Towards a Geoeconomics of Energy Transition in Central Asia's Hydrocarbon-Producing Countries

Yana Zabanova

Abstract The global energy transition and the growing ambition of decarbonisation policies in the world's leading economies are bound to affect Central Asia's three hydrocarbon producers, yet there has been little research on the issue. This chapter uses the theoretical toolbox of geoeconomics to analyse the implications of energy transition for Kazakhstan, Uzbekistan and Turkmenistan across four dimensions: resources, energy infrastructure, strategic industries and clean energy technologies and the rules of international economic interaction. Kazakhstan remains the region's renewable energy frontrunner, while Turkmenistan is yet to make its first steps. Despite a late start, Uzbekistan is benefiting from the falling cost of renewable energy technologies and has attracted major industry players. Rather than pursuing fossil-fuel phaseout, these countries seek to capture more value from their hydrocarbon resources—especially natural gas—while adding renewables to the mix to bolster energy security and help decarbonise the economy. However, infrastructure constraints remain an obstacle to low-carbon energy production. Lacking the influence to shape the international rules of engagement on energy transition, the three countries are employing a variety of strategies to manage their asymmetrical dependence on key partners—be they China, the EU or Russia—and to diversify their international engagement.

Keywords Geoeconomics · Energy transition · Central Asia

1 Introduction

Traditionally, the geopolitics of energy has focused on oil and gas as a source of power and influence in the global economy. More recently, however, increasing attention has been paid to energy transition and its geopolitical ramifications. These include the

Y. Zabanova (✉)
Research Institute for Sustainability (RIFS)—Helmholtz Centre, Potsdam, Germany
e-mail: yana.zabanova@rifs-potsdam.de

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declining power of hydrocarbon exporters, an expected reduction in the potential for conflict in a renewables-dominated world, and the intensifying competition between China and the West on clean energy technologies. Furthermore, there are growing security risks associated with critical minerals needed for the energy transition and in the cybersecurity domain but also new economic opportunities for countries of the Global South that are rich in renewable energy and critical raw materials (Vakulchuk et al. 2020).

In parallel, there has been a growing interest in *geoeconomics* as a related but different lens through which to observe power relations within the global economy. In his seminal 1990 article 'From Geopolitics to Geo-Economics', Edward Luttwak argued that, with the collapse of the bipolar world order, nation-states were increasingly relying on economic instruments rather than military might to achieve their geostrategic goals. The emergence of global value chains and the rise of China as the world's economic powerhouse have further increased the salience of geoeconomics. The security implications of supply chain disruptions became painfully clear during the Covid-19 pandemic and in the wake of the Russian invasion of Ukraine in February 2022.

Central Asia has rarely been mentioned in these analyses; this reflects the near total absence of academic research on climate change and decarbonisation in Central Asia more widely (Vakulchuk et al. 2022). Koch and Tynkkynen (2021) use a critical geopolitics approach to compare renewable energy development in Kazakhstan and Russia, while Vakulchuk and Overland (2021) analyse Central Asia's potential to supply critical materials for clean energy technologies. To the author's knowledge, no contributions have addressed the geoeconomics of the energy transition in Central Asia. This is the research gap that this chapter is aiming to address.

In the global energy transition, Central Asia remains a laggard. Wind and solar power deployment in the region began only around 2013 and for a long time took place almost exclusively in Kazakhstan. As of mid-2022, the total installed capacity was still below 2 GW. There is much room for growth: the technical solar power potential of Central Asian countries exceeds their current power generation levels by a factor of twenty (Eshchanov et al. 2019b). For wind power, the potential is even higher, with 70% of this concentrated in Kazakhstan (Eshchanov et al. 2019a). Yet, there are many challenges ahead. Mass deployment and integration of renewable energy require a large-scale upgrade of the region's ailing grid infrastructure, much of it dating back to Soviet times. Energy tariffs are low, resulting in high levels of energy intensity and a lack of investment in electricity grids, as well as distorted price signals, making it difficult for renewables to compete with traditional—heavily subsidised—power generation.

