



Issues Paper

Central Asia: A Source of Energy for the 21st Century

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Contents

Foreword: Central Asia Awaits More Investment	1
I. Introduction	2
II. Natural Resources in Central Asia	5
A. Hydrocarbons	5
B. Coal	9
C. Uranium	11
D. Renewable Energy	14
III. Logistics and Security of European-Central Asian Trade	15
IV. Internal Central Asian Considerations	19
V. International and Geopolitical Considerations	23
VI. Final Recommendations	26
VII. Conclusion	27
Endnotes	28

Foreword: Central Asia Awaits More Investment

Since the collapse of the Soviet Union, my career has been deeply tied to the political, economic, and energy prospects of Central Asia. Thus, I have become deeply acquainted with the perils and promises of energy investments in the region. This locomotive of modern society drives all other activities and makes the aspirations of nations and individuals possible. Energy – from nuclear to oil to gas to renewables – is an economic sector filled with opportunities for investors and host Governments.

In an uncertain world, Central Asia is a welcome investment destination, not only for short-term profits but for long-term, sustainable relationships. Amidst opportunities, there are also traps, capable of miring nations in dependency, poverty, and woe. This is the fate of many states with abundant resource endowments, but not Central Asia, and especially not Kazakhstan.

Kazakhstan avoided the traps of a rentier state by ensuring that investments in energy were not only profitable but translated to investments in people and society. It created a stable and predictable business environment through legal reforms by looking to the West. Nowhere else one can find a financial powerhouse like Astana International Financial Center. Central Asian countries achieved their successes from the ruins of the Soviet Union, in a challenging neighborhood, and demonstrated incredible skills and insights in opening the region's potential for itself and investors.

Those achievements are on display, as this report amply documents. Amidst global challenges, Central Asia has overperformed and exceeded expectations. Best efforts at sanctions compliance, geopolitical cooperation with the U.S., easing energy shortages, infrastructural investments, energy policy, fiscal management, and privatization are some of the areas of recent strong performance.

Not all countries in the region are performing equally. Challenges still exist in the governance and management quality areas. They are being addressed, and there is every indication they will be overcome. There is local recognition that these challenges will require working with Western partners and demand foreign investment, after an environment conducive to investment has already been created.

These investments have unprecedented amounts of political support. European energy security and the desire to diversify investment and diplomatic ties present great opportunities for investment. These opportunities should be seized, and the people of Central Asia will be the beneficiaries of the prosperity that will follow.



Daniel Witt
President
International Tax and Investment Center

I. Introduction

Russia's invasion of Ukraine sent an economic shockwave through the energy sectors of the Western world. As Russian revanchism galvanizes the West in defense of Ukrainian democracy, the EU faces a grim reality of reliance on Russian energy exports, particularly natural gas. In 2021, the EU imported roughly two-fifths of its total natural gas consumption from Russia, totaling 155 billion cubic meters (bcm).¹ They now face the possibility that the gas will be turned off without an alternative supplier.² Indeed, Gazprom's indefinite shutdown of the Nord Stream 1 pipeline in September 2022 could well have signified the beginning of the end.³ In the long term, Europe will be able to lean on both renewable energy projects and presently developing infrastructure to supply US natural gas.⁴ In the short term, alternative suppliers of current energy, including gas, coal, and nuclear, must be found to meet Europe's demand for affordable power and ample baseload.⁵

Viable alternatives capable of quelling energy shortages exist around the world. Europe will be increasing its gas imports from North Africa, the Middle East, sub-Saharan Africa, and the Caspian region, especially Azerbaijan. The former Soviet Central Asian Republics — Kazakhstan, Kyrgyzstan, Turkmenistan, and Uzbekistan — are rich in hydrocarbons, hydro energy, coal, and other natural resources. Its leaders understand the potential of newfound energy opportunities in the wake of Russian aggression. Kazakh President Kassym-Jomart Tokayev, who leads Central Asia's largest economy, suggested his nation's hydrocarbon exports could stabilize European and global energy markets.⁶

Economic relations between the EU and Central Asia and Kazakhstan are already thriving, with the 2016 Enhanced Partnership and Cooperation Agreement signaling a move toward stronger ties.⁷ Kazakhstan has similarly developed ties with the United States as part of its multi-vector foreign policy, carrying out a campaign of anti-corruption and market liberalization to better attract American investors to its growing economy.⁸ This push provides a counterweight to already considerable Chinese investment. China's Belt and Road Initiative is seen by Western leaders as an effort to create a sphere of influence and export market.⁹ Chinese President Xi Jinping's September 2022 visit to Astana, his first trip abroad since the start of the pandemic, emphasized his country's growing political and trade interest in Kazakhstan and Central Asia.¹⁰

In Summer 2022, G-7 leaders announced the Partnership for Global Infrastructure and Investment (PGII), a plan to raise 600 billion USD to counter China's spending, and Central Asia should be a key target for this spending.¹¹



*Image 1: C5+1 Foreign Ministers meet at the sidelines of UNGA '77 in September 2022.
Source: Kazakh Foreign Ministry's press service*

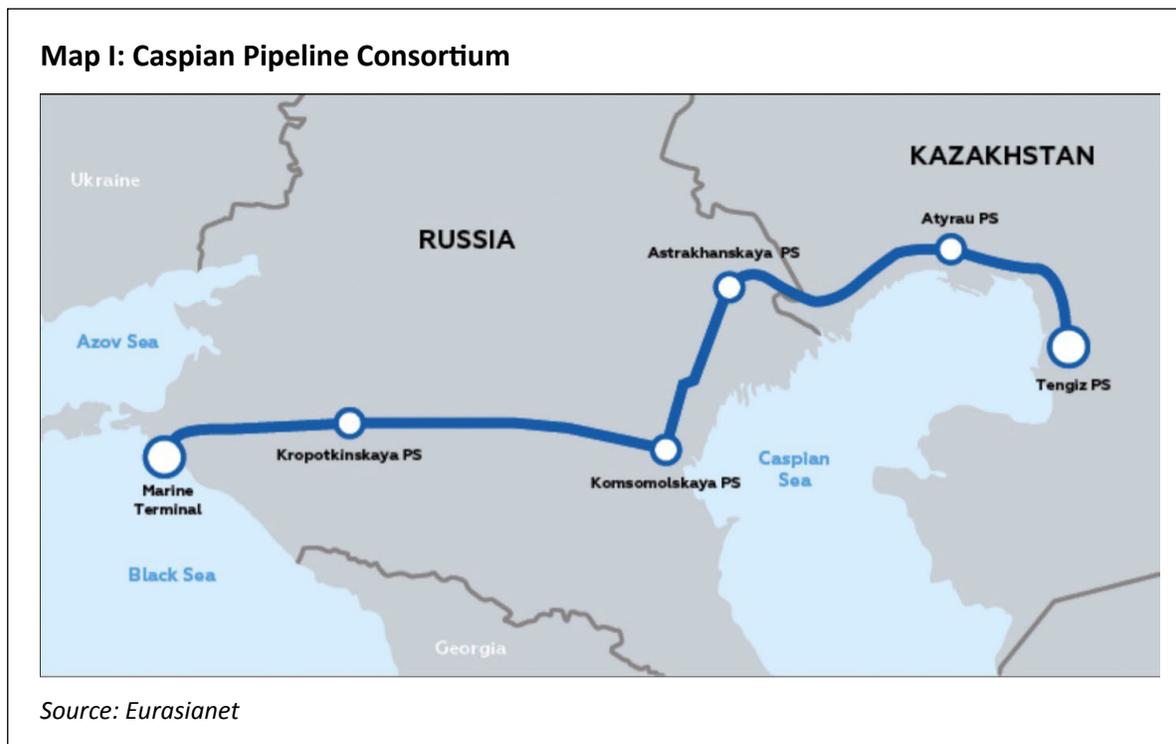
This report analyzes opportunities for Central Asia to expand its energy-exporting capacities, fortifying and assuaging a disrupted international system reeling from Russian aggression and its lack of reliability as an energy supplier. This report engages with four axes of analysis: 1) the potential of Central Asia's natural resources to meet current energy demand, 2) what infrastructure exists or would need to exist to export these resources, 3) whether the Central Asian Republics (CARs) are sufficiently stable to be reliable economic partners, and 4) whether proximity and ties to Russia and China pose an obstacle to the development of a partnership.

Geopolitical shifts are forcing traditionally reticent actors such as the EU to move decisively. The immediate opportunities for Central Asia won't last forever, and underscore the urgency of this analysis. These opportunities include but are not limited to: the passage of the Taxonomy Delegated Act through the European Parliament on July 6, 2022, which encourages private investment in natural gas and nuclear energy moving forward,¹² Germany and Austria taking steps to resume the use of high-emission coal power plants,¹³ Poland receiving materials from Korea to construct six APR-1400 reactors with a combined capacity of 8.4 GW,¹⁴ and vitally changing EU regulations towards Russian energy designed to empower its neighbors.¹⁵

With some assistance in developing resource extraction and logistical infrastructure, Kazakhstan and its fellow CARs could provide customers with more oil, coal, and uranium. Investors eyeing a Central Asian energy future should similarly examine renewables in the region, as a greener energy mix in the region would allow more diversified and stable energy exports to environmentally conscious consumers.

For the transmission of Central Asian energy to Europe or elsewhere, the region must confront its geographic obstacles. While the Caspian Sea's crude oil and natural gas offer reliable flows to bordering countries, it provides no ocean access for tanker trade and is constrained by Russia's control of the

exporting pipelines.¹⁶ This was recently demonstrated in July 2022, when a Russian district court in Russia's leading Black Sea port Novorossiysk ordered a freeze to crude oil exports through the Caspian Pipeline Consortium (CPC), which carries Kazakhstan's energy exports to Europe.¹⁷ While the court cited a legal violation, the injunction was only a day after a call between Kazakhstan's President Tokayev and EU leaders on Europe's developing needs.



Efficient exports of Central Asian resources to potential trading partners requires infrastructure investments including pipelines and specialized port terminals. With most existing pipelines crossing Russia or Iran, the best option may be the Baku–Tbilisi–Ceyhan oil pipeline connecting Azerbaijan to Georgia to Turkey and thus to the European nations.¹⁸ Whether through the construction of a trans-Caspian pipeline or the deployment of a fleet of Caspian tankers, Aktau will likely become an even more significant player in regional energy politics.

Assessing the viability of the CARs as energy exporters requires examining them as safe harbors for foreign investment and evaluating their political stability. To attract wealth that might enable a more expansive energy trade, the CARs must pursue continued market liberalization and anti-corruption reforms, building confidence that energy and infrastructure projects will not be hindered by graft, needless roadblocks, expropriation, or confiscatory and punitive taxation. Concurrently, efforts must be taken to enshrine and safeguard the rule of law, thus promoting confidence in the stability and responsiveness of governments.

