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Trends and challenges of energy diplomacy: a case study on Kazakhstan

Abstract. *The geopolitical ramifications due to the rise of renewable energy have opened a new front in international energy relations. This article aims to use a case study on Kazakhstan to explore the trends and challenges of energy diplomacy amid the energy transition. The latest development indicates that, whereas Kazakhstan and other Central Asian countries have begun adopting a coordinated regional approach for a resilient, cooperative, impactful, and environmental-friendly energy future, the great powers and individual “second tier” countries in neighboring regions are crucial partners in terms of infrastructure investment, production of critical raw materials and rare earth elements, and technology transfer and knowledge-sharing. A model of “hybrid diplomacy” that accommodates both petroleum and renewable energy is anticipated to carve a niche in international energy relations.*

Keywords: *renewable energy, energy transition, energy diplomacy, Kazakhstan, neorealism.*

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Introduction

Being a member country of the Russia-led Collective Security Treaty Organization (CSTO), the China-led Shanghai Cooperation Organisation (SCO) and the United States-led North Atlantic Treaty Organization’s Partnership for Peace program, it has been argued that Kazakhstan’s multi-vector foreign policy was designed to enhance national security by balancing out the great powers’ geopolitical interests while facilitating its own petroleum exports [1]. Home to the world’s twelfth-largest oil reserves and an ally of the Organization of the Petroleum Exporting Countries (OPEC+), Kazakhstan might seem to have low incentives to invest in diversifying away from fossil fuels. However, as the bottom-ranked country in the

2022 Climate Change Performance Index [2], the Republic’s unsustainable consumption of resources has been seriously deteriorating land, water and air quality. When former President Nursultan Nazarbayev (1991-2019) released the “Kazakhstan 2050 Strategy” in 2012, “greening” key economic sectors was portrayed as a catalyst that would transform Kazakhstan into one of the top thirty competitive developed countries in the world by 2050 [3]. Under current President Kassym-Jomart Tokayev (2019-), in 2020 Kazakhstan pledged to achieve carbon neutrality by 2060. In 2021, it was reported that the Republic would take measures to increase the share of renewable energy in its energy matrix to 15 percent by 2030, 5 percent more than the initial target set by Nazarbayev [4]. In addition to the prospects for green hydrogen facilities and nuclear power,

the Astana International Financial Centre (AIFC), International Centre for Green Technologies and Investments and Astana Hub International IT and Start-ups Hub are some of the most important recent developments in Astana that were created to facilitate Kazakhstan's accelerated transition to a decarbonized economy.

Formulation of the problem

Competition over resources in Central Asia has long enticed a number of authors into analyzing the potential of militarized disputes between countries, but there is much to explore when considering the geopolitical and socio-economic consequences of a new energy age. With intensifying regionalism and global division, how Kazakhstan pursues its national decarbonization plan and, at the same time, preserves good energy relations with all countries associated with fossil fuels calls into question the effectiveness of its multi-sectoral approach to foreign energy policy.

The purpose of this article

With new geopolitics of renewable energy anticipated to interweave with old geopolitics of oil and gas in the short-to-medium term and eventually overhaul it in the long term, the relevance of this article is built on the need for a comprehensive study of the far-reaching implications of an energy transformation driven by the rapid growth of renewable energy on Kazakhstan, whose energy diplomacy has been in close association with petroleum politics. The research question is: how does energy transition affect Kazakhstan's engagement in foreign energy relations?

History

Given energy's strategic significance, the exploitation of fossil fuel resources worldwide and oil crisis of the 1970s gave rise to numerous studies of energy security and international politics. Likewise for the transition towards renewable energy sources since the 1990s. Beyond its environmental and climate implications,

this transition holds revolutionary potential to transform the fossil fuel-powered international energy relations. Spearheaded by contemporary European academicians such as Andreas Goldthau, Indra Overland and Daniel Scholten, studies of the geopolitics of renewable energy and associated energy diplomacy have emerged in the past decade to give a hint on the altered power dynamics in a post-petroleum world.

