

# From Gas To Green – Bridging the Energy Connectivity Gaps Between Central Asia and EU

*Presented at 2024 Turkmenistan Oil and Gas Conference<sup>1</sup>*

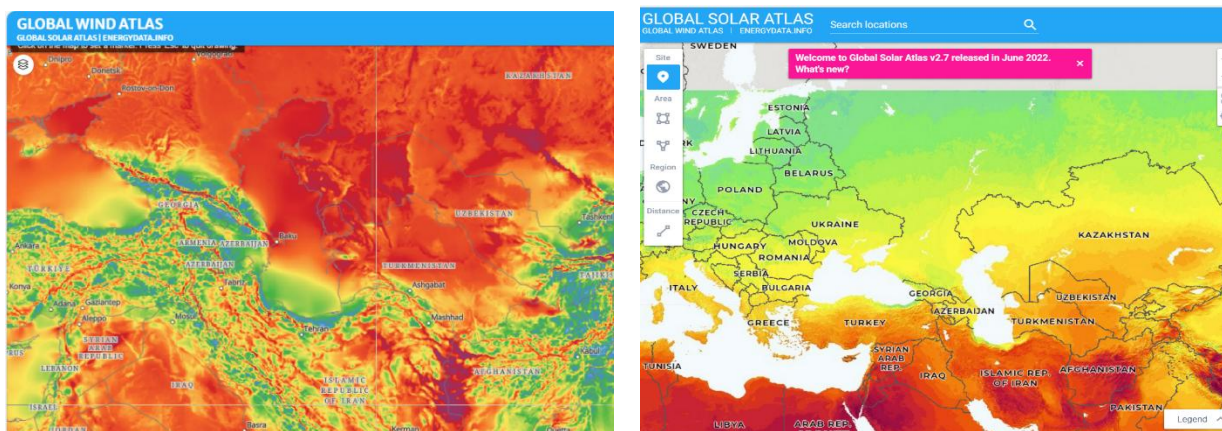
Dr. Murman Margvelashvili, an energy policy specialist, underscores Central Asia's significant role in supporting EU energy security and the energy transition, leveraging its vast fossil and renewable energy resources. He suggests that developing dual-use convertible transport infrastructure can overcome the investment barriers for strategic energy connectivity projects spanning natural gas and renewable energy.

## EU Energy Security and Climate Challenges

As climate change accelerates, the pressure to phase out fossil fuels and develop renewable energy grows. The EU, with its 2050 Net Zero goal, is recognized as a global leader in climate policies and an attractive market for green electricity and low-carbon fuels. However, despite this decarbonization push, Europe's demand for natural gas remains critical to stabilize energy security. Russia's invasion of Ukraine has further disrupted gas supplies, prompting the EU to urgently seek alternative sources. Natural gas must therefore serve as a transitional fuel in Europe's energy shift and pipeline gas can be a more predictable alternative compared to LNG being developed globally.

## EU's Focus on the East

The EU is increasingly turning to the Caucasus and Central Asia (CCA), where Azerbaijan and Turkmenistan possess significant gas reserves that could provide short- to medium-term relief for energy security. A memorandum of understanding with Azerbaijan of 2022 aims to double gas supplies to EU through the Southern Gas Corridor by 2027. The EU has also shown interest in connecting to Turkmenistan, and Turkey is active in bringing Turkmen gas to the EU. Yet, developing new gas infrastructure remains challenging due to investor uncertainty over future demand and the risk of stranded assets, given the global move toward renewables. Financing large-scale projects like the Trans-Caspian Gas Pipeline (TCP), whether for 30 bcm/y or a smaller 8-10 bcm/y version, remains uncertain. Additionally, the further routes from the TCP to the EU remain to be defined.

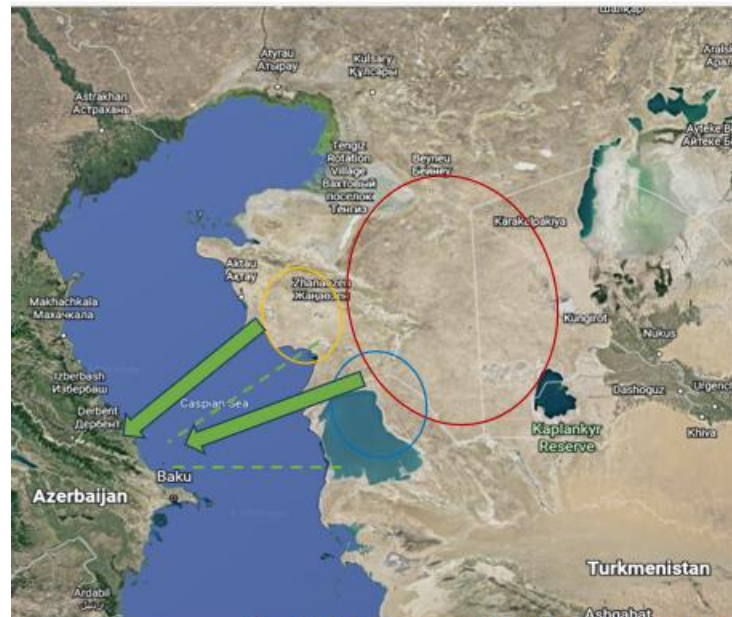


**Fig.1 Wind and Solar maps of CCA region**

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## Renewable Energy Potential in Central Asia