Beyond that, the governments should make sure that the local educational systems prepare qualified labor and management in sufficient numbers. While Kazakhstan is Central Asia's leader in the educational field, other countries should follow suit, recognizing the economic and cultural benefits of a learned populace.

Lastly, the geopolitical context of strengthening ties between Central Asia and the West must be considered as Russia is likely to intimidate Central Asian energy exporters, hoping to prevent their role

as potential suppliers to Europe. Similarly, China could attempt to increase its leverage while Russia is preoccupied in Ukraine and protect its own economic interests.

Even though it is in Central Asia's best economic interests to pursue multi-vector cooperation and economic ties with the West, and greater regional integration, these are not in Russian or Chinese interests. Careful multi-vector diplomacy from the CARs and active diplomacy from Washington will be necessary to balance quickly shifting geopolitical relationships. Kazakhstan, as one of three nations to border both Russia and China — alongside Mongolia and North Korea — could serve as an example of proactive neutrality in action.

This report's analysis will conclude that Central Asian resources are important to meet the world's rising energy demand. Further steps must be taken to create the physical infrastructure needed to facilitate energy trade and investment in the long term, though short-term options such as the creation of a Caspian Sea tanker fleet exist. The benefits of building this economic relationship are considerable for all parties, and the threat of Russian retaliation should be considered in the context of Moscow's aggressive but precarious position. To guarantee a fruitful relationship and Western support in developing the facilitating infrastructure, the CARs should be embracing strategies of market liberalization, political reform, institutional development, openness, promoting education, curbing the bureaucratic red tape, and boosting anti-corruption measures that will lead to increased foreign investment and prosperity.

This is not *terra incognita*, but the road well-traveled: South Korea, Taiwan, and Singapore are all examples of nations that have pursued this path to assertive modernization.

II. Natural Resources in Central Asia

With the world's energy demand peaking, Central Asia's bounty of energy resources provides an opportunity for it to emerge as a key supplier of oil, natural gas, coal, and uranium. Demonstrating willingness and capacity to meet the global demand, Central Asia could be on the precipice of a lucrative era of energy export-based prosperity. European nations will serve as the first customers as they look to phase out reliance in all Member States on Russian coal by the end of 2022,¹⁹ Russian oil by the end of 2024,²⁰ and Russian natural gas by the end of 2030.²¹

This section will consider Central Asia's energy resources and export potential in the context of present demand.

A. Hydrocarbons: Oil and Gas – the Highest Yielding Energy Resources

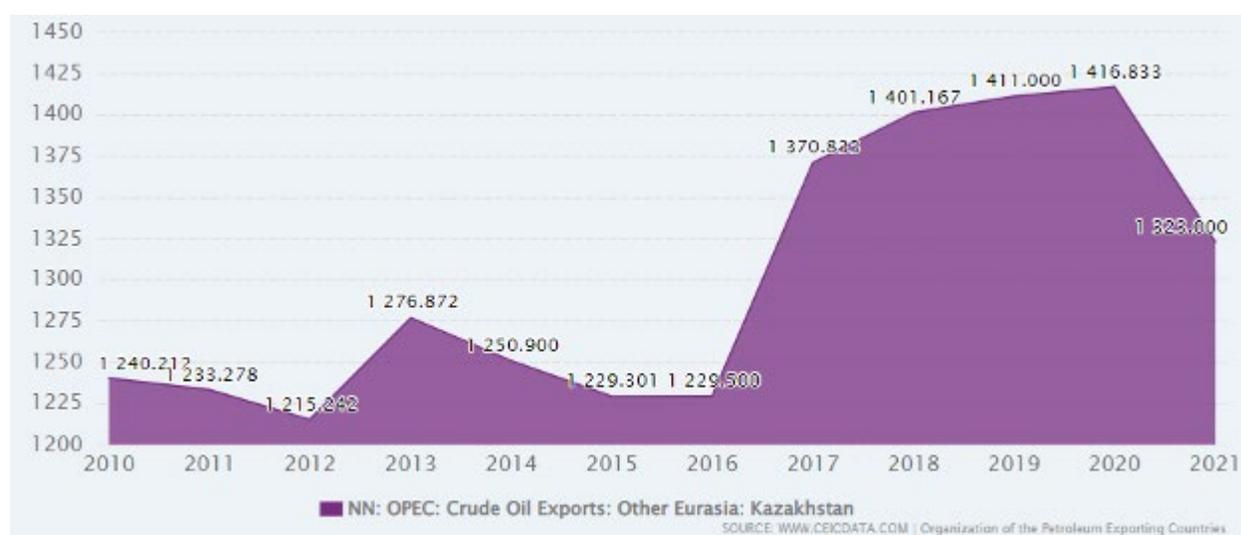
Hydrocarbons (oil, natural gas, diesel, and heavier fuels) are the world's dominant energy resource; the 2021 global energy mix measured in terawatt-hours (TWh) saw crude oil lead the pack at ~31.26%, with natural gas in third behind coal at a not-inconsiderable ~24.66%.²² Hydrocarbons are expected to eventually lose ground to renewables amidst the long-term trend of decarbonization, but at a total of ~55.92% of the global energy supply, it is reasonable to expect a long remaining shelf life as a major source of energy and driver of global commerce.

Considering the global figure of 595.14 exajoules (EJ) consumed worldwide in 2021, the potential impact of a Russian energy phase-out is significant.²³ British Petroleum (BP)'s review of world energy points towards a total European consumption of 82.38 EJ in 2021, of which 26.25 come from oil and 19.51 from

natural gas (amounting to 45.76 and ~55.55% total). With its estimates indicating Russian fills 25% of European oil consumption and 37% of European natural gas consumption, a complete shut-off of Russian energy would demand an alternative supply for ~13.78 EJ per year.²⁴ One EJ is the equivalent of roughly 163 million barrels of oil.²⁵ Finding an alternative for two percent of annual global energy consumption is no small task, and Europe is not the only region now considering the implications of further Russia-led disruptions.

Kazakhstan ranked thirteenth among leading nations in oil production in 2021, with its estimated 1.8 million barrels per day that year amounting to approximately 2% of global production.²⁶ In that same year, it extracted 73.7 Mt of crude oil (~1,811,000 barrels/day), of which it exported 65.7 Mt for a profit of approximately 31.1 billion USD. Despite the lack of pipeline and shipping infrastructure which does not pass through Russian or Iranian territory, Kazakhstan is already Europe's third largest non-OPEC supplier of oil.²⁷

Figure I: Kazakhstan Oil Exports 2010-2021



Source: OPEC

The country's highest performing field is Tengiz Field, located in the wetlands along the northeastern shore of the Caspian in the vicinity of Atyrau and holding an estimated 6 to 9 billion barrels in recoverable oil reserves.²⁸ Since 1993, Tengiz has been developed and overseen by Tengizchevroil, a consortium lasting until 2033 that consists of Chevron, ExxonMobil, KazMunaiGas, and LukArco.²⁹

Tengiz is scheduled for a major expansion, the Tengiz Future Growth Project (FGP) – Wellhead Pressure Management Project (WPMP), intended to increase oil production by 12 mt per year starting in 2024.³⁰ The \$45 billion USD project has immense promise, increasing the field's production from 627,000 b/d to an estimated 877,000 b/d, but reliance on the Russia-controlled CPC remains an unsolved cause for concern as Kazakhstan considers expanding trade relations with Moscow's geopolitical rivals.³¹

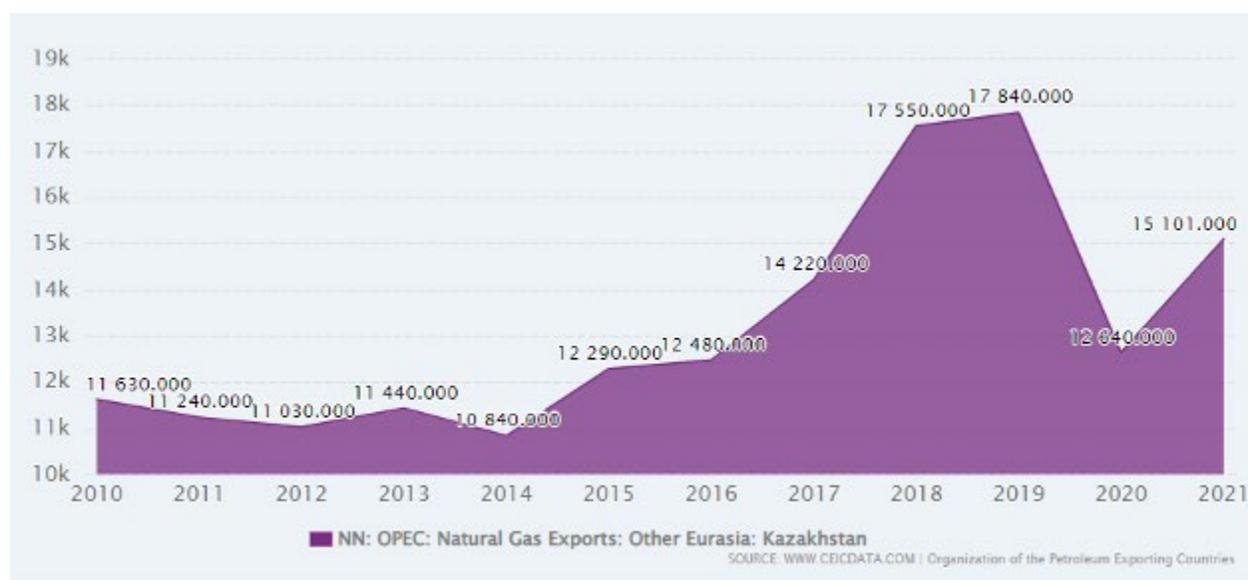
Trailing Tengiz in its present output but exceeding in size is Kashagan Field, which is located approximately 80km offshore from Atyrau and holds an estimated 9 to 13 billion barrels of recoverable oil reserves.³² Since its discovery in 2000, Kashagan Field has been managed by the North Caspian Sea Production Sharing Agreement, a consortium which consists of KazMunaiGas, Eni, ExxonMobil, Shell, Total,

ConocoPhillips, and INPEX.³³ Despite its size, Kashagan faces unique challenges including operational safety demands brought on by high content of toxic sour gas (H₂S) and carbon dioxide (CO₂), which warrant particular care.³⁴

Kazakhstan continues to survey for new oil and gas fields in its territory, with the recently discovered Khalel Uzbekgaliyev Field in Mangystau (which also houses the sizable Uzen and Zhetybay Fields) suggesting there could be more undiscovered resources to be found in its territory.³⁵ More investment and technology are needed for existing fields to be developed to their full potential, and hydrocarbons transported to the global markets.³⁶ Herein exists the potential for would-be investors and consumers to provide Kazakhstan's burgeoning energy industry with the necessary funding to ensure business expansion and prosperity.

