



# Energy transition and climate change efforts in the Black Sea

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## About the author

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Previously, Andrei was Head of Public Affairs at Enel Romania, having held several other positions with the company since 2014. He was also a Member of the Board of the FEL-100 (2018-2021), a global program designed by the World Energy Council to convene the most promising young professionals in the energy sector.

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The aim of COP21 in Paris was to establish global consensus and a binding agreement for climate change mitigation. And it did, setting a goal to limit global warming to “well below 2<sup>o</sup>C” compared to preindustrial levels while pursuing efforts to stay even within the 1.5<sup>o</sup>C threshold. While the agreement was unanimously signed by the 196 participating countries, some states delayed ratification. The Russian Federation ratified the agreement in October 2019 but other nations, including Iran and Turkey, are yet to officially do so. In 2017, President Donald Trump announced America’s intention to withdraw from the agreement, but this has since been overruled by the Biden Administration.

Unfortunately, as many have noted, progress made over the last five years is not nearly enough to reach the overall target of limiting global warming to “well below 2<sup>o</sup>C.” As the beginning of the COVID-19 pandemic has demonstrated, the idea of “global effort” is somewhat aspirational. While the impact of the health crisis was immediately visible, the effect of climate change does not seem as urgent to many. As nations focus on the need for a quick economic restart and their own recovery plans, regional and global cooperation on mitigating the impact of climate change might, at least in the short term, be hindered. Nevertheless, the vaccination roll-out has showed that coordination in reaching an important global goal is possible, even if the costs are high. This raises the hope that economic conditions can be created to address longer-term challenges like climate change.

In the Black Sea, regional characteristics such as historical geopolitical tensions and societal challenges like migration add further layers of complexity. The Black Sea region is incredibly complex; it is an area at a geopolitical and economic crossroad where neighboring states are part of different general administrative unions and alliances.<sup>1</sup> This makes the region a unique case study for analysis.

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<sup>1</sup> Iulia Joja, “Geopolitics and propaganda: Lessons from the Black Sea”, *Middle East Institute*, (February 27, 2020), <https://www.mei.edu/publications/geopolitics-and-propaganda-lessons-black-sea>

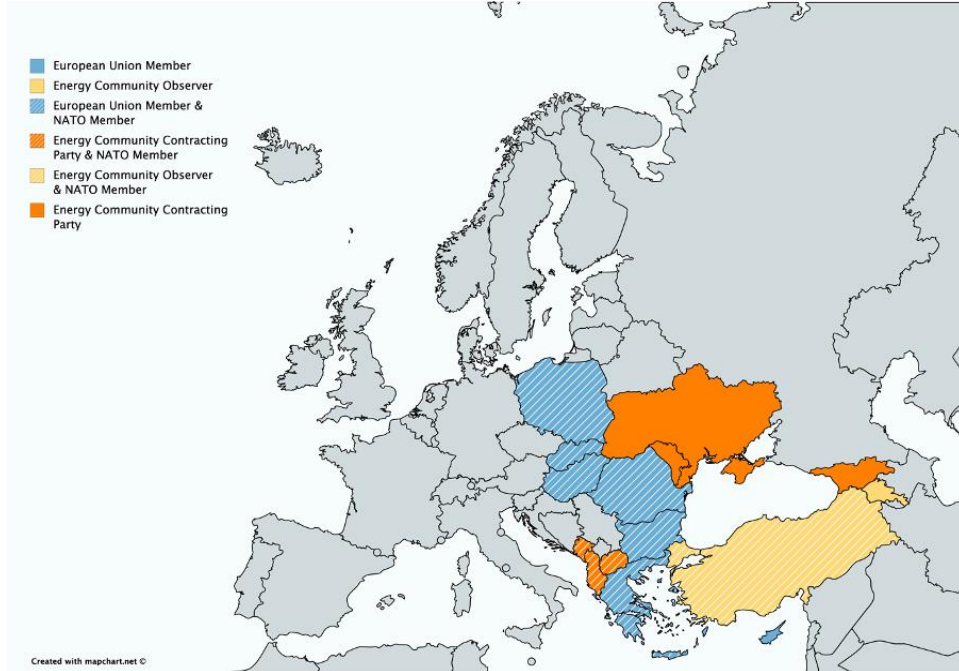


Figure 1: Energy affiliations and commitments in the Black Sea

These complexities are particularly pronounced in terms of energy and climate. In the Black Sea, nations are members of different affiliations calling for different climate targets, whether binding or not.