Methodology and theoretical framework

The research method employed for this article is the case study method. Case study has been defined as an intensive study of a single unit for the purpose of understanding a large class of similar units [5]. Using relevant qualitative data drawn from research articles of other scholars, periodical press, mass media, news reports, government documents and industrial reports, this method enables an in-depth investigation of a particular topic and bears the potential to explore alternative casual explanations for complex issues. Being one of the few major petroleum exporting countries that has made a carbon neutral pledge, a case study on the energy diplomacy of Kazakhstan amid energy transition does not only help identify the Republic's development trends and challenges with respect to foreign energy relations but also provides a reference point for other petroleum exporting countries when faced with a changing energy landscape.

In addition, a theoretical framework based on neorealism, in complementary with Kazakhstan's Concept of Foreign Policy for 2020-2030, is applied to examine if Kazakhstan's energy diplomacy embeds features of balancing with its Central Asian neighbours and bandwagoning with the great powers that keep the status quo amid energy transition. Based on the neorealist notion that states are central actors in an anarchic international system, Waltz (1979), Walt (1987) and Mearsheimer (2001) argue that states tend to "self-help" themselves by accumulating more power to ensure survival in the chaotic world order. Alliance formation, either through balancing or bandwagoning in response to

power and threat, helps states in a “self-help” world to enhance their capabilities and thereby to maintain their security and survival. As the capabilities of states keep changing, a constant shifting of power relations in the international sphere is anticipated, triggering insecurity in other states which reciprocates by enhancing their own capabilities and creating relative gains – “win-lose” or “zero-sum” – endeavour which is essentially competitive in nature [6] [7] [8]. These principles of neorealism lay the foundation for the interpretation of energy security. As conventional energy sources are finite and are subject to competition, a neorealist foreign energy policy of a state – regardless of its position as a producer, transiter or consumer – embeds the necessity of strategic thinking and military means to protect hydrocarbon trade and to engage in competition for the right to possess fossil fuels. This implies the relevance of balancing and bandwagoning with respect to alliance formation for access to energy resources and energy markets, therein lies energy security. The development trends and challenges unveiled through the case study help verify if these neorealist principles can be pronounced in Kazakhstan’s energy diplomacy amid energy transition.

Literature review and hypotheses

Energy transition and its geopolitical impacts. According to OPEC’s long-term forecast publication titled *World Oil Outlook 2045* (2021), global demand for oil will move from 82.5 million barrels per day (bpd) to 104.4 million bpd between 2021 and 2026, but after 2026, the rate of oil consumption will witness a slow down due to developed countries’ extensive shift to renewable energy with respect to their industrial and transportation infrastructure. The demand for oil will stop growing and stabilize after 2035 [9]. *Net-zero by 2050: A Roadmap for the Global Energy Sector* (2021), a report produced by the International Energy Agency, forecasts that a net-zero world would still use 50 percent of the gas and 25 percent of the oil compared with 2021 levels but their usages will be accompanied by viable and commercially sensible carbon capture

technology [10]. Goldthau and Westphal (2019) assert that the prospects of petrostates are not alike but dependent on their positions in the energy value chain, i.e. whether they possess the capabilities to build up refining capacity and develop a viable petrochemical industry [11]. Griffiths (2019) comments that the geopolitical impacts of energy transition are to be determined by the intrinsic features of renewable energy, which include: a) global abundance with many countries having access to multiple renewable resources that include sun, wind, hydro, biomass, geothermal or ocean; b) intermittency of the fastest growing forms of renewable energy, solar and wind; c) opportunity for distribution of generation rather than reliance on centralized generation; and d) dependence on technologies that are made from critical raw materials and rare earth elements that are geographically concentrated in selected parts of the world [12]. Based on these characteristics, O’Sullivan, Overland and Sandalow (2017) hypothesize that energy relations between energy producers and consumers would be altered as energy markets become increasingly defined by the combination of resource abundance, energy self-reliance and interconnectivity of electrical grids rather than the historical combination of energy resource scarcity and geographical concentration that requires transport of energy over long distances to reach end markets [13]. Schloten, Crikemans and Van de Graaf (2020) argue that renewable energy shifts areas and locations of conflict, while geopolitics frame technical choices and trade patterns. With myriad global and regional powers defending their economic and political and interests, they forecast that great power rivalry would politicize renewable energy and shape the speed and direction of the energy transition [14]. O’Sullivan has been quoted as saying in her keynote lecture at the Institute of International and European Affairs (2021) that energy transition would have great bearing on great power politics when considering the significance of political leadership, market forces, energy innovation, access to cheap capital and ability to set standards. Highlighting China’s current dominance in the global supply chain of