In addition to petroleum, Kazakhstan is a potential supplier of natural gas, having produced an estimated 32 bcm in 2021, amounting to 0.79% of global production.³⁷ BP estimated that it houses 0.6% of provable global gas reserves, with 29.7% of this in the Karachaganak Field located near the northern tip of the West Kazakhstan Region.³⁸

Figure II: Kazakhstan Natural Gas Exports 2010-2021



Source: OPEC

Much of Kazakhstan's natural gas is produced in conjunction with petroleum. A sizable portion of associated gas is either reinjected into the field to maintain desired pressure or flared, and there is more work to be done before the resource can be fully utilized for domestic and international consumption.³⁹ Plans are in the works to create a 1 bcm capacity gas processing plant at Kashagan Field for this purpose.⁴⁰ In September 2022, Kazakh Prime Minister Alikhan Smailov announced government support for the project.⁴¹

Domestic consumption of natural gas is a current priority, with 96 billion tenge (approximately 200 million USD) allocated for gasification with a projected 58.43% of the population having access to gas by the end of 2022.⁴² In 2021, Kazakhstan's energy needs (roughly 2.85 EJ) were partly filled by oil (~20.7%) and natural gas (~22.1%).⁴³

To further develop energy export potential, Kazakhstan will need to balance domestic demand with increasing production for international exports. With 15.1 bcm⁴⁴ of natural gas allocated for domestic consumption in 2021, if the remainder were fully directed toward European consumers it would account for roughly 11% of demand formerly filled by Russian gas.⁴⁵ However, these exports have to go through Russia, and given both fraught relations between Russia and the EU and export cuts of 2 bcm in 2022, this ratio may be somewhat optimistic.⁴⁶

Rising worldwide energy demand will need to be satisfied with a variety of resources from a diverse set of sources. In Central Asia Kazakhstan will undoubtedly take the lead due to its relatively advanced economy and ample reserves, but other Central Asian nations also have potential sources of hydrocarbons to meet demand. Kazakhstan's neighbors have their own burgeoning energy exports, with Uzbekistan in particular holding potential.

Uzbekistan's Energy Potential: Playing Catch-Up

Uzbekistan holds nearly 50% of the Central Asian population. However, it lags behind Kazakhstan in economic development even as it outperforms its other neighbors. Rich in hydrocarbons, its proven reserves amount to 594 MMbbl of oil (47th worldwide) and 1.84 tcm of natural gas (20th worldwide).⁴⁷ These reserves are heavily concentrated in the Bukhara-Khiva region, the northeastern segment of the Amu-Darya Basin, which houses 60% of known fields and 70% of production.

Uzbek oil production is low when compared globally. It stood in 2021 at 60,000 barrels a day to Kazakhstan's 1.8 million b/d and Russia's 10.9 million b/d.⁴⁸ While unadvisable for any nation to burn through finite resources too quickly, the global push away from fossil fuels is a warning that the resource's shelf life at its current high value is not eternal. Considering this, accelerating the exploration and production of fossil energy with foreign assistance and investment is a logical course. Uzbekistan has received assistance in this respect from Azerbaijan's state-run SOCAR and BP, though more remains to be done if the country is to attract needed capital and exploit its bountiful hydrocarbons.

Uzbekistan's natural gas sector outperforms several Central Asian neighbors, second only to Turkmenistan. First Deputy Energy Minister Azim Akhmedkhadzhaev reported gas production at 53.6 bcm in 2021 and predicted 56.3 bcm in 2022, with a goal of achieving 66.1 bcm by 2030.⁴⁹ A majority of the production is allocated for the consumption of the Uzbek people, with 47.2 bcm projected for domestic usage, a figure expected to exceed 56 bcm by 2030.⁵⁰ This reflects a region-wide trend of increasing energy demands at home corresponding with a more developed energy sector. Tashkent has signaled need to end gas exports overall by 2025.⁵¹

China remains the predominant purchaser of Uzbek energy exports. Exports were briefly halted in January 2022, Tashkent prioritizing domestic demand at the same time Kazakhstan saw unrest tied by some to rising energy prices, but quietly resumed a few months later.⁵²

For Uzbekistan, the trend of growing domestic demand means a gas sector larger than that of neighboring Kazakhstan, but less able to find success as an exporter. If Uzbekistan is to emerge as a major global hydrocarbon supplier, it will need to continue capital-fueled expansion and develop a more diversified energy mix.

Turkmenistan: Gas-rich but Lagging Behind

Central Asia's massive natural gas deposit is in Turkmenistan, whose reserves of 19.5 tcm are the sixth

largest worldwide and encompass approximately 9.8% of the provable global supply.⁵³ The country produced 79.3 bcm in 2021, leading the pack in Central Asia and amounting to ~1.96% of global production that year.⁵⁴ Oil production is somewhat less noteworthy, with the 2021 figures pointing to roughly 252,000 B/D⁵⁵ and 2020 estimates pointing to 600 MMbbl of proven oil reserves.⁵⁶ With its massive gas reserves, Turkmenistan has considerable potential as a supplier, but is constrained by a China-oriented gas export policy and insufficient Western-facing pipeline infrastructure. Gas exports to the PRC through the China-Central Asia Gas Pipeline have exceeded 334 bcm since 2009, and the completion of its Line D will expand its annual capacity to 65 bcm.⁵⁷

Clearly a pivot away from China would be economically turbulent, and likely see political and economic pushback by Beijing despite Turkmenistan being recognized as a permanently neutral State since 1995.⁵⁸ Permanently afraid of neighbor and former imperial master Russia, and the next-door theocratic dictatorship Iran, Ashgabat will not provoke its main gas customer Beijing.

Kyrgyzstan has poor oil and gas reserves, most of which have already been exploited to a considerable degree.⁵⁹ It lacks the infrastructure to fully exploit its natural resources and is utterly dependent on Russia, having entered into a development agreement with Gazprom in 2013 for its hydrocarbon needs, and tends to rely on imports from its more developed neighbors.⁶⁰ Tajikistan is also reliant on imports for its hydrocarbon needs.⁶¹ Without substantial investment into the development of their energy sectors and associated infrastructure, neither country is likely to emerge as a major hydrocarbon exporter.

In mid to long-range projections, Kazakhstan appears a potential giant in oil exports and is joined by Uzbekistan and Turkmenistan as potential suppliers of natural gas in a changing world's energy economy. To accomplish the promise of its potential, Kazakhstan would need to attract investment to expand its pipeline and terminal infrastructure while conducting adroit diplomacy needed to keep Moscow and Beijing at bay. Similarly, Turkmenistan would require gas production be exported west via Azerbaijan to the enhanced TAP pipeline, or win investment to support building a new main exporting pipeline to Europe.

B. Coal: A Depreciating Asset

Coal is the most environmentally problematic fossil fuel, which has prompted many nations to turn to alternative energy production.⁶² Even with increases in prices due to temporarily high European demand, there are few political actors capable or willing to arrest the decline of coal.

In the United States, where a coal-producing state's senator (Manchin D-WV) chairs the Senate Energy Committee and at times is the upper house's key swing vote, coal power plants have fallen to the ongoing renewable energy megatrend.⁶³ The possibly brief renewal of coal, spurred by the possibility of a European winter without Russian gas, should not be misconstrued as a long-term coal renaissance.⁶⁴ Coal is still a necessary in many communities, but a severely polluting commodity that may be replaced by natural gas and nuclear at first opportunity. Prior to sanctions intended to phase out all coal imports from Russia, 20% of EU coal consumption was sourced there.⁶⁵ Central Asia has the capacity to partially fill that lucrative void, but the realities of logistics make that outcome unlikely in the long-term.

In both reserves and production, Kazakhstan leads the Central Asian coal industry, with its Ministry of Industry suggesting that its 2020 reserves were the 8th largest worldwide — amounting to 33.6 Bt and 3.8% of provable global supply.⁶⁶ In 2021, Kazakhstan accounted for roughly 1.25% of global coal production.⁶⁷ Output is trending upward as well, with March 2022 having outperformed March 2021 by 14.5%.⁶⁸

Figure III: Hydrocarbon and Hydropower potential in Central Asia

Resources	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan	Turkmenistan
Coal (bt)	31.3	0.9	3.6	3.3	-
Natural Gas (tcm)	2.4	0.006	0.006	1.8	7.5
Oil (bb)	30	0.04	0.01	0.594	0.6
Hydro (GW)	20	24	40	1.7	-

Source: Asian Development Bank

This trend bodes well for future export potential, but a large share of production will be allocated to domestic consumption. The International Trade Administration labels coal the dominant energy source in Kazakhstan, accounting for 64.7% of generation and 74.0% of thermal generation, something they regard as unlikely to change significantly by the end of the decade.⁶⁹ The high cost of transport by rail has rendered domestically cheap coal an uneconomical export for Kazakhstan, suggesting that it will not fill demand abroad without financial significance.⁷⁰

The start of Russia's war saw an increase in Kazakhstan's coal exports to Europe, noted in July 2022 at 2.85 Mt compared to 0.81 Mt in all of 2021.⁷¹ However, demand was somewhat limited by the high ash content in much of the nation's coal, and in August 2022, Kazakhstan announced a 6-month freeze on coal exports to prioritize domestic demand.⁷²

The high expenses of exporting coal relative to the cheapness of utilizing it for domestic power and heating apply throughout Central Asia, making Kazakhstan's neighbors equally unlikely to emerge as exporters for a resource already flush with suppliers and on its way out. Uzbekistan's production in 2021 amounted to 0.06 EJ worth of coal, with the rest of Central Asia and Commonwealth of Independent States members amounting to 0.12 EJ, a minuscule figure compared to Kazakhstan's 2.09 EJ that same year.⁷³ That is not to suggest Uzbekistan lacks coal to meet its own needs nor to export to its immediate

neighbors, with its proven reserves of less efficient brown coal exceeding 1.85 Bt and production rising as a result of investments.⁷⁴ Kyrgyzstan similarly has worked to increase its production, increasing from 450 kt in 2010 to a planned 3 Mt in 2025.⁷⁵

Ultimately, increased coal production in Central Asia is best utilized to meet domestic and regional demand for cheap energy and heating while building renewable capacity and exporting hydrocarbons. Of the fossil fuels, coal is too costly to transport and too abundant elsewhere to export from Central Asia.