2 Conceptual Framework: Towards a Geoeconomics of Energy Transition

There is no uniform definition of geoeconomics, and the term is often confusingly used alongside geopolitics. Wigell (2016, 135) defines geoeconomics as 'the geostrategic use of political power by economic means', while Blackwill and Harris (2016, 9) describe it as 'the use of economic instruments to promote and defend national interests, and to produce beneficial geopolitical results; and the effects of other nations' economic actions on a country's geopolitical goals'. Diesen (2019, 568) employs the concept of 'asymmetrical dependence', which 'enables the more powerful and less dependent state to set favourable conditions for economic cooperation and to extract political concessions from the more dependent state'. Geoeconomics combines an outward pursuit of influence in the global economy or in a given region with a more inward-oriented approach to strengthening one's economic resilience. The latter may be particularly relevant for states that lack the capacity to actively project power internationally.

With its nuanced treatment of the economic interdependencies created by global value chains—where some countries are more indispensable than others—and the resulting power relations, geoeconomics is a promising lens through which to analyse the global energy transition. Renewable-rich regions may become attractive locations for industries seeking to decarbonise; imports of hydrocarbons may be superseded by imports of renewable energy, critical materials or green intermediary industrial products, and lead to the emergence of new strategic partnerships; and governments and private actors may compete—or cooperate—in creating new value chains for climate-friendly technologies and products. Drawing on Diesen (2019) and Wigell (2016), this chapter explores the following dimensions of the geoeconomics of energy transition: *resources, energy infrastructure, strategic industries and clean energy technologies, and the rules of international economic interaction.*

Despite the more even distribution of renewable energy sources as compared to oil and gas, ***resources*** will retain importance in a net zero world: sites with high RE endowments will be needed to decarbonise industrial production; manufacture of clean energy technologies will require ever growing volumes of critical minerals—whose supply is even more concentrated geographically than that of hydrocarbons; water availability will be crucial for renewable hydrogen production through electrolysis; CO_2 geological storage sites will become an important asset; and finally, natural gas is likely to preserve its strategic importance for a long time to come.

Energy infrastructure will remain essential as well. This includes pipelines which will be used to transport clean hydrogen or hydrogen-methane blends, seaports ready for handling sustainable liquid fuels and hydrogen, and tube trailers for road transportation. With the electrification of new sectors—such as transport, industrial processes and residential heating and cooling (and the corresponding increase in the disruptive potential of blackouts)—and with the growing share of intermittent renewables, there will be a need for a better quality grid infrastructure and more

regional interconnections. Furthermore, grid infrastructure can be used 'as a means of projecting political power and authority beyond territorial space' (Grinschgl et al. 2021, 7).

Strategic industries and clean energy technologies constitute a prime area of geoeconomic competition, especially among powerful actors like China, the US and the EU, who fund R&D programmes and promote clean technology manufacturing. Less influential states may try to position themselves along certain segments of clean energy value chains or extract benefits for domestic industrial development from technology and R&D cooperation with leading countries. In addition, petrostates may seek to capture more added value from oil and gas by specialising in high-carbon applications, e.g. by developing the petrochemical industry or increasing oil refining capacity (Goldthau and Westphal 2019).

Finally, ***the rules of international economic interaction*** include, among other things, a wide array of climate policies, measures to prevent carbon leakage, green investment taxonomies governing access to climate finance, sustainable product standards, certification procedures and life cycle assessment methodologies for calculating the CO_2 footprint. Such rules are predominantly negotiated by powerful actors, while others are left with finding ways to adapt. Adopting the 'green' rules of the game may also become a competitive advantage in the global markets, as well as a reputational dividend.

The following sections explore the geoeconomics of the energy transition in Kazakhstan, Uzbekistan and Turkmenistan, focusing on the four dimensions described above.

3 Kazakhstan

Kazakhstan (population 18.7 million), Central Asia's wealthiest nation, is the epitome of a hydrocarbon-dependent economy. Its oil exports are the main source of revenue for the state budget, it produces and exports natural gas, and it relies on cheap domestic coal for power and heat generation. Yet, Kazakhstan's leadership was early to recognise the importance of clean technologies for economic competitiveness and international prestige. Kazakhstan became the region's first country to actively develop its renewable energy sector, launching an emissions trading system in 2013 and announcing a carbon neutrality target (for 2060). In 2013, Kazakhstan adopted its Concept of Transition to a Green Economy, which contains renewable energy targets (3% by 2020, 10% by 2030—increased to 15% in 2022 and 50% by 2050) and introduced a feed-in tariff for renewable energy (replaced by renewable energy auctions in 2018). By early 2022, Kazakhstan had installed 684 MW of wind power, 1 GW of solar, 281 MW of small hydropower and 8 MW of biogas (Ministry of Energy 2022). However, RE development in Kazakhstan has decelerated, owing to grid integration difficulties.