renewable energy resources and technologies, O'Sullivan predicts that the relationship between Russia and Europe, Russia and China, the United States and China, and India and China will change because of policies that intend to diversify production [15]. Hypothesis one: "Energy transition opens new doorways for Kazakhstan to contribute to global energy security."

Energy diplomacy. Zhao (2019) describes energy diplomacy as a set of thoughts and behaviours that pertains to government-related foreign activities to ensure a country's energy security while also promoting business opportunities related to the energy sector [16]. Krutikhin and Overland (2020) study about relationships among the member countries of OPEC+, commenting that energy diplomacy within the cartel embeds a common interest in the semblance of multilateral cooperation to enable all twenty-three member countries to gain reputational and diplomatic benefits through impacting market psychology with respect to the global oil-centred energy order [17]. Kresnawan and Wijaya (2021) consider the participation of the member countries of the Association of Southeast Asian Nations (ASEAN) in the ASEAN Plan of Action and Energy Cooperation as a form of energy diplomacy, in which the countries concerned work collaboratively and cooperate with dialogue partners, international organizations, private sector, and academe to achieve the regional energy targets [18]. Kuteleva (2021) addresses China's energy paradigm and energy relations with fossil fuel producers in the likes of Kazakhstan and Russia, commenting that the pursuit of win-win bilateral energy partnerships features prominently in China's energy diplomacy [19]. The European Union, as of 2022, does not have a common energy policy among the member countries but intends to have a collective stance in the face of climate emergency at regional and global levels. According to the European External Action Service (2021), the primary goal of the European Union's energy diplomacy is to promote and accelerate the decarbonization of the energy sector, focusing on energy efficiency, renewable energy, and the take-up of new green technologies, such as hydrogen

[20]. Hypothesis two: "Kazakhstan's energy diplomacy is geared towards consolidating the energy interests of a variety of intra- and extra-regional actors."

The findings from the case study

Trends in Kazakhstan's Intra-regional Energy Relations. Regional cooperation on electricity involves a physical, and infrastructure dimension as well as a market dimension with rules and regulations to facilitate cross-border electricity trade. However, the latter was not considered when the Central Asia Power System (CAPS) was set up to exchange hydroelectric power for fossil fuel between the upstream and downstream republics of the Soviet Union in Central Asia. Created in the 1970s and managed by the Unified Dispatch Office of Central Asia in Uzbekistan, the operating footprint of the CAPS was approximately two million square kilometers, covering the entirety of Uzbekistan, Tajikistan, Kyrgyzstan, Turkmenistan, and five adjacent regions of Southern Kazakhstan. Its network consisted of eight-three power plants of different types, 30 percent from the upstream hydroelectric power plants and 70 percent from the downstream thermal power plants [21]. However, the end of the Soviet Union resulted in a progressive decline in a crucial function of the CAPS when each country undertook energy decision-making independently, eroding established practices and abandoning the physical and technical parameters of the infrastructure. Subsequently, Turkmenistan's disconnection from the CAPS in 2003, Tajikistan's disconnection from Uzbekistan in 2009 and several withdrawal announcements made by Uzbekistan and Kazakhstan plummeted intra-Central Asian electricity trade by 92 percent between 1990 and 2016 [22]. Kazakhstan's Concept for the Development of the Fuel-Energy Complex by 2030 (decree No.724), released in 2014, shed light on a number of key energy policy priorities and the Republic's preposition to intra-regional electricity cooperation. Based on the analysis of the situation in the early 2010s, the document repeatedly stressed the need to "guarantee national energy security by

reinforcing energy self-sufficiency” to increase the efficiency of Kazakhstan’s power resources in support of economic growth and improving living conditions for the population. Low-carbon hydroelectric power imports from Kyrgyzstan and Tajikistan were omitted but, on the contrary, plenty of mentioning was found about investing in additional electricity generation capacity to increase Kazakhstan’s export capability [23].