C. Uranium: Fuel of the Future?

The war in Ukraine and the current climate crisis has global leaders considering an effective alternative to fossil fuel in both the long and short-term, particularly as Europe faces a deadly heatwave attributed to anthropogenic climate change.⁷⁶ Existing and newly developing nuclear technology, such as Small Modular Reactors (SMRs), will be crucial to achieving energy security. Central Asia, particularly Kazakhstan, whose considerable uranium reserves are second worldwide behind Australia, will play a key role in any nuclear renaissance.

Nuclear energy emits less CO₂ than any fossil fuel, even accounting for potential hidden costs in uranium ore mining, plant development, and transit.⁷⁷ A nuclear plant would generate a three cubic meter brick of high-level waste, compared to 300,000 tons of ash and 6 Mt of CO₂ from a coal-powered plant of the same size.⁷⁸

However, nuclear energy faces organized opposition, including from misguided proponents of clean energy. Critics point to high-profile incidents, such as the 2011 Fukushima Daiichi tragedy and Chernobyl.⁷⁹ While technology has made nuclear plants considerably safer, thoughts of mushroom clouds and radiation poisoning create a psychological force field and political constituencies difficult to challenge. These may be necessary to challenge, however, as many nations face the necessity of prompt energy restructuring. Renewables are not yet capable of supplying power to billions of citizens in need of safe and abundant energy, and investment into nuclear could buy the world decades until renewables are fully competitive.

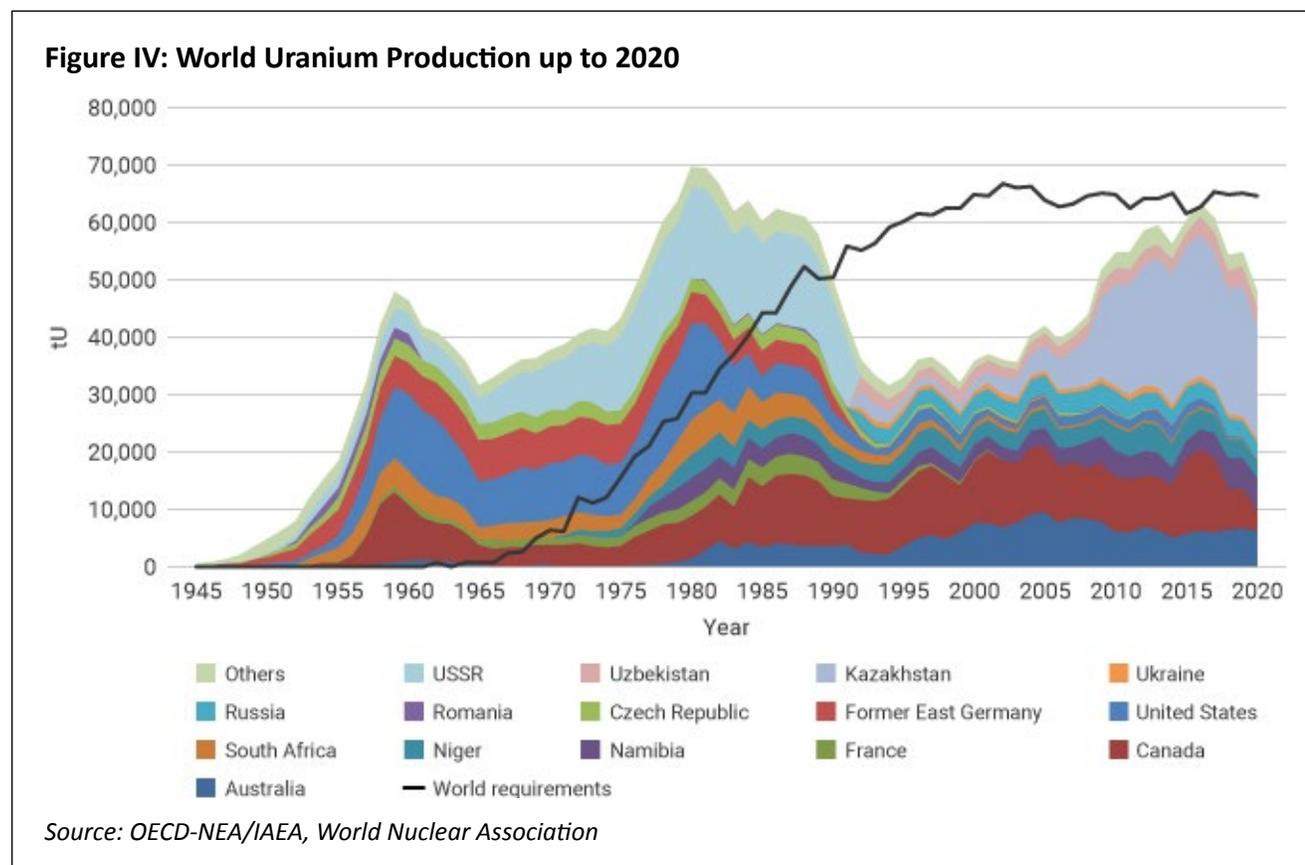
Nuclear aversion resulted in the last few decades of nuclear development being dominated by few heavy investors, particularly Russia, South Korea, and China,⁸⁰ and the construction and activation of new plants can take a decade.⁸¹ France, the foremost nuclear power in Europe — in every respect — has seen its reactors struggle with cooling due to water scarcity in a changing climate, demonstrating the need for technological advancement.⁸² Germany, whose government has turned away from nuclear, may now be considering a shift back.⁸³ They and others pursuing nuclear solutions must learn from France's struggle and build any future reactors with potential climate change-caused droughts in mind.⁸⁴

Despite difficulties, traditional nuclear power is becoming more popular and acceptable, which bodes well for Central Asian uranium demand. France, Ukraine, Slovakia, and Belgium all use nuclear energy for more than 50% of domestic energy, with Hungary, Czechia, Bulgaria, Finland, and Sweden at over 30%.⁸⁵ Poland has embarked upon some of the most sweeping energy reforms in history, with Korean-provided nuclear reactors playing a significant role in their plan to incorporate nuclear power to their energy mix by 2033.⁸⁶

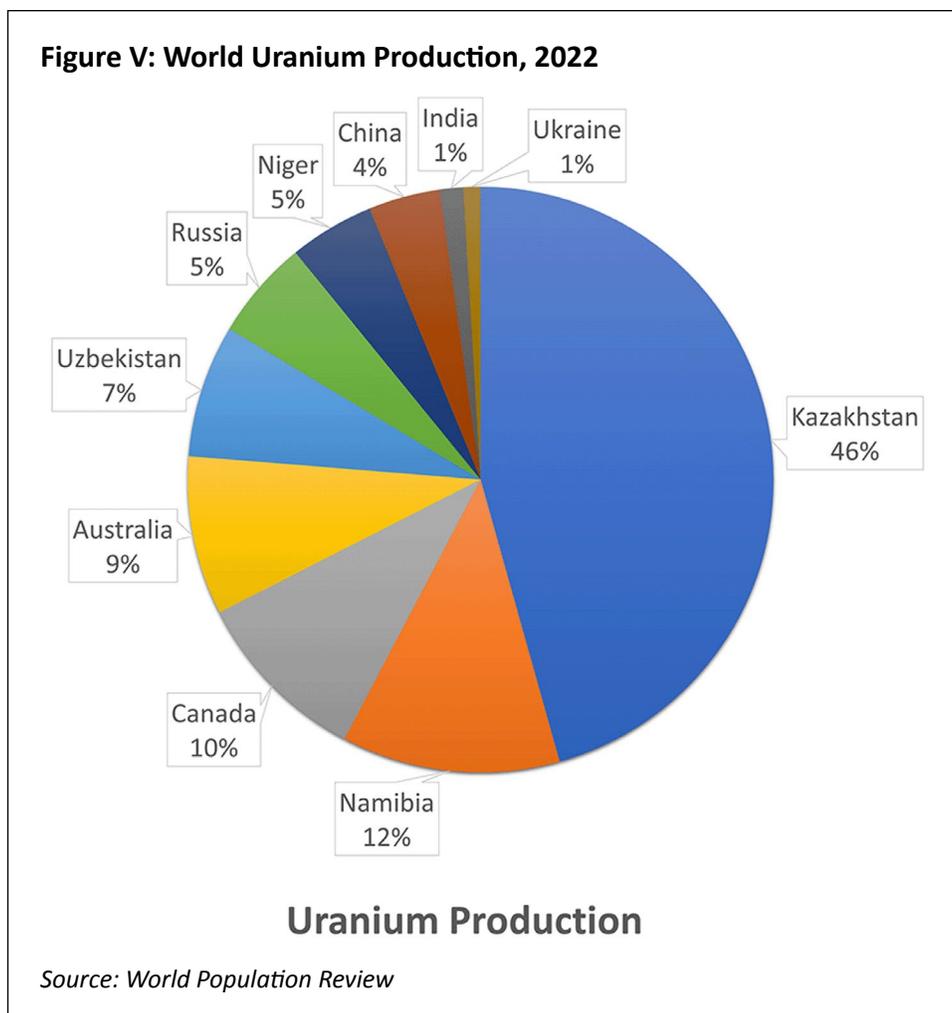
The US government has already begun working with its European partners in civilian nuclear power projects which will help stimulate demand for Uranium.⁸⁷ The US government has invested heavily and broadened its nuclear cooperation with Poland, Slovakia, Czechia, and Romania over the last two years.⁸⁸ This cooperation includes a range of initiatives from traditional nuclear reactor construction primarily by

the Westinghouse corporation, to innovations and implementation of small modular reactors (SMR) led by Rolls Royce and NuScale.⁸⁹

For all countries revitalizing old plants or constructing new ones, developing uranium supply chains is a necessary precondition. Central Asian uranium has the potential to play a sizable role in global energy politics in the coming years.