For Turkey, Romania, and Bulgaria, NATO affiliation means a focus on energy security and energy independency. At the same time, European Union (EU) membership requires Romania and Bulgaria to commit to specific 2030 binding targets for renewable generation and 2050 decarbonization objectives. These nations also adhere to the EU Emissions Trading System (EU ETS). The Energy Community is an international organization established between the EU and a number of third countries to extend the EU internal energy market. The Energy Community Treaty was signed in 2006, legally committing parties to adopt core EU legislation – known as the *acquis communautaire*. Ukraine, Moldova, and Georgia are active members of the Energy Community while Turkey and Armenia are observers.

### Socioeconomic efforts of energy transition in the Black Sea

Energy transition is the shift from burning fossil fuels for electricity, heating, cooking, or transportation, to low carbon generation such as nuclear facilities or wind and solar power plants. The challenge of energy transition is less the process itself and more the pace and cost of this transformation. But given the urgent need to switch to cleaner and safer methods of energy production, energy transition should be considered a long-term investment. The challenge remains: who will pay for this fast-paced, much needed process, and how much investment is required?

Governments around the world face a difficult challenge in maintaining a balance between low energy prices, security of supply, and environmental impact. This is known as the ‘energy trilemma.’ In practice, the energy trilemma is a virtually impossible task because adjusting two indicators will always happen at the expense of the third.

The Black Sea region faces additional challenges in this equation, with its knotty geopolitical affairs (linked partially to security of supply), as well as migration threats and outbreaks of political populism and nationalism. At the same time, the region requires significant investment in the energy sector to ensure countries can meet new environmental standards, limit the impact of increased electricity demand, and improve connectivity for large-scale electricity and gas infrastructure.

Countries in the region are approaching the energy transition process in different ways, depending on the structure of their economy, availability of natural resources, and on geography itself, among other factors. The EU’s COVID-19 economic recovery strategies are reliant on different technology ecosystems, such as hydrogen, to boost long-term growth. While Romania and Bulgaria will follow the EU’s general plans and will expand their current clean energy infrastructure, there are no other major changes envisaged for either country. Both will likely preserve their current industry structure.

Turkey could be a regional champion, as its current economic structure can adapt to future-proof manufacturing industries compliant with energy transition provisions, such as electric vehicles, white appliances, or solar panels. Moreover, given the declining conditions of Europe’s steel industry, Turkey could climb higher than its current ranking of eight as a global manufacturer.<sup>2</sup> The bad news is that in increasing Turkey’s system efficiency, the above-mentioned measures would dramatically increase energy consumption, thus multiplying the already existing negative effects of climate change. Turkey’s role has clearly evolved in recent years as the main transit route for Southern Europe’s gas needs. Although it’s not (yet) playing a monopsony role, Turkey’s territory is crossed by gas from multiple sources, including Russia, Azerbaijan, and even Iran.

Ukraine’s energy trilemma is delicate as the country scores low on all three dimensions. Environmental status is poor (the country relies on high usage of polluting generators), security of supply is problematic considering ongoing issues with Russian gas, and affordability is increasingly a challenge in the midst of COVID-19. Energy transition in Ukraine would provide clear benefits, including higher energy independency and cleaner electricity generation. But it would also bring challenges. The Ukrainian government will need to consider financing strategies and clear alternatives for employment loss, especially in the coal mining industry which still provides close to 100, 000 jobs.

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<sup>2</sup> World Crude Steel Production, *World Steel Association*, (January 27, 2020), <https://www.worldsteel.org/en/dam/jcr:391f6e61-488d-46d1-b611-c9a43224f9b8/2019%2520global%2520crude%2520steel%2520production.pdf>

## Low emission energy in the region

Another challenge with energy transition is the level of change. Will it be significant or just incremental? As experts have consistently noted,<sup>3</sup> switching from high-polluting technologies like coal generation, to less-polluting-but-still-polluting technologies like natural gas, will keep our economies locked into fossil fuel-based energy systems despite there being clean and affordable technologies. This is a situation known as the *carbon lock-in effect*.