3.1 Resources

In the age of energy transition, the strategic significance of hydrocarbon resources is changing. The expected fall in the global demand for oil will decrease Kazakhstan's export revenues. Coal, despite its abundance in Kazakhstan, is no longer expected to play a significant role in new power generation capacity owing to societal opposition related to environmental issues and a lack of access to international finance. Natural gas, however, is viewed positively as the most feasible option to replace old coal-fired facilities, as well as to provide a much-needed balancing capacity for the Kazakh power system.

Kazakhstan's significant RE endowment can become a strategic resource to help decarbonise its energy-intensive, export-oriented economy; the mining and metals industry is a prominent example. The country has also begun looking for ways to situate itself in the emerging international hydrogen economy. The national investment agency Kazakh Invest has signed a memorandum of understanding with Svevind Energy, a German company, to install up to 30 GW of electrolyser capacity to produce renewable hydrogen and ammonia in Mangistau Region in western Kazakhstan. In addition, Kazakhstan's state-owned oil and gas company KazMunayGas has signed an agreement with Linde, a leading German industrial gas company, to develop hydrogen projects.

Kazakhstan is also rich in critical raw materials. Some big players have turned to Kazakhstan to explore its rare earth production potential as a way to reduce their own asymmetrical dependence on China. In 2012, Japan's Sumitomo Corporation launched a joint venture with Kazakhstan's state-owned nuclear company Kazatomprom to produce heavy rare earth metals at a plant in Stepnogorsk, northern Kazakhstan. The cooperation soon petered out, but there is now, however, a renewed interest in Kazakhstan in developing critical minerals, including lithium. In addition, Kazakhstan is the world's largest producer and exporter of natural (non-enriched) uranium, with a share of over 50% of the global market. It may potentially gain importance if the West decides to sanction Russian uranium.

3.2 Energy Infrastructure

Currently, Kazakhstan is considering ways in which its gas transportation infrastructure can be used to transport clean hydrogen or ammonia in the future (the original plans to use the Russian gas transportation system have been put in question by the war in Ukraine). As for Kazakhstan's power system, it suffers from the poor condition of the grid, weak connections between the north and the south, and a completely isolated western zone. This is already becoming a serious liability in meeting domestic demand and integrating the growing amount of power generated from renewables. In recent years, Kazakhstan has increasingly relied on relatively

expensive electricity imports from Russia to balance its system and satisfy growing domestic demand, viewing this condition as a structural vulnerability.

3.3 Strategic Industries and Clean Energy Technologies

Kazakhstan has started producing nuclear fuel assemblies at a plant in Ust-Kamenogorsk launched in November 2021 as a result of a joint venture between Kazatomprom and the state-owned China General Nuclear Power Group. The plant uses French technology and Russian-enriched uranium and plans to export fuel assemblies to China. In parallel, there has been a prolonged discussion in the country on whether to build a nuclear power plant (a project that Russia's state nuclear energy corporation Rosatom has been eyeing, although Kazakhstan remains open to other technology suppliers as well), despite strong societal opposition. Kazakhstan's 2060 carbon neutrality target has been used as a justification for these plans. On the one hand, a nuclear power plant could allow Kazakhstan to capture added value from its uranium reserves and improve energy security. On the other, it would also make Kazakhstan dependent on external suppliers of technology and skilled labour.

Other efforts to move up the value chain in clean energy technologies have had limited success. As part of its State Industrialisation Programme (2010), Kazakhstan has attempted to develop a fully vertically integrated cycle of PV module manufacturing using domestic silicon. A solar PV module manufacturing plant, Astana Solar, was launched in 2012, yet, despite state support, soon found itself unable to compete with cheap Chinese PV modules, eventually ceasing production. Today, nearly all solar PV modules used in Kazakhstan are imported from China.

3.4 Rules of International Economic Interaction

In the geoeconomics of energy transition, the rules of international interaction are largely developed by the leading economic powers, with other actors having little say in shaping these. The EU's proposed Carbon Border Adjustment Mechanism (CBAM) to prevent carbon leakage is a case in point. Kazakhstan, for whom the EU is a key trading partner, will be affected by CBAM rules. This has led to calls within Kazakhstan to bring its currently dysfunctional emissions trading system in line with EU rules.