To seize this opportunity, Central Asia must look to the legacy of Soviet rule.⁹⁰ Kazakhstan is the largest producer of uranium on the planet, accounting for ~45.14% of world primary supply in 2021.⁹¹ Kazakh uranium mines include four of the ten largest worldwide, and its reported 2019 reserves were estimated at 15% of the world total, nearly 900,000 tons. Uzbekistan is somewhat less gargantuan, but still accounted for an estimated 2% of global proven uranium reserves in 2019 and ~7.24% of global uranium production in 2021.⁹²



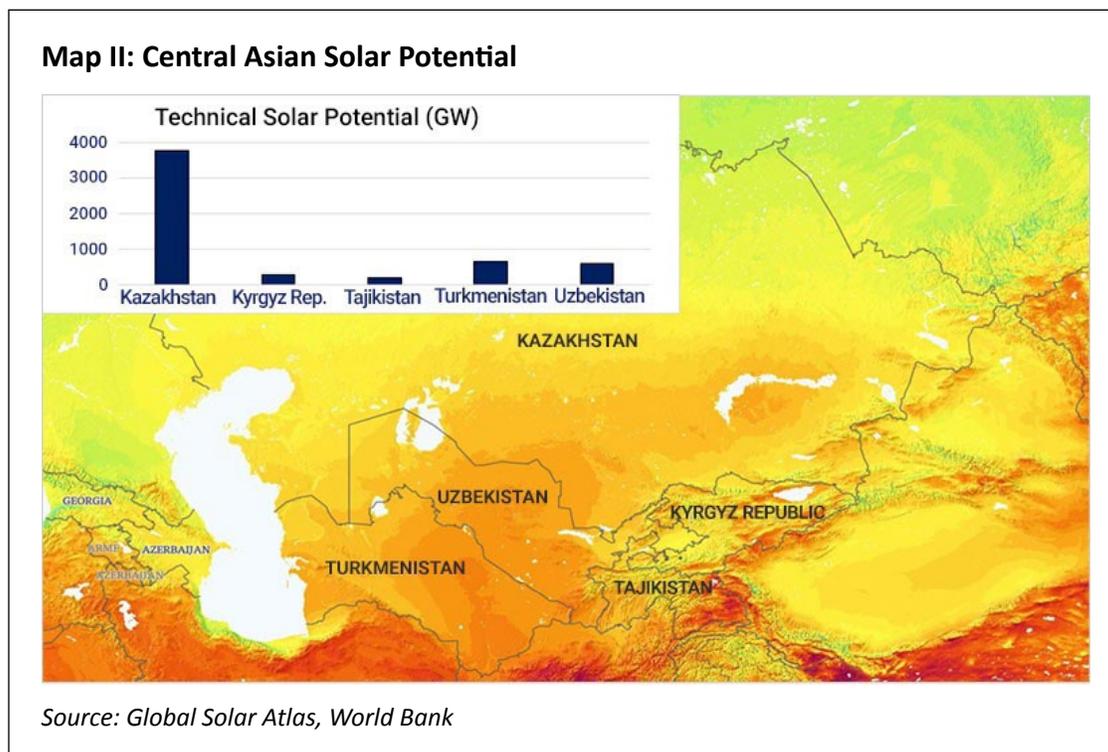
Tajikistan and Kyrgyzstan scuttled their uranium industries in the wake of the dissolution of the USSR, with health risks and pollution caused by mining a notable local concern.⁹³ Rehabilitation efforts are underway in affected lands in both nations. The history of pollution and disease connected to uranium mining and Soviet nuclear testing has prompted both states to not consider uranium mining. For the foreseeable future, Kazakhstan will dominate Central Asian uranium production, with Uzbekistan a respectable but very distant follower.

Central Asia also has global competition. Canada (third in active production and third in proven reserves) and Australia (fourth in active production and first in proven reserves) ship to many consuming nations in the Americas, Europe, and Asia, and together produced 8885 tons in 2021, roughly ~18.38% of global production.⁹⁴ Despite the challenges presented by these competitors, the sheer size and strength of Kazakhstan's industry offer a swift and large-scale path to a nuclear renaissance for Europe that other suppliers cannot match.

FORATOM's recommendation in 2015 was that Europe constructs 100 new nuclear plants between 2025 and 2045, generating an estimated 122 GWe (~3.85 EJ) per year.⁹⁵ If reliable supply chains can be established across the Caspian, Central Asian uranium could fuel a nuclear energy renaissance. With French President Emmanuel Macron entering his second term promising a massive investment in the development of new nuclear reactors, France may serve as an example for all nations, with Kazakhstan's uranium fueling a long-term investment into decarbonization.⁹⁶

D. Renewable Energy: The Global Megatrend

Fossil energy resources are traded via tanker or pipeline, but the direct electricity trade relies on physical connections and integrated grids. This poses an obstacle to trade outside of one's region, though some efforts have been made to link regions together and enable to importing of low-carbon-generation electricity, such as the Morocco-Spain connection.⁹⁷



Central Asian renewable energy, on the rise as decades-long transition plans go into effect, will likely be limited to the region and its immediate vicinity. Through the lens of foreign investment, renewable energy should be an investment in the region which can free up other energy sources for export. Western nations looking to expand energy exports from the region, including fossil fuels and uranium, should encourage investment in renewables there.

Some efforts are already underway. Kazakhstan's multi-vector foreign policy has translated into ~1.8 billion USD of foreign energy investment into renewables since 2014, with money flowing from both the west and east.⁹⁸ The success of these renewable projects is rooted in the region's high potential for the development of renewable energies. Over 50% of the country's terrain is considered well suited for solar,⁹⁹ and its wind corridors similarly could power numerous turbines.¹⁰⁰ Kazakhstan's success in drawing foreign investment can be attributed in part to business-friendly reforms it has taken and in part to diligent re-investment; the Astana International Financial Centre attracts foreign attention in a way Kazakhstan's neighbors cannot yet match.¹⁰¹

Kazakhstan's neighbors possess similar potential. Uzbekistan has sought foreign partners to assist in its goal of achieving an 8% solar energy of the total production by 2030, doable in a country with over 320 days of sunshine each year.¹⁰² Western Turkmenistan is well suited for the placement of wind turbines.¹⁰³ Kyrgyzstan has welcomed investors from China¹⁰⁴ and the UAE to assist in the construction of solar and hydropower plants respectively.¹⁰⁵ As in Kazakhstan, a domestic renewables sector will enable more

hydrocarbons to be exported to other markets, reduce imports, and enhance energy security.

Figure VI: Wind Power Potential in Central Asia

Theoretical wind power potential in Central Asia (in GW)

	Capacity factor	0-0.18	0.18-0.22	0.22-0.26	0.26-0.3	0.3-0.38	Total	Grand total
	<i>Distance from the shore</i>							
Kazakhstan	0-50 miles	216.745	298.633	686.646	823.191	68.936	2094.150	11387.700
	50-100 miles	443.727	681.356	1502.915	1316.112	35.376	3979.486	
	100-5000 miles	128.651	498.109	3974.696	710.938	1.671	5314.064	
Kyrgyzstan	0-50 miles	89.121	33.224	57.050	19.172	0.428	198.995	255.663
	50-100 miles	14.908	13.711	15.379	11.903	0.768	56.669	
	100-5000 miles	0.000	0.000	0.000	0.000	0.000	0.000	
Tajikistan	0-50 miles	104.230	17.210	5.433	0.043	0.000	126.915	146.135
	50-100 miles	0.637	7.197	3.509	2.009	4.988	18.340	
	100-5000 miles	0.000	0.152	0.585	0.145	0.000	0.881	
Turkmenistan	0-50 miles	183.517	400.382	15.864	0.000	0.000	599.762	1991.867
	50-100 miles	311.135	647.288	47.490	0.279	0.000	1006.191	
	100-5000 miles	1.427	331.878	52.610	0.000	0.000	385.914	
Uzbekistan	0-50 miles	139.353	444.335	31.288	0.000	0.000	614.975	1685.278
	50-100 miles	44.734	499.430	52.887	0.662	0.000	597.712	
	100-5000 miles	11.966	298.209	150.339	12.078	0.000	472.591	

Source: National Center for Atmospheric Research

To these ends, a renewables-centric investment arms race has already begun as the West formulates the PGII as its response to the Chinese BRI. Central Asia should work to create the safest possible environment for investors, lest it misses out on potential cooperation in the coming years.

One such investment is the EU's into Tajikistan's 335-meter Rogun dam, which would be the world's tallest and would shift Tajikistan away from Russian energy dependence, further enabling it to export to Uzbekistan and Kazakhstan as well.¹⁰⁶ Tajikistan is already heavily reliant on hydropower,¹⁰⁷ amounting to roughly 95% of ~6,000 MW total energy use, followed by Kyrgyzstan at roughly 80% of ~3,800 MW.¹⁰⁸ Central Asia's hydroelectric potential is considerable, but only recently is infrastructure dating to the 1950s and 1960s being modernized, and no nation in the region having developed more than ~13% of its potential full capacity.¹⁰⁹ Hydropower should be considered a potential target for investment and development with this in mind, but at the same time should be eyed through a lens of caution; climate change caused droughts would present a great injury to a society reliant on hydroelectric generation and exports.

III. Logistics and Security of European-Central Asian Trade

Geography and security are the greatest constraints on the prompt development of energy trade between Central Asia and Europe. Central Asia is landlocked, lacking coastal territory which prevents it from accessing maritime trade with world markets. Confronting these obstacles will require careful diplomacy and likely reciprocal arrangements with amicable neighbors, being granted access to ports or infrastructure which could lead to prospective client. Unfortunately, Central's Asia neighbors are not always politically agreeable.

Russia is the past hegemon, struggling to retain its status and wielding the denial of energy to Europe as a Machtpolitik tactic. While China acts as a willing investor in energy infrastructure and consumer of hydrocarbons and other natural resources, its investment will not facilitate the open transit of energy to

markets. Instead, it will seek to cultivate dependency and further its hegemonic ambitions as an aspiring superpower. Iran, authoritarian, domestically shaky, and vehemently anti-American, and itself an energy exporter would only benefit from sabotage the expansion of Central Asian energy trade.¹¹⁰ Afghanistan remains a factor as well, capable of spilling chaos and violence across neighbors borders even without traditional power projection.

As might be expected given Central Asia's recent history as constituent part of the Soviet Union and Russian Empire, the existing energy transport infrastructure snakes its way north-west or west through Russian territory. The primary pipeline that has enabled Kazakhstan to become Europe's fifth-largest supplier of oil¹¹¹ is the CPC, which connects the country's Tengiz Field to Russia's Black Sea Novorossiysk-2 Marine Terminal.¹¹² The CPC manages roughly 1% of global supply, its 1.3 MMB/D amounting to ~80% of Kazakh exports.¹¹³ Owned by a mixture of local, Russian, and western investors, its continued operation is important to both European energy security and Kazakhstan's economy.