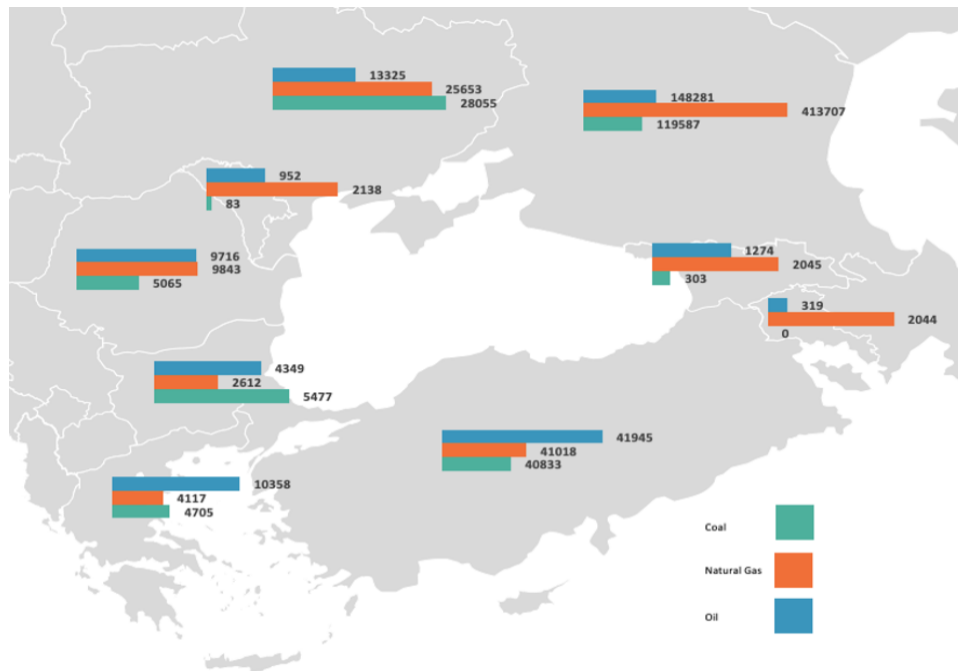


Figure 2: Coal, natural gas, and oil in total energy supply in 2018 [ktoe] | Source: International Energy Agency

In recent years, several Western European municipalities and governments have made commitments on sustainable solutions for the future of mobility and set clear intentions to ban the sale of new combustion-engine vehicles while imposing higher taxes on existing ones. As a result, a greater number of second-hand diesel vehicles are being exported to Eastern Europe and neighboring countries. These countries are now forced to find a balance between transitioning to clean technologies and allowing their population to buy affordable cars from the West. This trend, combined with low oil prices, has caused a stable rise in oil demand in the Black Sea region. At the same time, switching to electro mobility and electric appliances could be challenging in the Black Sea region, given most countries still rely heavily on coal-generated electricity. Thus, a higher penetration of electric vehicles will only solve part of the issue. Urban environments will be cleaner but pollution levels in coal-fired power plant

<sup>3</sup> Gregory C Unruh, "Understanding carbon lock-in", *Energy Policy*, (October 1, 2000),

regions will increase – regions which already face horrid environmental conditions. For this reason, governments must simultaneously invest in subsidizing electric consumption and renewable electricity generation deployment, with the awareness that both add to the burden of consumer bills.

The Black Sea has become a highly transited route. Istanbul, now home to the world’s largest airport, has become the most important transit hub in the region. The aviation sector will therefore continue contributing to the region’s oil demand, despite the current setback caused by COVID-19. Meanwhile, low-cost airlines have influenced consumer behavior, with figures showing significant increases in passengers year-on-year.

Reliance on coal is facing a steady decline in the region, as emission trading systems push coal generators out of the market and economic alternatives, such as renewable generation, emerge. This is particularly relevant for EU members and countries with low-dependency levels on coal generation output. On the other hand, Russia, Turkey, and Ukraine are still heavily dependent on coal usage and their economies are developed around coal generation, with hundreds of thousands of direct and indirect jobs in the sector. Russia has shown little-to-no progress in fighting climate change and reducing fossil fuels, and fossil fuels will continue to lead the generation mix, with carbon-free technologies responsible for only 43 percent of needs.

Gas is another complex issue in the region given the large infrastructure needed to transport gas to Southern Europe. Investment in gas infrastructure – whether transportation pipelines needed for long distances or distribution networks for household heating and cooking – may cause the *carbon/gas lock-in effect*. Governments will in the long-term delay massive deployments of clean energy alternatives, as not enough economic value would have been extracted from gas infrastructure yet. This will once again delay decisive and much-needed steps to accelerate the transition toward renewable generation. The swing actor is once again Turkey, which plays a major role in the gas transportation sector and which has increased its ambitions as a gas producer. Tensions in the Eastern Mediterranean aside,<sup>4</sup> Turkey has claimed a massive gas reserve discovery in the Black Sea (although experts have doubted the volumes announced by President Recep Tayyip Erdogan).<sup>5</sup>

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<sup>4</sup> Marwa Maziad and Jake Sotiriadis, “Ideology, and not just energy, explains Turkey’s Mediterranean disruptions”, *Middle East Institute*, (September 22, 2020), <https://www.mei.edu/blog/ideology-and-not-just-energy-explains-turkeys-mediterranean-disruptions>

<sup>5</sup> “Turkey’s Black Sea gas find”, *Middle East Institute*, <https://www.mei.edu/multimedia/podcast/turkeys-black-sea-gas-find>

## Renewable generation in the Black Sea area

The renewable sector has not yet contributed to escalating tensions in the Black Sea. This may change as countries' share of renewable generation increases, leading to a decline in energy independence. Add to this offshore wind potential and the region is set to once again face boiling energy topics.