The collapse of the CAPS promoted not only policies of energy independence in Central Asia but also led to widespread power outages notably in Kyrgyzstan and Tajikistan in winter and increased use of environmentally unfriendly fossil fuels by Kazakhstan, Turkmenistan, and Uzbekistan in the summer. As a result, negotiations over the re-establishment of the intra-regional resource-sharing mechanism and a common power market since 2018 have been regarded as a step in the right direction for the five Central Asian countries. Besides, electricity sharing among them could facilitate their shift to green energy systems as relocation of greenhouse gas (GHG) emissions from one country to another has been regarded as helpful in creating the conditions for efficient emissions management and eventually their reduction [24]. The approval of a USD\$35 million grant by the Asia Development Bank (ADB) in 2018 to reconnect Tajikistan’s electricity system to the once-unified Central Asian power grid via Uzbekistan, followed by a technical assistance grant of USD\$4.5 million in 2019 to investigate on reconnecting Turkmenistan to the CAPS and extending the system into Afghanistan, set the region “on a faster reform path toward more liberal energy markets with greater private sector participation and investment, increased power connections and exchanges between countries, and a strong commitment to tap renewable energy sources and clean technologies [25].” As of 2021, electricity trade appeared to have been ongoing on a bilateral basis, exemplified by electricity transfers made towards Kyrgyzstan: a planned 500 billion kilowatt-hours (kWh) from Turkmenistan, 900 million kWh from Kazakhstan, 750 million kWh from Uzbekistan, as well as 1 million kWh per day from Tajikistan since October [26].

Although the pursuit of an intra-regional sustainable electricity partnership in Central Asia is occasionally hampered by the outdated Soviet-built electricity infrastructure interconnections, the prospect of the CAPS is deemed promising when considering the great powers’ interests in turning Central Asia into an integrated regional energy market that could benefit billions of people across the Eurasian continent. In fact, the joint effort between the World Bank, the European Bank for Reconstruction and Development, the ADB’s Central Asia Regional Economic Cooperation (CAREC) Program and the Kazakhstan Electricity Grid Operating Company for the construction of the north-south electricity transmission in Kazakhstan in the early 2000s has seen not only the creation of a “life line” of the Republic’s economy but an “energy bridge” between Russia and Central Asia that closes the infrastructure gap that was once considered an obstacle for a transcontinental electricity network. The global energy crisis since 2021 has further demonstrated how electricity interconnections between clusters of countries – in combination with cross-border electricity trading and a higher share of renewable energy generation – could provide improved energy security, system stability, loss reductions, and decreased emissions. At the fourth Consultative Meeting of the Leaders of Central Asian States in July 2022, besides signing the agreements that promote cooperation and consolidated efforts to articulate their collective stance to address pressing items on the regional agenda, the construction project of the Kambarata Hydroelectric Power Plant-1 in Kyrgyzstan – one of the largest hydroelectric power plant in Central Asia – was actively discussed among the five presidents with the purpose to search for a viable and cooperative option to strengthen energy security of their countries while improving conditions for expanding agricultural production [27]. The significance of the CAPS, as a cluster of national grids operating in complementary ways and in parallel with the united energy system of Russia via Kazakhstan, thus cannot be neglected when considering its strategic presence in the east-west and north-south electrical interconnections.

The Russia-led Eurasian Economic Union (EAEU) supports the formation of a common electricity market, which is expected to be launched by January 1, 2025 [28]. With hydropower from Kyrgyzstan capable of reaching Russia and other EAEU countries through the territory of Kazakhstan, the CAPS is not only practically connected with the EAEU power system but can potentially be part of the transnational decarbonized electricity network stretching from western Siberia all the way west to Lisbon if pragmatic cooperation between the EAEU and the European Union will become possible one day [29]. Russia has the prospect of enlarging the EAEU's interstate power network infrastructure through the CAPS to get interconnected with Afghanistan, the Indian subcontinent, the Middle East and West Asia across the Caspian Sea and becoming the energy superpower of the twenty-first century [30]. However, Russia's ambition is undermined by an estimated USD\$400 billion in cumulative investments up to 2030 to repair and modernize the Soviet-era power stations and transmission lines, not to mention the effects of stiffer western sanctions following its invasion of Ukraine in 2022.