Russian interference with the CPC's operation is worrying. Damage in March 2022 attributed to bad weather necessitated repairs and a halt to exports, increasing fears of deliberate delays or hindrance by Russian authorities.¹¹⁴ A larger blow came in the aforementioned July 2022 shutdown at Novorossiysk.¹¹⁵

Tokayev responded with a statement on the necessity of diversifying oil supply routes, labeling the Caspian Sea port infrastructure a strategic objective and ordering a study into a Trans-Caspian pipeline that would reduce dependence on Russia for its European export route.¹¹⁶ A higher Russian court suspended the halt in lieu of a 200,000 ruble fine on July 11, 2022, allowing exports to continue to Europe unhindered.¹¹⁷ This reversal may have been a backtrack to salvage worsened relations with Kazakhstan, but Russian unfriendliness and the potential of a similar ruling will be a factor in Astana's deliberations moving forward. The temptation to move further into China's camp will be strong, as Beijing pushes for increased trade and investment.¹¹⁸ Xi Jinping's pledge to respect Kazakhstan's territorial integrity during his September 2022 visit to Astana reflected this ongoing diplomatic courtship, as well as concerns in Central Asia awakened by Russia's actions in Ukraine.¹¹⁹

Reliance on infrastructure geared toward trade with or through powerful neighbors is seen across Central Asia. In Turkmenistan, the country's rich natural gas fields were first connected to Russia via the Central-Asia Center pipeline, largely controlled by Russia's Gazprom.¹²⁰ China's courtship led to the Central Asia-China Gas Pipeline, that now accounts for more than half of Turkmenistan's gas exports.¹²¹ This infrastructure was funded and constructed by Beijing for their own benefit, and Turkmenistan is accordingly constrained in who it can sell to.

Map III: The Middle Corridor



Source: Middle Corridor: Trans-Caspian International Transport Route

That may be changing as the gas-hungry EU hunts for new suppliers, and Central Asia evaluates the potential of its resources in an environment of high energy demand. Turkmen media has emphasized European interest in a Trans-Caspian Gas Pipeline capable of bringing Turkmen gas to European-accessible ports in Türkiye and the Caucasus.¹²² A smaller endeavor which could serve as a proof of concept for a larger pipeline is Turkmenistan’s proposed Trans-Caspian Interconnector project, capable of carrying 10-12 bcm of natural gas from Turkmenistan to Azerbaijan each year.¹²³ The interconnector would bridge Turkmenistan’s Banja Livanova Field with Azerbaijan’s Azeri Chirag Guneshli Field, only 42 nautical miles apart.¹²⁴

Map IV: Proposed Trans-Caspian Pipeline



Source: New Europe

A pipeline bridging Türkmenbaşy, Turkmenistan and Baku, Azerbaijan would enable Turkmen gas to make its way through the South Caucasus Pipeline and into the EU-reaching Southern Gas Corridor, or to accessible ports such as Georgia's Batumi in the Black Sea and Türkiye's Ceyhan in the Mediterranean Sea.¹²⁵ Central Asian energy could help meet European demand without Russian interference, strengthening relations with partners in Central Asia, the South Caucasus, and Türkiye.

In the face of heightening Russian truculence and economic disentanglement, the landlocked CARs must look to the sea to conduct trade unhindered by their neighbors. A transportation corridor carrying various fuel sources across the Caspian increasingly appears the optimal next step for connecting Central Asian energy exports to the European markets. Before proceeding, however, potential investors and involved nations must carefully consider the optimal routes for potential pipelines, the merits and modalities of the construction of a Caspian Sea tanker fleet as an alternative or an accompaniment to the pipeline, and the logistics of transporting to Europe fuels which cannot easily be conveyed via pipeline, such as coal and uranium.

The development of a Trans-Caspian Pipeline capable of linking Kazakhstan's gas fields to Baku would require considerable western spending given roughly 500-miles to span, but would undeniably be among the most direct options available and cut out any potential middleman.¹²⁶ Such pipelines have been proposed and discussed for decades; however, cost has always loomed large. Geopolitical shifts have energized demand, and multiple options must be considered.¹²⁷

There is, in theory, substantial potential to save money by investing in a single Trans-Caspian Pipeline corridor rather than multiple, particularly as offshore pipelines can cost twice as much as their onshore counterparts.¹²⁸ A single pipeline corridor accommodating both oil and gas pipelines, joined by onshore linkages is an attractive prospect to would-be investors and energy purchasers, but the situation is complicated. Oil and gas pipelines make use of different pipe stocks, because of different temperature and pressure requirements, so any such project would require multiple suppliers and experienced contractors from the start.¹²⁹ For Europe to invest in Central Asian hydrocarbons would require leveraging both money and professional expertise.¹³⁰

Some proposals suggest infrastructure could be paired or made cheaper through collaboration, such as a direct onshore connection between Kazakhstan's infrastructure and Türkmenbaşy.¹³¹ In strengthening Central Asian cohesion and intra-regional trade, connecting infrastructure might work wonders, but cost and political analysis would be needed to gauge whether, for example, Kazakhstan could provably save money and manage risks constructing a gas pipeline via Turkmenistan, working through Türkmenbaşy to Baku rather than from its own territory, and whether it would cede territorial control over much of that awaited infrastructure to its neighbor.

Consideration of which countries wish to export which resources will be significant in examining how potential pipelines would need to be connected elsewhere in Central Asia; given a Turkmenistan-to-Azerbaijan pipeline for natural gas, landlocked Uzbekistan might well seek an arrangement for the transfer of its own gas to Türkmenbaşy and subsequently to Europe.

Investment into Caspian Sea tanker fleets and terminals could reap dividends. The ports of Aktau and Kuryk could and do see the shipment of oil to Baku without the immediate need for a more efficient pipeline.¹³² If additional ships are constructed, more shipments will be possible, and more terminals could help facilitate expanded trade in this respect. Shipping in this method will be of particular importance if Europe chooses to expand its nuclear fleet and purchase uranium from Kazakhstan. Typically transported

by rail, uranium obviously cannot be carried via pipeline and would require ships and crews readied for its safe transport across the Caspian to the next leg of its journey.¹³³

Ultimately, the EU must perform a cost-benefit analysis of investing in Central Asian transportation infrastructure to increase energy imports. This analysis should consider potential routes for Trans-Caspian Pipelines carrying oil and natural gas, potential cost-saving intraregional collaboration measures, and the specific needs of the moment. A Europe bound to expand its nuclear fleet should differently than one prioritizing natural gas and existing nuclear infrastructure on the path to a renewable future. In doing this, Europe must consider its own pipeline infrastructure and if it is up to the task. The Southern Gas Corridor does not reach certain nations in Eastern Europe as the failed Nabucco Pipeline would have, and it may be necessary to expand infrastructure within Europe.¹³⁴

Eastbound options also exist. In the wake of the threatened CPC shutdown, Tokayev suggested that Kazakhstan might expand an existing pipeline carrying oil from Atyrau through Kenkiyak and Kumkol to Chinese markets.¹³⁵ This is a stark reminder to the West of the importance of investing in suppliers' infrastructure, enabling them to access western markets, lest their supply be monopolized by more geographically convenient buyers.

IV. Internal Central Asian Considerations

The continued development of Central Asia's energy sector will require inflows of foreign capital into infrastructure. Beijing's BRI has made investment a cornerstone of Chinese diplomacy, recently shifting focus from large-scale infrastructure to promote overall industrialization and renewable energy infrastructure.¹³⁶ G-7 members have responded to the BRI with the aforementioned PGII, pledging 600 billion USD in hard and soft infrastructure.¹³⁷ China's ten year lead is an undeniable advantage in this bidding war, but the PGII has its own advantage in being able to learn from steps and missteps made by Beijing. It remains to be seen if the Central Asian governments and elites will be sold on the G-7 plan.

As western governments realize the mutual benefits of assisting in the development of Central Asian energy infrastructure, western investors are sure to be drawn in as well. Investors hold an immense amount of capital which, if channeled in the appropriate areas, could translate into considerable economic growth. For this, they will need to feel confident their contribution will not be lost to corruption, restrictions on foreign stakeholders' profit repatriation, political instability, and other risks. If the countries of Central Asia hope for western investors to support energy infrastructure and other domestic priorities, they will need to prepare the environment and position themselves as safe places to invest. This is accomplished through political and market-oriented economic reforms, institutional development, good governance, transparency, and a strong commitment to the rule of law.

Reforms not only build investor confidence, but create a stronger, fairer domestic economy, investing into the wealth and education of the population and accordingly reducing the likelihood of civilian unrest. If social grievances can be resolved through an equitable income distribution and fair elections, violence is far less likely to occur. Political reforms may take time to implement and face resistance, but investors will undoubtedly reward them as their fear of systemic graft, unmanageable roadblocks, and civilian unrest fade away.

Kazakhstan has experienced both the prosperity that is achieved through market liberalization and the discontent brought about by social inequality and political stagnation. The country's strategy of targeted reform has created an economy that has outperformed its neighbors by a noteworthy margin. In fact,

Kazakhstan's predicted 2022 GDP of 193.611 billion exceeds those of its four Central Asian neighbors combined, despite encompassing less than one-fourth of the region's population.¹³⁸

Kazakhstan's economic growth did not happen overnight. Rather, it has resulted from sustained policies prioritizing heavy investment into the development of its energy industry since independence. During the nearly three-decade reign of President Nursultan Nazarbayev, Kazakhstan initially prioritized the exploration and sale of its energy resources, with proceeds to be reinvested into economic diversification and needed infrastructure.¹³⁹ Nazarbayev's Kazakhstan-2050 Strategy, unveiled in 2012, expressed the ambition of marching Kazakhstan into the world's 30 most developed economies by the midpoint of the century.¹⁴⁰

A cornerstone of this ambitious goal has been the establishment of the Astana International Financial Centre (AIFC), presently entering its fifth year of business. Located in Astana's futuristic EXPO center, the AIFC has been structured on the model of fellow financial centers such as Dubai, Hong Kong, and Singapore.¹⁴¹ With a relaxed regulatory environment and applicable English common law, not to mention English as its working language, the AIFC is specifically geared toward attracting foreign investors to Central Asia, and has prioritized coordination and facilitation of green finance across the region. President Tokayev has stressed the importance of the AIFC in building investor confidence and regional stability, along with that of the political reforms required for both to flourish.¹⁴²

After coming to power in 2019, Tokayev pledged to continue economic diversification, prioritizing agricultural development, tax reform, and a shift away from state-owned enterprises to greater privatization. The country's 2021 National Development Plan emphasized the importance of the AIFC as a tool to attract foreign direct investment and encourage consistent growth.¹⁴³ For all this success, however, the country and its trade partners were caught off guard by the outbreak of civilian unrest in January 2022.

A Short and Violent Outburst Triggers Reforms

With rallies initially caused by a sharp rise in gas prices and systemic wealth inequality, Kazakhstan's surge of unrest was later attributed to actions by criminal gangs and political opportunists, with the response by security services and police adding gas to the fire.¹⁴⁴

Tokayev initially treated the protests as an economic matter, taking steps to reimpose price controls, but a weak early security response to the violence, allegations of internal treachery, and allegations of religious extremists among the rioters saw him transition to a more aggressive approach.¹⁴⁵ On January 5, 2022, Tokayev took control of Kazakhstan's Security Council from his predecessor, fired several officials, and requested support from the Russia-led CSTO, a request the organization promptly approved.¹⁴⁶

In the wake of the violence and amidst talks of "de-Nazarbayevification"¹⁴⁷ (which ultimately saw the country's capital return to its original name of Astana),¹⁴⁸ calls swiftly went out to follow through on social and economic reforms, with specific emphasis on privatization and combating corruption.¹⁴⁹ Recognizing the necessity of the hour, Tokayev was quick to move.¹⁵⁰



Image II: President Tokayev speaking in Kazakhstan's Parliament earlier this year.