The nuclear sector has witnessed some interesting geopolitical developments in recent months. Following Romania's decision to end its agreement with China General Nuclear Power Corporation to develop two additional nuclear units, formal cooperation was signed with the U.S. Government.<sup>6</sup> At the same time, Sofia is also considering an agreement with America to align Bulgaria with the EU's goal of climate neutrality.<sup>7</sup> The U.S.'s technological "offensive" in Southeast Europe is a clear attempt to both discourage Chinese investments in critical infrastructure (especially considering the NATO base in Romania, which is just kilometers from the Cernavoda Nuclear Power Plant), and balance Russian's nuclear technology presence in the region. This is relevant to Hungary,<sup>8</sup> Bulgaria<sup>9</sup> and especially Turkey, where Rosatom is financing, building, and will own and operate 4.8 GW of nuclear facilities.<sup>10</sup>

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<sup>6</sup> "Romania and USA agree to cooperate on nuclear projects", *World Nuclear News*, (October 12, 2020), <https://world-nuclear-news.org/Articles/Romania-and-USA-agree-to-cooperate-in-nuclear-proj>

<sup>7</sup> "Bulgaria to host talks with U.S. companies over new nuclear reactor", *Reuters*, (October 14, 2020), <https://www.reuters.com/article/bulgaria-nuclear-kozloduy/bulgaria-to-host-talks-with-u-s-companies-over-new-nuclear-reactor-idUKL8N2H44VI?edition-redirect=uk>

<sup>8</sup> "Hungary draws down 239 million Euro Russian loan for Paks nuclear power plant expansion", *bne IntelliNews*, (February 20, 2020), <https://www.intellinews.com/hungary-draw-downs-239mn-russian-loan-for-paks-nuclear-power-plant-expansion-177013/>

<sup>9</sup> "Russian-US-French team angles for Bulgaria's Belene nuclear power plant", *Global Construction Review*, (June 19, 2020), <https://www.globalconstructionreview.com/news/russian-us-french-team-angles-bulgarias-belene-nuc/>

<sup>10</sup> "Nuclear Power in Turkey", *World Nuclear Association*, <https://www.world-nuclear.org/information-library/country-profiles/countries-t-z/turkey.aspx>



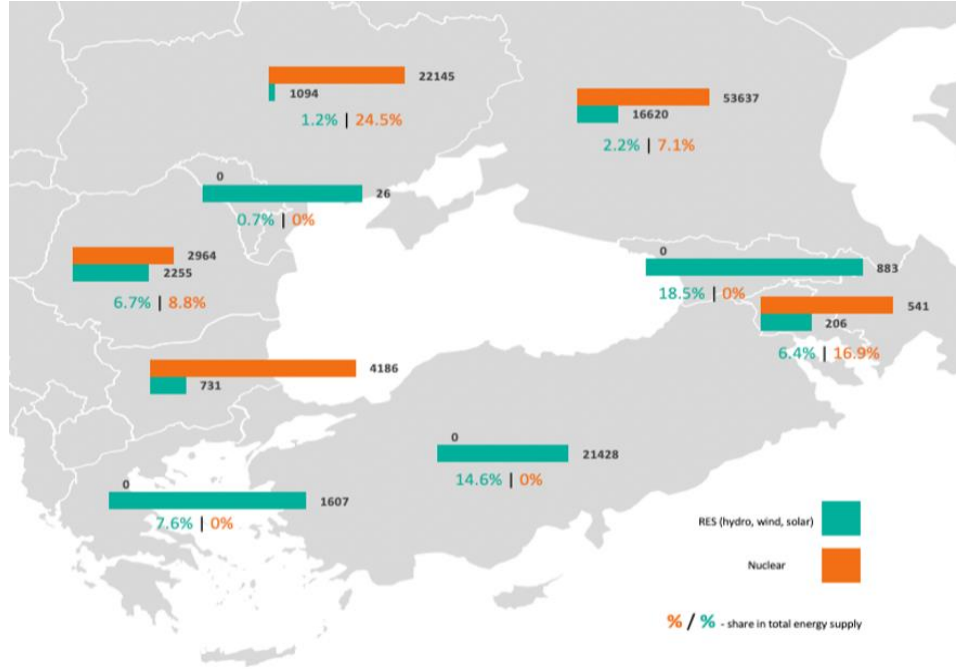


Figure 3: Low emission energy supply (hydro, wind, solar + nuclear) in 2018 [ktoe] | Source: International Energy Agency