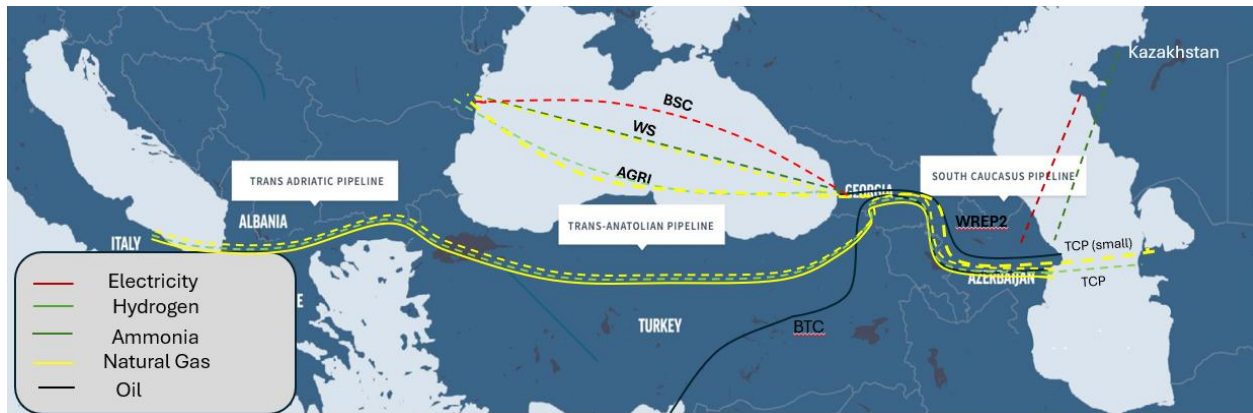
Central Asia is not only rich in gas but also has outstanding potential for renewable energy. The region's large, wind-swept plains and sunny semi-deserts next to low salinity Caspian Sea are ideal for generating solar and wind power and exporting vast amounts of electricity, hydrogen, and ammonia, making the CA a competitor to Australia, Chili, and other prospective green energy hubs globally. There is already an **Hyrasia One** project with announced 40GW plans, starting with 2GW, in Kazakhstan, the similar projects or production of blue hydrogen from natural gas and carbon storage could be initiated in Turkmenistan. However, the feasibility of these projects hinges on the development of efficient evacuation routes—whether pipelines or alternative transportation methods—which are challenging to finance and implement due to their scale and the uncertainty in future demand.



**Fig.3 Potential flows of low carbon and green energy**

### Dual-Use Infrastructure as a Solution

A viable solution for financing both natural gas and low-carbon projects could be the development of dual-use infrastructure—pipelines and facilities initially designed for gas transportation but convertible to hydrogen or ammonia. The Trans-Caspian Gas Pipeline could be constructed with this flexibility in mind, which would ease its further integration through the Black Sea or Turkey. There can be various options to consider. E.g. the original size 30 bcm/y TCP could be extended by the White Stream pipeline over the Black Sea or by TANAP 2 over Turkey, both adaptable for hydrogen. A smaller TCPs of 8-10 bcm/y capacity could be connected to the Black Sea LNG export terminal (AGRI) through a new pipeline along the Baku-Supsa route (WREP2) - convertible to ammonia. Additionally, the 1-1.5GW Black Sea power cable could export green electricity from CCA. Thus, a new Gas to Green Energy Corridor could be created with the diversified set of energy carriers, transportation routes and diversified political and security risks.



**Fig. 3 Potential Dual-Use convertible projects in CCA region**

### Challenges Ahead

Developing such flexible infrastructure is not without challenges either. Pipelines like White Stream, which would run across the bottom of the Black Sea, and a parallel TANAP2 across Turkey would require significant investment and technical solutions for adaptability. Moreover, the uncertainty around future hydrogen demand adds risk to such projects. A major challenge of agreement between various multinational stakeholders may render this task formidable. However, the pressing urgency of responding to climate change is likely to be an increasingly compelling argument for such decisions, thus unlocking the green energy hub of regional and global importance and addressing energy security problems together. This opportunity warrants deeper exploration and political engagement to realize mutually beneficial solutions for the countries involved.