Billions of dollars pledged by China's Belt and Road Initiative (BRI) befittingly help improve electricity infrastructure in Central Asia. The BRI aims at reviving the ancient Silk Road by erecting a Eurasian transport-linked corridor for bringing Chinese exports to Europe via land roads in Central Asia, and China has looked into the feasibility of establishing power grid interconnection between its Xinjiang province, the five Central Asian countries and Pakistan after a global electricity network was proposed in 2015 to meet global energy demand with clean and green sources [31]. With electrification gaining importance and China holding more than half of the world's solar energy capacity, the BRI represents not only China's financial investment in Central Asia but its export of expertise in renewable systems interconnection, smart grid technologies, ultra-high voltage transmission and electric vehicles to partner countries. A modernized CAPS could potentially turn China's purchase of fossil fuels from Central Asia into

electricity trade that helps meet the growing electricity demand of all parties and bring the GHG emissions in line with their respective set limits, demonstrating the BRI's trendy win-win proposition for green development.

The United States, despite the withdrawal of its military forces from Afghanistan, appears to be continuing its New Silk Road Strategy in Central Asia. On the basis of the C5+1 multilateral dialogue platform between the United States and the five Central Asian countries, the United States Agency for International Development (USAID) launched the Central Asia Regional Electricity Market (CAREM) project in 2018 to serve as a platform for an expanded Central Asia-South Asia regional power market in support of greater economic and social development, as well as commercial transactions of electricity between Central Asia and Afghanistan and possibly Pakistan. In 2020, USAID launched the "Power the Future" program with the goal to accelerate the regional cost-effective, low-emission, climate resilience economies, primarily through the deployment of renewable energy and energy efficiency in all five Central Asian countries [32]. The same year saw the launch of a new five-year, USD\$38.9 million regional energy program "Power Central Asia" to assist national governments, utilities, and other stakeholders to develop domestic energy market reforms, help strengthen the regional electricity market, and promote greater adoption of clean energy technologies from conventional and renewable sources [33]. The USAID-sponsored Central Asia Clean Energy Forum, themed "Energy Transition and Innovation," in 2022 brought together nearly three hundred participants from the Central Asian region and around the world to address key energy sector challenges and opportunities [34].

The European Union also supports interconnections in Central Asia by making available European technology and providing advice to foster energy sector reforms and transition to a low-carbon economy in the region. According to the 2019 European Union Strategy on Central Asia, titled *The EU and Central Asia: New Opportunities for a Stronger*

Partnership, the European Union aimed to promote resilience, prosperity, and regional cooperation in Central Asia. Acknowledging the region's potential in solar, wind, and hydroelectric energy, the 2019 European Union Strategy recommended the European Union step up cooperation with the Central Asian countries on renewable energy and energy efficiency [35]. While European renewable energy developers have been among the most active participants in the renewable energy auctions in Kazakhstan, a 2020 report produced by the science and knowledge service of the European Commission explored the most optimal routes for electricity transmission interconnections between Central Asia and the European Union [36]. Together with the announcements made by Kazakhstan, Uzbekistan, and Turkmenistan of their respective hydrogen plans with countries in the Europe Union as either partner in development or export destinations [37], the role of Central Asia in the European Union's energy security strategy appears to have shifted to a new phase.