Another relevant example relates to local content requirements (LCRs). Unlike Russia, Kazakhstan has never introduced LCRs, which would have obligated investors to use at least some Kazakhstani-made components, in its renewable energy tenders. This may be a reflection of the influence of the European Bank of Reconstruction and Development (EBRD), which has been one of the key players in RE development in Kazakhstan, both acting as a financing institution and consultant to the government on RE regulations. The EBRD has been strongly against LCRs,

arguing that they would complicate project completion and result in higher costs. Membership of the World Trade Organisation (WTO), which Kazakhstan joined in November 2015, likely played a role too given that WTO members are required to treat domestic and imported products equally.

4 Uzbekistan

Uzbekistan, Central Asia's most populous country (population 35 million) and an important gas producer, is intent on challenging Kazakhstan's 'green' leadership in the region. Uzbekistan was late in adopting a law on renewable energy: it did so only in 2019, a decade after Kazakhstan. Similarly, Uzbekistan announced its net zero target later than Kazakhstan—in January 2021—but it also chose a more ambitious one, aiming for 2050 rather than 2060. The relatively late start has allowed Uzbekistan to benefit from the falling costs of RE technologies. This has translated into renewable energy auction prices that are lower than any that have been achieved in Kazakhstan. In Uzbekistan's first competitive solar tender in October 2019, the winner was the United Arab Emirates' Masdar, offering 0.027 USD per kWh—a record low for the region at the time. The tender was for the 100 MW Nur-Navoi plant in the north of the country—Uzbekistan's first utility-scale solar power plant—which was inaugurated in August 2021.

Uzbekistan's interest in renewable energy is to a large extent driven by energy security considerations. Although nominally self-sufficient in energy, Uzbekistan is a country with a young and rapidly growing population. There is a clear need for increased domestic energy production to match the rising demand, and renewables are an important piece of the puzzle.

4.1 Resources

Uzbekistan currently uses most of its gas production to supply domestic demand, both for power and heat generation and for producing gas motor fuel. Yet Uzbekistan's proven gas reserves are limited and may not last much longer than another 25–30 years; there is therefore a desire to monetise these in the most profitable way. For this reason, Uzbekistan is planning to boost its gas production, mainly for export to China, and is already developing gas processing industries to add value to its gas production, with further plans to develop its domestic petrochemical industry.

Unlike Uzbekistan's dwindling gas reserves, its solar potential is enormous and remains largely untapped. In May 2019, Uzbekistan adopted a *Renewable Energy Law* granting subsidies and incentives to RE facilities and RE manufacturers. In May 2020, the *Concept of Providing the Republic of Uzbekistan with Electric Energy for 2020–2030* set out ambitious plans for the overhaul of the power sector. These include more than doubling the total installed capacity from 12.9 GW to 29.3 GW by 2030 and

increasing the share of renewables (including hydro) in power generation to at least 20% by 2025 and at least 25% by 2030. This is to be achieved through the construction of 5 GW of solar, 3 GW of wind and 2 GW of hydropower capacity. In 2021, the Uzbek Ministry of Energy announced plans to raise these targets to 7 GW solar and 5 GW wind (Ministry of Energy 2021). Uzbekistan has prioritised the construction of large-scale RE plants (up to 500 MW) in the form of public–private partnerships with renewable energy market leaders such as Total Eren (France), Masdar (UAE) and Saudi Arabia's ACWA Power, receiving technical assistance from the International Finance Corporation (IFC).

The *Concept* also foresees the construction of Central Asia's first nuclear power plant with a capacity of 2.4 GW, to be built by Rosatom. Like Kazakhstan, Uzbekistan could use its own uranium reserves to produce fuel. However, the future of this project has been rendered uncertain in the wake of Russia's invasion of Ukraine and Russia's resulting geopolitical isolation. Finally, Uzbekistan is also investing in R&D in hydrogen technologies. It has set up a National Research Institute for Renewable Energy, which includes a Centre for Hydrogen Research and is seeking to develop technology cooperation on hydrogen with China, Russia and the EU. As of 2022, Uzbekistan's government is also working on a hydrogen strategy in close cooperation with industry leaders that are already investing in the Uzbek energy sector: ACWA Power, Siemens and the US industrial gas company Air Products. In addition, in 2021, Uzbekistan requested that the World Bank explore potential options for producing blue hydrogen (from natural gas) and developing carbon capture and storage (CCS) technology solutions in Uzbekistan.

