission projects that support energy market interconnection and promote further regional integration.[29]
- The African Development Bank (AfDB) invests in infrastructure projects to support economic development and regional integration, which includes financing electricity interconnection projects between North Africa and Europe.
- The U.S. International Development Finance Corporation (DFC) has historically been an important source of financing for some large-scale interconnection projects in Europe, and especially Ukraine.[30] It also invests in strategically important projects. In 2024, the DFC submitted a letter of intent to support the Great Sea Interconnector project.
- The World Bank has supported energy infrastructure projects intended to expand regional integration. In 2023, the World Bank approved almost 270 million dollars in financing for the ELMED interconnector and support for Tunisia's renewable energy trade.[31]

Challenges

Legal, Regulatory, and Market Barriers

One of the most significant barriers to cross-border grid integration between Europe and the southern and eastern Mediterranean is navigating the different regulatory environments. Common market rules are needed to ensure fair competition, transparent and non-discriminatory network tariffs, proper cross-border trade mechanisms, congestion management, and capacity allocation mechanisms. The more market designs and rules between countries or regions differ, the more likely it is that trade is impeded or distorted between markets.[32] Harmonizing or otherwise adjudicating electricity market regulations, standards, and energy policies is therefore a prerequisite for cross-border interconnection.[33]

The European Union has largely already unified under a common regulatory structure facilitated by the Agency for Cooperation of Energy Regulators (ACER), which works toward developing common market rules and coordinating actions of national regulators. The EU electricity market is liberalized and predominately operates on a marginal pricing model. In contrast, the southern and eastern Mediterranean countries generally operate under less competitive markets and more vertically integrated utilities. In recognition of the importance of integration, the Association of Mediterranean Energy Regulators (MEDREG) is promoting harmonization of electricity markets and regulations across the region by bringing together regulators across 22 countries, but full harmonization will require drastic changes in the regulatory framework, market procedures, technical rules, and administrative measures.[34] In the meantime, differences in markets and rules continue to present challenges to cross-regional grid integration.

Technical Constraints

While several examples of successful electricity interconnections via subsea cables exist, it continues to be a technically complex undertaking. The subsea cable routes must be carefully surveyed to ensure the long-term security and stability of the cable and avoid any obstacles during construction. Additionally, laying the cables requires specialized vessels to install the cables at great depths and under high pressure. The cables themselves must be carefully engineered with advanced materials to withstand the harsh conditions and mitigate energy losses, mechanical stress, and risk of failure.[35] Beyond the cables themselves, converting between the HVDC lines and AC grids requires complex power electronics and control systems. If the HVDC line is connecting to asynchronous grids, it must actively manage the power flow. Careful protection schemes and coordination mechanisms are also needed to account for the differences in characteristics between AC and DC lines.

Realizing Strategic Alignment

"One of the things that Europe needs to do with its energy policy within the context of transatlantic relations is identify initiatives that have bipartisan American support."

– Gabriel Mitchell, Policy Fellow at the Mitvim Institute

Mediterranean energy interconnections solve multiple European challenges at once: They enhance security, build resilience, and make energy more affordable in markets hungry for clean power. These connections form the backbone of Europe's energy security strategy in an increasingly competitive global landscape. For Mediterranean nations on both shores, these projects transform geographic location into strategic advantage, placing them at the center of emerging energy geopolitics.

Europe's energy crisis taught its leaders a painful lesson: Depending on a single supplier creates dangerous vulnerability. Now, as Europe builds a more determined energy strategy—one that delivers clean power at affordable prices—expanded interconnections offer a twofold benefit. They improve energy resilience while weakening Russia's ability to weaponize its resources against European interests. This approach aligns perfectly with the United States' long-standing goal of European energy independence, a policy that serves both economic and strategic purposes.

As leaders in Europe and the United States rethink transatlantic relations, European leaders must identify energy projects that can win U.S. support and engage regional powers. For the United States, supporting Europe's energy independence through these interconnections makes perfect sense. Such infrastructure investments advance multiple American strategic interests: They

can help countries recover from conflict, add to energy abundance and security in Europe, and promote economic development in the Middle East and North Africa. These aren't merely power lines and pipelines—they're pathways to stability, prosperity, and peace.

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