Source: Official Website of the President of Kazakhstan

Tokayev's promised reforms in the long-run include transferring certain presidential powers to parliamentary and local leaders, cracking down on nepotism, establishing a constitutional court system, and banning the death penalty.¹⁵¹ Of particular note is the imposition of presidential term limits, office holders limited to a single term of seven years.¹⁵² Activists have criticized the reforms as insufficiently expansive and not intended to result in genuine, multi-party democracy.¹⁵³ Nonetheless, there has been discussion of an increased focus on human rights and cooperation with international organizations to that effect, which may reflect a genuine commitment toward liberal reform, at a slower pace than some would like out of a desire to avoid instability.¹⁵⁴

Kazakhstan's successes and its management of the unrest of January 2022 demonstrate that the economic reforms necessary to achieve prosperity are at their most effective when paired with democratic and anti-corruption reforms. Liberal democracies draw strength from civilian populations taking part in regulated but free trade on the domestic and international level.

If Kazakhstan follows through on the promise of increasing democracy and accordingly sees a more equal distribution of its economic growth, it will be an example not only to its fellow states in Central Asia but to nations across the world. If it fails to follow through, future civilian unrest as a result of inequality is possible, and investors may start looking elsewhere.

Uzbekistan's Renaissance

At first glance, Uzbekistan presents a similar profile to Kazakhstan. Longtime President Islam Karimov failed to capitalize on the country's economic potential, but his death in 2016 allowed his successor Shavkat Mirziyoyev to promise a New Uzbekistan. Mirziyoyev has opened the country's economy and abandoned some more repressive and isolationist policies.¹⁵⁵ The new government has been praised for its efforts to tame a police state apparatus¹⁵⁶, while some remain critical of a government that continues to concentrate power within its own hands.¹⁵⁷

Mirziyoyev's market reforms have been geared specifically toward building a more dynamic and open

economy. Uzbekistan's November 2018 Reform Roadmap outlined its intended steps to transition toward a market economy through 2021, complete with building a social safety net and emphasizing environmental sustainability.¹⁵⁸ Already these efforts have translated into an overhauled tax administration and greater fiscal transparency, though a great deal of work remains to create a strong and free financial sector where private industry can flourish.¹⁵⁹

The country's 2022-2026 roadmap lays out a lengthy list of continued reforms including protection of property rights, tax reform intended to attract foreign investments, increasing digitalization, agricultural reform, new education and health programs.¹⁶⁰

Amidst these liberalizing measures, Uzbekistan is taking steps to attract foreign capital and better integrate itself into the global market. Efforts to eradicate child and forced labor in Uzbekistan have borne fruit under Mirziyoyev, a victory for human rights which should enable the building of stronger ties between Tashkent and the democratic world.¹⁶¹ The important Uzbek cotton industry, has been reshaped by these reforms, shifting away from the state as the monopsonist buyer imposing fines on producers unable to meet their quotas.¹⁶²

Steps are being taken to address corruption. Among Uzbekistan's highest-profile corruption cases is that of Gulnara Karimova, daughter of President Islam Karimov. A self-labeled fashion designer once spoken of as her father's successor, Karimova was labeled a robber baron over her ties to forced child labor in the cotton industry.¹⁶³ Her arrest on charges including accepting bribes, embezzlement, and extortion demonstrates that the corrupt can face justice in Uzbekistan, but raises questions on if entrenched corruption can be easily expunged.¹⁶⁴ Uzbekistan's strongest tool against corruption and toward achieving an interconnected, prosperous economy is to pair its economic reforms with continued political liberalization and democratization.

Proposed constitutional reforms offer steps toward greater popular participation in government, but critics have noted that they would simultaneously enable Mirziyoyev to exceed his previous term limits in a system not yet able to be called a genuine democracy.¹⁶⁵ Protests have emerged from the autonomous Republic of Karakalpakstan, which was set to lose its right to hold a secession referendum in a package of reforms.¹⁶⁶ A brief outbreak of violence forced Tashkent to rescind the measure, but left eighteen dead, highlighting the existence of ethnic tensions while also showing the government's willingness to reserve course on missteps after its missteps.¹⁶⁷

This outbreak does not point to any inherent instability in Uzbekistan but does highlight the importance of prioritizing social development, human capital, civilian infrastructure, and resilience. Ethnic or regional tensions are exacerbated by inequality and environmental degradation and diminished by prosperity and socio-political mobility. Should Uzbekistan continue economic reform, it will likely see notable economic growth as investors take note of its potential. Should it accompany those reforms with a push toward democratization, education, and civil liberties, that growth will likely increase exponentially.

Progress Elsewhere in Central Asia

Such political reforms are less likely to take root in Turkmenistan, where President Gurbanguly Berdimuhamedow officially stepped down in March 2022, effectively remaining in power though as part of a duumvirate with his son, President Serdar Berdimuhamedow.¹⁶⁸ The authoritarian Turkmen regime makes use of regressive policies and a cult of personality, imposing limits on free speech and religious expression.¹⁶⁹ The shift in the public face of leadership is unlikely to translate into real political reform,

and Serdar's inclination to lean into religiosity — his early rule being characterized by the reopening of mosques, a pilgrimage to Mecca, and restrictions on women in public spaces — could see further limitations imposed upon the population.¹⁷⁰ A report from May 2022 points to restrictions on clothing and transportation for women, similar to those in Taliban-controlled Afghanistan and theocratic Iran, with both of whom Turkmenistan shares a border.¹⁷¹ The partial change in leadership has come with signaling of increased willingness to export energy resources with Europe, albeit with nothing concrete at the time of this writing. For the West to pursue such trade will likely require accepting Turkmenistan's regime, rather than persuading it of greater prosperity in doing right.¹⁷²

Kyrgyzstan does not present a promising environment for western investors. The country is extremely reliant on remittances, the vast majority of which come from Russia. With war and economic sanctions disrupting Russia's workforce, the World Bank projects a decline in remittances could send the Kyrgyz poverty rate as high as 38%.¹⁷³ The country's steep, mountainous terrain presents an obstacle to the infrastructure development, and its politics have been plagued by consistent instability and armed conflict.¹⁷⁴ Once hailed as democracy, political developments have been in the opposite direction of Kazakhstan and Uzbekistan, further consolidating power in the hands of the sitting president.¹⁷⁵ Without significant changes in stability and governance, it is unlikely Kyrgyzstan will successfully modernize its economy or attract the foreign funds needed to fuel such an objective. Of note for the country's future economic prospects is the China-Kyrgyzstan-Uzbekistan (CKU) Railway Corridor, a project nearing commencement. The CKU will draw Kyrgyzstan further into China's orbit and see it pursue an economic strategy built on light manufacturing and transit fees.¹⁷⁶

Tajikistan likewise faces severe obstacles in presenting itself as a safe place for investment. President Emomali Rahmon has been in power since 1992, holding his current office since 1994, and his government can be defined by widespread corruption, nepotism, staged elections, and severe restrictions on political expression.¹⁷⁷ While it has succeeded in lowering its poverty rate substantially, Tajikistan remains the poorest country in Central Asia and heavily reliant on remittances from Russia as it works to address poor or disconnected infrastructure and energy shortages.¹⁷⁸ As remittances are likely to fall as a result of post-invasion sanctions on Russia, it is likely that Tajikistan will face rising poverty and setbacks in its own efforts to modernize. Economic reform has been slow to take root, and the state remains excessively involved in developing industry and agriculture.¹⁷⁹ Tajikistan will likely need to carry out a number of economic and political reforms before it can expect to attract substantial private capital.

V. International and Geopolitical Considerations

For Western investors to be confident in Central Asia's governments as energy exporters, they must be assured the region's neighbors do not pose serious threats to its stability. The region cannot be divorced from its geographic context, particularly as Russia publicly and violently rejects the sovereignty of formerly Soviet states — not only in Ukraine, but also through thinly veiled threats aimed at Kazakhstan. Sitting at the crossroads between Russia and China, the Central Asian nations' economies are deeply intertwined with those powers, and thus vulnerable to them. Beyond fear of Russia or China, the region's proximity to Iran and Taliban-controlled Afghanistan must be addressed as well.

There is cause to fear Russian revanchist goals beyond Ukraine. President Vladimir Putin cited historical ties to justify his violent grab at Ukraine, deriding the idea of distinct identity formed outside of a Russia-led empire.¹⁸⁰ Such an argument could be stretched to justify subjugation of Central Asia, citing their historical rule by the Russian Empire and USSR. Tokayev's June 2022 refusal to recognize Russia's proxy

governments in Donetsk and Luhansk saw Putin label Kazakhstan another part of “historic Russia,” a statement perceived by many as threatening.¹⁸¹

This reluctance to accept Putin’s justification avoids giving legitimacy to a potential similar invasion of Kazakhstan down the road, but has been labeled a slight by some observers, particularly after Russian troops were crucial in quelling Kazakhstan’s January 2022 unrest.¹⁸² Kazakhstan’s September 2022 refusal to recognize rigged referendums, used by Russia to fabricate legal annexation of four Ukrainian regions, builds on this distancing from Moscow.¹⁸³

There is great cause for concern regarding another of Russia’s pretexts for its war of aggression: the purported mistreatment and repression of ethnic Russians.¹⁸⁴ This *casus belli* is a convenient one, as some regions formerly under Russian and Soviet rule saw original populations displaced and replaced through settler colonialism or immigration.¹⁸⁵ Kazakhstan’s share of ethnic Russians is the largest in Central Asia, with roughly 3.5 million concentrated within northern and eastern Kazakhstan, while the rest of Central Asia houses a collective 1.1 million.¹⁸⁶ State Duma Member Konstantin Zatulin, a virulent nationalist, cited ethnic Russian presence in Kazakhstan as potential grounds to attack an unfriendly government in Astana.¹⁸⁷

Russian threats should be taken seriously but examined in context. Russia remains bogged down in its war with Ukraine, and is escalating a conflict which could last years and cause it serious economic damage as sanctions persist.¹⁸⁸ Its September 21 mobilization has increased its overall wartime capabilities, but at the time of this writing, the constrict force is untested and not yet demonstrably capable of defeating Ukraine, let alone more of its neighbors. A Russian invasion of Kazakhstan or any other Central Asian state would see those threatened nations turn to China or the West for security and further alienate Moscow from its trading partners, or simply see the seemingly incompetent Russian war machine falter embarrassingly. Beijing’s September 2022 pledge to support Kazakhstan’s territorial integrity represents a diplomatic line in the sand, informing the world that a Russian government prepared to invade Kazakhstan will lose its remaining allies or trade partners.¹⁸⁹

Presently, the CARs rely heavily on Russian exports, including metal products such as automotive parts or pipeline components, lumber, and energy products.¹⁹⁰ There are longstanding ties to Russian companies in the development of the energy sector. The region’s proximity to China presents it with an alternative supplier of goods and buyer of mining and agricultural products, a safeguard against economic collapse. Still, should a divorce with Russia occur, the break would be sorely felt, and the shift into China’s camp might similarly come with conditions restricting the energy trade with China’s Western rivals. Central Asia’s trade with Russia is largest in Kazakhstan, reaching ~19 billion USD in 2020, followed by Uzbekistan at ~6 billion USD, Kyrgyzstan at ~1.75 billion,¹⁹¹ and Turkmenistan and Tajikistan at ~1 billion apiece.¹⁹² Together, the CARs account for over 5% of Russian trade, a number which could rise as Moscow’s ties elsewhere weaken.