4.2 Energy Infrastructure

Uzbekistan has been exporting a smaller part of its gas products, mainly to China, Russia and Kazakhstan. It is now considering retrofitting its gas pipelines to transport clean hydrogen in the future. As a doubly landlocked nation, Uzbekistan has no seaports and would be unable to participate in future hydrogen or ammonia trade by ship, which would expand the range of potential buyers.

As for the Uzbek power system, it is in poor condition, suffering from high losses and lacking the capacity to meet the demand of a rapidly growing population. Frequent electricity and gas shortages are the cause of much public discontent. At the moment, Uzbekistan is chiefly focused on modernising its own domestic energy infrastructure, which is a precondition for reducing losses and integrating growing amounts of renewable energy.

4.3 Strategic Industries and Clean Energy Technologies

The government of Uzbekistan is clearly interested in capturing more added value along the energy value chain. For instance, Uzbekistan is planning to build on its strengths in the automotive industry and the experience of using compressed natural gas for a large share of its light vehicle fleet to develop clean hydrogen transportation. Another priority area is the chemical and petrochemical industry, where the government already has significant processing projects underway and is planning further investment—over 12 billion USD between 2019 and 2030—which would allow it to capture more value from its diminishing gas reserves. As one of the world's most energy-intensive economies, Uzbekistan also has a long way to go in decarbonising its industrial sector. Uzbekistan's renewable energy resources—and possibly clean hydrogen—could play a role in this effort.

4.4 Rules of International Economic Interaction

Like Kazakhstan, Uzbekistan may not be able to influence the rules of international economic interaction in the area of the energy transition, but it is trying to position itself as Central Asia's 'green champion' to attract foreign investment and technical expertise. It is also seeking to extract benefits from the geopolitical and geoeconomic strategies of more powerful countries and is pursuing multi-vector cooperation with key actors. Interested in large-scale renewable energy deployment at a low cost, Uzbekistan has opted for close cooperation with Masdar, an energy company controlled by the UAE's Mubadala Investment Company, which can be characterised as a sovereign wealth fund. The latter has strategic goals to increase its presence in Eurasia and is less profit-oriented than regular private investors, thus being able to offer especially low tariffs. Likewise, when it comes to financing clean energy, Uzbekistan has been able to benefit from large amounts of funding supplied by international development institutions such as the Asian Development Bank, the EBRD and the IFC. In 2019, Uzbekistan became the first non-African country to secure a place in the IFC's Scaling Solar programme, which helps governments to develop large-scale solar projects with the participation of private lenders. Finance from international financial institutions does, however, come with its own conditionalities, i.e. economic, social or environmental rules, which need to be followed.

In its game of catch-up, Uzbekistan is relying on international expertise in developing nearly all its sustainability-focused programmes. For instance, Uzbekistan's Ministry of Energy and Ministry of Investment and Foreign Trade have engaged such leading consultancies as Corporate Solutions, Tractebel and Guidehouse, with support from the government of Japan and the EBRD, to develop a roadmap for a carbon–neutral electricity sector by 2050. A similar process is currently being pursued to draft the national hydrogen strategy. The EBRD is assisting Uzbekistan,

which joined the Global Methane Pledge in 2022, with developing a national methane emissions programme to bring these emissions down by 30% by 2030.

5 Turkmenistan

Turkmenistan (population 6 million), Central Asia's reclusive and authoritarian gas giant, has so far been an idle onlooker in the global energy transformation. The power transition from President Gurbanguly Berdymukhamedov to his son Serdar in 2022 raised hopes that Turkmenistan will open to the international community and increase its cooperation on climate policy and energy transition. As of 2022, no renewable energy projects have been implemented in the country; however, there are some cautious signs that this might soon change.

5.1 Resources

Turkmenistan may possess some of the world's largest gas reserves—fourth after Russia, Qatar and Iran—as well as some oil, but this hydrocarbon wealth has not materialised prosperity for the Turkmen population. It has, however, turned Turkmenistan into possibly the most gas-dependent country in the world when it comes to both its energy sector and its export structure, with an utterly undiversified, non-resilient and CO_2-intensive economy.

With its wind-swept Caspian shores, vast deserts and excellent solar radiation levels, Turkmenistan also has a significant renewable energy potential and no shortage of available land. This has not yet translated into active renewable energy deployment, but there are indicators of growing interest. In December 2020, Turkmenistan adopted the *National Strategy for Renewable Energy Development* until 2030, followed by the *Renewable Energy Law* in March 2021, both drafted with support from the UN Development Programme (UNDP); more regulations are currently in the pipeline. In October 2021, Turkmenistan signed a Memorandum of Understanding on renewable energy with Masdar, which is actively expanding its presence in post-Soviet Eurasia and is known for delivering utility-scale RE projects at a low price. The Asian Development Bank is supporting an innovative project in Turkmenistan where concentrated solar power technologies would be installed at existing gas-fired power plants whose turbines could then run not only on gas but also on solar power whenever available (Asian Development Bank 2021).