There is little doubt that foreign direct investment (FDI) from the great powers is crucial for every segment of the energy supply and value chains in Central Asia, capable of causing an increase in technological innovation capabilities in the region. The CAPS, on this basis, represents an intra-regional platform that formulates collective solutions to energy security, capital inflows, and sustainable development after years of limited cooperation among the five Central Asian countries. As the most predominant actor among all Central Asian countries, Kazakhstan has an undisputable role in attracting investors and connecting opportunities to stimulate functional spill-over effects both within and between industries in Central Asia. With the AIFC designed to handle an influx of investment in building a sustainable energy future at the national and regional levels, the CAPS is where foreign renewable energy developers and green tech companies could participate in partnership with local experts from different Central Asian countries. The challenge, though, is that the involvement of foreign renewable energy developers and green tech companies could not

be understood independently from the crucial geopolitical importance of the region. Another challenge is whether Kazakhstan could adopt a foreign policy built on technology transfer and knowledge-sharing with respect to the great powers' common ground on the climate-friendly energy revolution rather than provoking their counteractions to gain leverage for its own security and global presence.

Trends in Kazakhstan's Extra-regional Energy Relations. In a changing world order where the struggle for power is at a decisive phase, strategically important Central Asia is a convenient region for the great powers to engage in intense competition. However, Kazakhstan's multi-vector foreign policy does not write off the significance of Turkey, Iran, India, and the Gulf Cooperation Council (GCC) countries on the Republic and the Central Asian region as a whole. Like the great powers that treat Kazakhstan as a sovereign state as well as a part of the Central Asian cluster, these "second tier" countries tend to forge relations with the Republic at both bilateral and multilateral levels due to Central Asia's proliferation and overlapping of regional organizations, initiatives, and memberships. Turkey demonstrates this complexity in Kazakhstan's extra-regional relations precisely. Despite not having any shared borders, the two countries are considered strategic partners, alongside Kyrgyzstan, Turkmenistan, Uzbekistan, and Azerbaijan, in this grouping known as the Organization of Turkic States.

Turkey has the highest rate of growing energy demand among the OECD member countries [38], making it heavily reliant on energy imports, particularly fossil fuels from Russia and Iran, to meet its growing energy demands. However, Turkey has seen considerable diversification of its energy matrix in the past decade, in particular through the growth of renewable electricity generation. With around USD\$3 billion in renewable energy financing in 2020, renewable capacity in Turkey rose to nearly 49 gigawatts (GW) – over 50 percent of the country's total installed power [39] – with the addition of around 4,900 MW, which marked a record-high increase [40]. It is thus not a surprise that Turkey

aims to achieve net-zero emissions by 2053 [41], and renewable energy developers of Turkey were found among the one hundred and seventy-two companies that participated in Kazakhstan's renewable energy auctions between 2018 and 2020 [42]. Further cooperation opportunities between the two countries might be explored in the production of green hydrogen, especially since Turkey has already launched its national hydrogen strategy [43]. In this connection, the proposal made by Tokayev in 2021 to create an international consortium among the member countries of the Organisation of Turkic States was a timely initiative, in which the respective national scientific establishments of the organization would be given a platform to gather and exchange relevant experiences and knowledge to make technological breakthroughs for production, storage, and transportation of hydrogen. "Green hydrogen diplomacy" within the framework of the Organization of Turkic States could lead to new prospects for Kazakhstan-Turkey relations in terms of talent recruitment and development.

Kazakhstan and Turkey – together with Afghanistan, Azerbaijan, Iran, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan – also are member countries of the Economic Cooperation Organization (ECO). Among them, Iran stands out as an important priority to Kazakhstan, highlighted by the negotiations between the five permanent members of the United Nations Security Council, Germany, and Iran on nuclear matters in Kazakhstan in 2013. Besides being two of the littoral countries – along with Azerbaijan, Russia and Turkmenistan – that took part in the Convention on the legal status of the Caspian Sea in 2018 to resolve the demarcation issue with respect to the world's largest inland body of water, the SCO is another multilateral platform where the involvement of both countries is found. Through the mechanism of SCO, Iran has made itself the main partner of the Sino-Russian tandem in the Middle East, capable of creating a southern corridor that bypasses the Caspian Sea, linking infrastructure projects between north and south Eurasia and connecting landlocked Central Asia with its Chabahar port on the Gulf of Oman.

In addition, it is worth noting that the SCO consists of the largest producers and consumers of energy in the world, as well as frontrunners in uranium deposits, nuclear reactor constructions, and crucial technologies for the renewable energy transition. Therefore, joint projects in the field of energy are increasingly taken as a priority in achieving the organization's goal of economic integration and sustainable development.