Additionally relevant in contemplating the economic damage of a Russian trade conflict with Central Asia is potential suffering if Russia cracks down on foreign labor and remittances. This would be particularly damaging for the poorer Kyrgyzstan and Tajikistan, should the Putin regime pursue economic warfare.¹⁹³ Central Asia’s greatest protection in this case remains proximity to China and Chinese regional ambitions.

China represents a notably different type of neighbor to Central Asia than Russia, without relevant historical claim of suzerainty or demonstrated territorial ambitions. At this stage, China’s interest still appears more rooted in economic than imperial domination, as trade and economic expansion open the door to empire.¹⁹⁴

The Belt and Road Initiative has poured hundreds of billions of yuan into the infrastructure of China's neighboring countries, developing new markets for the future export of Chinese goods and services and building future trade relations which might pull recipients into the Chinese sphere.¹⁹⁵ China has enjoyed a rather lengthy lead in Central Asian infrastructure, shifting to meet more demands including skills training in recent years as western and Russian investment began to match pace in the region.¹⁹⁶

China has worked hard to build strong ties to Central Asia. In addition to investment, Beijing offered mid-pandemic assistance, providing enough single-dose vaccines for roughly two thirds of Central Asia's population to be immunized.¹⁹⁷ Said Sinovac vaccine is widely implemented worldwide, but its efficacy has been questioned amidst conflicting efficacy reports and distrust of reported numbers by some opposition parties and media in participating countries.¹⁹⁸ This soft-spoken and cash-heavy approach to diplomacy has birthed considerable economic interconnectivity. China is either the largest trading partner or fastest growing market for each nation in the region, with a commitment to building on trade and investment opportunities.¹⁹⁹

BRI's widespread condemnation as a purposeful debt trap may be controversial,²⁰⁰ but there are lessons that the Sri Lankan mismanagement of BRI projects and ensuing financial difficulties can teach Central Asia.²⁰¹ The greatest lesson Central Asia must take to heart is to not allow for government investment to substitute the role the private sector has in maintaining economic relations between economic actors. The G7's \$600 billion PGII has built off lessons learned watching China's investment approach in Sri Lanka and Pakistan.²⁰²

As the PGII proceeds, China will remain a strong trade partner and investor in Central Asia, its funded pipelines and railways pointed eastward, toward the Chinese sphere of influence. What appears best for Central Asia is also what is best for would-be buyers in the West. Trade and investment only with China or Russia would leave the CARs dependent on one or both larger neighbors in all respects, while diversification by trading with everyone allows for fallbacks in cases of worsened relations or logistical setbacks. Western funding can help provide one such fallback, building the logistical infrastructure needed to enable exports to energy-hungry Europe. This could maximize trade and development.

Afghanistan presents a different challenge, as its instability and extremist leadership present a threat capable of spilling over a porous border. Turkmenistan, Uzbekistan, and Tajikistan all border Taliban-controlled Afghanistan's northern region, where Islamic State-associated militants (ISIS-K) are currently fighting for control.²⁰³ This context shows that the threat of religious extremists is well understood in Central Asia, perhaps explaining in part suggestions that the January unrest in Kazakhstan was in some way tied to such extremism.²⁰⁴ Taliban leaders have reportedly assured Central Asia's governments they will not allow their territory to be used to launch attacks against them,²⁰⁵ but ISIS-K leaders have said no such thing. Whether the Taliban's words are believable or not, there is cause for Central Asian leaders to embrace pragmatism in dealing with a radical, unstable, and terror-sponsoring neighbor.

Afghanistan is an energy importer, with more than half of its energy imports prior to the Taliban takeover coming from Uzbekistan and Central Asia as a whole supplying ~78%.²⁰⁶ Since seizing power, the Taliban has claimed an inability to pay for said energy and pledged to do so at a time when its finances are more stable.²⁰⁷ Uzbekistan, Tajikistan, and Turkmenistan have continued to export power, a choice which can be regarded as security-minded and to mitigate the ongoing humanitarian crisis unfolding in the southern country.²⁰⁸ Whether security can be bought in such a case is questionable.

Uzbekistan has endeavored to build diplomatic relations and increase its influence through energy exports, but there have been border incidents involving Afghanistan and Turkmenistan already, and there

is specifically high tension along the Tajik border, exacerbated by Dushanbe's demands concerning the treatment of Afghanistan's large ethnic Tajik population.²⁰⁹

The strongest protection against the Taliban may well be its distraction with both Islamic State fighters and quarrels with Pakistan. Extremists cannot be expected to prioritize peace, but western business interests and western-directed energy and transportation infrastructure may be protected from attack due to reluctance by the Taliban to enter a multi-front conflict with its neighbors and the West. Violence may break out along the southern borders of Central Asian states due to the presence of the Tehrik-i-Taliban or Pakistani Taliban,²¹⁰ but pragmatism may win out, as the Taliban is relying on coal exports to Pakistan to fill its depleted coffers,²¹¹ and the CARs can reasonably expect support from trade partners in preventing the spread of extremism within their borders.

Similarly, Iran is unlikely to seek conflict with Central Asia while navigating fraught relations with the west and its Middle Eastern competitors, as well as domestic unrest at the time of this writing. As a rule, the CARs should emphasize border security and reasonable precautions, but not let religious fundamentalists stand in the way of necessary and beneficial economic ties, educational projects, and north-south transportation infrastructure development where possible.

VI. Final Recommendations

The full development of Central Asia's energy industries is contingent upon their connection to western supply chains and transportation infrastructure. To achieve heightened interconnectivity is in both parties' economic interests: helping the EU weather its hydrocarbon shortage and helping the CARs access global markets and assert independence from the neighboring powers.

To better facilitate the energy trade, western governments and investors should begin talks to construct one or multiple Trans-Caspian Pipelines, connecting the CARs to the Turkish pipeline network through Baku, Azerbaijan. Suggested routes include one from Türkmenbaşy to Baku, supplying Europe with natural gas from Turkmenistan and Uzbekistan, and from Kashagan Field to Baku, supplying Europe with oil from Kazakhstan. In the short-to-medium term, a Caspian Sea tanker fleet could facilitate a smaller volume of oil deliveries.

Caspian shipping could also be used to convey uranium from Kazakhstan and Uzbekistan to Europe. As the leader in global reserves and production, Kazakhstan should take specific note of Macron's messaging on nuclear energy and general attitudes in Europe. Kazakhstan has the raw materials to fuel a European nuclear renaissance, an arrangement that would fund Kazakhstan's development and help Europe achieve its twin goals of emission reduction and energy security.

Western investment — both government-directed and private — should prioritize the energy infrastructure of states whose resources make them best able to meet current demand: Kazakhstan, Uzbekistan, and Turkmenistan. In the case of the latter, its human rights record should warrant scrutiny for the funding of projects. In addition to the infrastructure needed for the energy trade, investors should consider renewable energy projects intended for Central Asian consumption, civilian infrastructure, and human capital. Accomplishing this broad investment should create warmer feelings between the West and the CARs, and give the latter a diversified energy mix and improved human capital, enabling increased hydrocarbon exports.

Throughout this expansion of trade relations, the CARs are likely to maintain cordial relations with the other powers of the region while committing to no camp or sphere of influence. Multi-vector diplomacy

has served Kazakhstan well, allowing its economic ties to flourish with Beijing while avoiding conflict with Moscow so far. A similar strategy could serve all the CARs, maintaining peaceful ties with its neighbors while building new trade connections with the West.

VII. Conclusion

As Russia escalates its bid for hegemony over formerly Soviet states, the strengthening of the CARs' energy sectors allows them a pathway to greater autonomy and prosperity. With a rich bounty of hydrocarbons, the Central Asian Republics can achieve prosperity in trading with the European Union, supplying a solution to Europe's energy shortage since the invasion of Ukraine. Of particular note in energy resource reserves are Kazakhstan with oil and uranium, Uzbekistan with natural gas and uranium, and Turkmenistan with natural gas.

To facilitate this desired trade, new infrastructure must be developed. As existing pipelines for hydrocarbons cross through Russian territory, it may be necessary for the parties involved to construct one or multiple new and long-discussed gas pipelines across the inland Caspian Sea. Such logistical infrastructure is a necessity if Central Asian gas is to be connected to the European energy grid, and can and will only exist if western governments and investors contribute to its creation.

Western investment will be critical to both the creation of the infrastructure needed to facilitate trade and the development of Central Asia's renewable energy sector, enabling it to commit a greater share of its hydrocarbons to exports. To ensure the continued flow of foreign direct investment, the Central Asian Republics should adopt a strategy of economic liberalization and political reform, focusing on good governance, transparency, and the rule of law. The success of such reforms in building investor confidence can be seen up close in Kazakhstan and the AIFC.

The Central Asian Republics face a time of political turbulence and economic uncertainty, navigating Russia's aggression, China's ambitions, and the Taliban's resurgence as they seek the best paths forward to achieve prosperity and stability. This report makes the case that increased economic ties with Europe, the U.S., and their partner nations will strengthen Central Asia's economies and allow the region's states greater political autonomy, ensuring multiple local and global powers are invested in serious project development, rather than paying lip service while not putting their money where their mouth is. The democratic West must encourage private investment in Central Asian energy infrastructure. In developing the region's energy industry and entering a new era of collaboration, the democratic world will create steady partners and balance Chinese and Russian great power ambitions.

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