5.2 Energy Infrastructure

Turkmenistan is very limited in the range of available gas export routes and can sell gas to very few customers. Until 2008, its main importer was Russia, but since 2009, following the construction of a new gas pipeline, it has been China, giving the latter significant leverage over prices and placing Turkmenistan in the position of strong asymmetrical dependence. Turkmenistan, however, also has two Caspian Sea LNG terminals which have allowed it to expand its export geography to as far away as Japan. Given that future hydrogen market development may share a great deal of similarities with LNG, technical competencies in this area may help Turkmenistan position itself as a blue or green hydrogen exporter.

5.3 Strategic Industries and Clean Energy Technologies

Like Uzbekistan, Turkmenistan has made some effort to invest in gas processing so as to better monetise its gas reserves and move up the value chain. A 3.4 billion USD gas chemical complex opened in Kiyanly, western Turkmenistan, in 2018. In 2019, Turkmenistan launched the world's first gas-to-gasoline plant in the Ahal Region. The plant uses Danish Haldor Topsoe's innovative technology which enables the production of especially pure gasoline. In 2021, Haldor Topsoe signed a memorandum of understanding with Turkmenistan to construct a gas chemical plant to produce ammonia and methanol. If these fuels are decarbonised, Turkmenistan has a chance to become a sustainable fuel producer.

By and large, however, Turkmenistan has not yet taken steps towards adapting its carbon-dependent economy to the decarbonising world. More active participation in the energy transformation would give Turkmenistan a lifeline by diversifying its economy (and thereby increasing its resilience, which is a geoeconomic imperative). Technology cooperation with industry leaders—such as Masdar or Haldar Topsoe—is a step in the right direction. In addition, there is hope that China's own green transition plans, coupled with its outsized influence in Turkmenistan, will have spillover effects in this Central Asian country; after all, China is known for successfully completing infrastructure projects in the most politically risky locations.

5.4 Rules of International Economic Interaction

Turkmenistan prides itself on 'neutrality', a principle embedded in its Constitution. In practical terms, this, together with its repressive political regime, has translated into high levels of self-imposed isolation, including a striking lack of involvement in the global climate agenda. However, cooperation on energy transition and sustainability

might be one of the few promising ways for Turkmenistan to improve its international image and diversify its economy. This was likely the country's motivation for becoming a member of IRENA in 2018, cooperating with the UNDP on renewable energy legislation, and participating in various sustainability-oriented initiatives.

6 Conclusion

Central Asia's hydrocarbon producers are increasingly grappling with ways to adapt to the accelerating global energy transformation. While not influential enough to actively project geoeconomic power or to shape the global climate agenda, these countries are interested in managing their asymmetrical dependences and raising the resilience of their carbon-intensive economies. Kazakhstan, Uzbekistan and Turkmenistan seek to monetise their hydrocarbon reserves by moving up the value chain and branching into the chemical industry, or by finding new export destinations. In addition, they are beginning to view their renewable energy potential as a strategic resource that can help attract foreign investment, bolster energy security, help decarbonise energy-intensive exports, and improve their international image. Uzbekistan and Kazakhstan are investigating the possibility of producing low-carbon and renewable hydrogen or ammonia for domestic use and for export. There is also renewed interest in expanding the production of materials critical for the energy transition. Finally, all three countries are trying to draw benefits from the geoeconomic and geopolitical strategies of other key players, such as China, the EU, the UAE and Russia, using them as sources of foreign investment, clean energy finance, technological cooperation and technical and regulatory expertise.

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Yana Zabanova is a research associate at the Research Institute for Sustainability (RIFS) in Potsdam, Germany, where she focuses on energy transitions in Central Asia and Russia, the emerging international hydrogen economy and, more generally, on the geopolitics and geoeconomics of the global energy transformation. Yana is also a PhD candidate at the University of Groningen (Netherlands). As part of her doctoral research, she studies renewable energy and clean hydrogen development in Eurasian hydrocarbon-rich countries such as Russia and Kazakhstan from a comparative perspective.