Iran aside, the emergence of India as an important vector in Kazakhstan's foreign affairs strategies cannot be undermined. Characterized by its policy of non-alignment, India's participation in a series of summits – including the Quadrilateral Security Dialogue along with Australia, Japan, and the United States in the Indo-Pacific region, and also a partnership with China and Russia in SCO and the BRICS (the acronym coined to associate five major emerging economies: Brazil, Russia, India, China, and South Africa) – underscores an Indo-centric specific multi-alignment [44]. India's overall approach towards Central Asia could be traced back to its Connect Central Asia Policy in 2012 at the first India-Central Asia Dialogue in Kyrgyzstan prior to its 2017 admission to the SCO, from which a strategic convergence with Russia and China has enabled it to address new security challenges, enhance infrastructural development projects and create a network of regional oil and gas pipelines for the larger benefit of the Central and South Asian region. India's ambitious energy security strategy is accompanied by its rapid adoption of renewable energy, too. With 100.68 GW of renewable energy capacity as of August 2021, which represented 25.2 percent of the overall installed power capacity, India had set implementation targets of a combined 175 GW of solar, wind, biomass, and small hydroelectric power production by 2022 [45] and expects to increase to 450 GW of installed renewable energy capacity by 2030 [46]. Besides, a National Hydrogen Mission to transform India into a global hub for green hydrogen production and export was launched in 2021 [47]. The discussion on "One Sun One World One Grid," a green grids initiative released by India and the United Kingdom in 2021, at the first India-Central

Asia Summit in 2022 also exemplified India's determination to forge cooperation with Central Asia in electricity decarbonization and emissions management while fostering interconnected solar energy infrastructure at a global scale [48]. As India is in process of improving its energy efficiency and going green to facilitate the surge of hyper-scale green data centers with renewable energy, engaging in knowledge-sharing and technology transfer with India might benefit Kazakhstan to cope with the development of energy-demanding cryptocurrency mining as an industry.

According to Kazakhstan's Concept of Foreign Policy for 2020-2030, the expansion of relations with regional organizations, such as the GCC, is considered a priority. With Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates as member countries, the GCC shares some fundamental commonalities – such as an abundance of fossil fuels, the urgency to diversify their economies toward lessening their reliance on this traditionally fruitful source of income, a belief in the form of Sunni Islam and an affinity for authoritarian governance – with Kazakhstan. The capital-rich GCC countries also present the Central Asian region with infrastructure investment and technological support in petroleum- and petrochemical-related projects, serving as an alternative to or a consolidation of China's BRI. Not to be underestimated is the grouping's efforts in using renewable energy to cut fuel costs, reduce carbon emissions, conserve scarce water, and create jobs. Among them, the United Arab Emirates has made the greatest strides by building one of the world's largest single-site solar plants that powers the daily lives of ninety thousand families [49], as well as being home to the Middle East's first facility for carbon capture and storage [50]. Regarding green hydrogen, it is worth noting that the GCC countries have unique advantages in terms of funding availability, export infrastructure, central location to the energy demand market, and local capabilities. The MENA (Middle East and North Africa) Hydrogen Alliance, a collaborative public-private platform under the umbrella of an industrial initiative Dii Desert

Energy in Germany, was formed in 2020 to kick-start a green hydrogen economy based on low-cost value chains for green molecules in the region and beyond [51]. As renewable energy developers from the United Arab Emirates were found participating in Kazakhstan's renewable energy auctions between 2018 and 2020 [42], the GCC's position as an emerging actor in the hydrogen supply and value chains offers new prospects to the Kazakhstan-GCC relations that are in transition to a post-petroleum world.