Development of the hydropower sector in the region varies country-to-country. Romania, for example, is already utilizing much of its natural potential but Georgia has largely unexploited hydropower potential. The solar industry has high growth potential, as both utility-scale and small-scale PV systems will be deployed in the region. Expansion here will depend on government subsidies needed to sustain the energy transition.

But by far the biggest opportunity for the region is its high wind potential. While EU member states have made significant steps in this direction as part of the EU’s Green Deal plan, progress is still expected from other countries. Onshore wind development continues to depend on the availability of state subsidies and is forecasted to increase significantly over this decade. At the same time, the next big thing will be offshore wind capabilities in the Black Sea, as encouraging studies<sup>11</sup> are promoting the region’s relatively high potential.<sup>12</sup>

<sup>11</sup> Irina Kustova, “How Black Sea offshore wind power can deliver a green deal for this EU region”, CEPS, (October 9, 2020), <https://www.ceps.eu/ceps-publications/how-black-sea-offshore-wind-power-can-deliver-a-green-deal-for-this-eu-region/>

<sup>12</sup> *Going Global: Expanding Offshore Wind to Emerging Markets (Vol. 16): Technical Potential for Offshore Wind in Black Sea - Map (English)*. Washington, D.C.: World Bank Group.

<http://documents.worldbank.org/curated/en/718341586846771829/Technical-Potential-for-Offshore-Wind-in-Black-Sea-Map>

The process of energy transition will cause a geopolitical transformation.<sup>13</sup> Renewables will alter current geopolitical relations and some of the historical trade dependencies. Energy security will no longer be an asset owned, used, or traded by rich fossil fuel countries only. These nations which will be forced to enter political negotiations with fewer commercial leverages. And although, to some extent, we may see a transition from global energy markets to regional cooperation, a different form of global energy geopolitics is emerging, one focused on raw materials and technology trades.

### Questions remain...

What are the strategic options for the Black Sea region? How accelerated will the energy transition process be? And how should the associated costs be split between different stakeholders? At the same time, how will energy and climate geopolitics shift in the region, given increasing low-emission producers' penetration is expected to positively impact energy independence levels and influence the current power structures. Finally, what can we expect from Black Sea countries in future climate change negotiations?

As mentioned, national governments will face a difficult task in balancing their economic growth with reaching global climate commitments. In a region as complex as the Black Sea, geopolitical tensions will play a significant role over the coming decades. This overall equation is increasingly complicated as years pass, but there are a few key indicators to properly assess. While much will depend on electrification levels adopted by Black Sea countries and on the pace of renewable technologies (based on their continuous cost decrease), the key factor remains future gas exploitation. Massive potential investments in the gas sector – for electricity, cooking, and heating – will lock the region's climate development for decades, delaying decisive steps to address global warming and other negative climate externalities.

While governments can at times be reluctant to commit to climate targets, civic movements, NGOs and climate advocates are increasingly making their voice heard in the region. At the same time, climate change literacy – while still at low levels – is on the increase, supported by different climate change initiatives. However, new climate challenges are emerging in the Black Sea region. These include water-related issues,<sup>14</sup> which will have long-term direct and indirect impacts like desertification, lack of water for electricity production (both for hydro power plant and for cooling), water conflicts, and even climate migration.

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<sup>13</sup> "A New World: The Geopolitics of Energy Transition", *International Renewable Energy Agency*, [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/Global\\_commission\\_geopolitics\\_new\\_world\\_2019.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/Global_commission_geopolitics_new_world_2019.pdf)

<sup>14</sup> Andrei Covatariu, "Europe's water related challenges", *offwater.org*, (January 8, 2020), <https://offwater.org/2020/01/08/europes-water-related-challenges/>

*In this context, climate change issues make up a difficult and continuously changing equation. Pre-existent social, economic, and geopolitical challenges – the “what” of the formula – call for different approaches from neighboring countries – the “who”. Based on Intergovernmental Panel on Climate Change (IPCC) reports and judging by warnings from the scientific community, the “when” should be defined as no later than 2030 if the agreed objectives are to be reached by 2050. While the “why” is clearly represented by pressing climate change issues and global warming, the “how” remains the greatest unknown variable.*