By reviewing Kazakhstan's potential in forging cooperation on renewable energy with extra-regional actors such as Turkey, Iran, India, and the GCC countries, there is little doubt that niches exist between Kazakhstan and these countries on bilateral and multilateral levels. However, these "second-tier" countries lack possession of cutting-edge enabling technologies, manufacturing capability, financial stability, and industrial expertise to be "agenda setters" for a clean-energy future. According to a 2021 report produced by the International Energy Agency on patents for low-carbon energy technologies, European companies, and research institutes have led in patenting low-carbon energy inventions, with 28 percent of all international patents between 2010 and 2019, followed by applicants in Japan – 25 percent, the United States – 20 percent, South Korea – 10 percent, and China – 8 percent [52]. These rankings help determine Kazakhstan's renewable energy-oriented foreign affairs strategies in terms of not only FDI inflows but also technical and regulatory support for relevant development and infrastructure. In fact, the Japan-based ADB, Korea Electric Power Corporation, and Samsung C&T Corporation are found to have been involved in Kazakhstan's electricity infrastructure and transfer of technologies based on high efficiency and environmental friendliness of production. Tokayev's visit to South Korea in 2021 indicated his acknowledgment of over five hundred and fifty enterprises with Korean capital currently operating in Kazakhstan. Simultaneously, Kazakhstan's extensive extra-regional relations – based on Central Asia's proliferation and overlapping of regional organizations, initiatives,

and memberships – could serve as convenient channels of technology transfer and knowledge-sharing for renewable energy development, creating opportunities for the Republic to take up a pivot role to facilitate mutually beneficial relations between and among the countries with the highest technological expertise and those interested in closing the gap.

Discussion

With respect to hypothesis one “energy transition opens new doorways for Kazakhstan to contribute to global energy security” and hypothesis two “Kazakhstan’s energy diplomacy is geared towards consolidating the energy interests of a variety of intra- and extra-regional actors,” both are acknowledged in the findings of the case study on the Republic’s intra- and extra-regional energy relations. A significant breakthrough in terms of energy security, energy efficiency, and energy transition has been made by Kazakhstan together with countries from near and afar without causing or intensifying any rivalry.

Following Russia’s invasion of Ukraine in 2022, what is most notable is that the new geopolitical realities have prompted a wide range of region-based order-making and order-maintenance practices in Central Asia for a proactive or even collective security action in response to any of the great powers’ geopolitical pull on the region [53]. The intensifying intra-regional electricity cooperation thus can be understood in this context. In fact, prioritizing intra-regional energy trade and pursuing long-term, transparent and reliable energy cooperation have been deemed essential to turn Central Asia’s energy resources into reliable and adequate energy supplies for all consumers in the region and beyond. This development trend is in accordance with Kazakhstan’s Concept of the Foreign Policy for 2020-2030, in which expansion of multilateral dialogue and cooperation in the Central Asia region is described as “increasingly important in the Eurasian and global processes” that could strengthen “the existing formats of interaction between the Central Asian states and external

partners [54].” Tokayev’s remarks at the Global Summit on Food Security in September 2022 were reflective of this posture when he said, “together with our Central Asian partners, we are committed to strengthening political interaction and deepening economic ties to move our region forward. We agreed to coexist as good neighbours and diversify our cooperation [55].”

Kazakhstan’s rich renewable energy potential in terms of the production of critical raw materials and rare earth elements also offers quick opportunities for both local and foreign developers and financiers. With sixteen critical raw materials having high geological potential in the Republic, including substantial reserves of lithium, chromium, and silicon that are crucial for their use in batteries, wind turbines, and solar cells, it is not an exaggeration to regard them as Kazakhstan’s “second oil” [56]. Most importantly, the green investment boom facilitated by FDI inflows from the European Union and China, as well as their changing investment patterns, fits well with Tokayev’s vision to pursue a new level of “economisation” of the foreign policy to stimulate a low-carbon economic transition. According to Kazakhstan’s Concept of the Foreign Policy for 2020-2030, Tokayev’s foreign policy priority to expand international cooperation to attract high-quality foreign investment in Kazakhstan’s engineering and instrumentation, education, petrochemicals manufacturing and non-ferrous metallurgy could be regarded as measures to equip Kazakhstan with new capabilities associated with the global supply and value chains of renewable energy to keep being relevant to global energy security [54].

However, for Kazakhstan to proceed from being involved merely in the upstream process of exploration and extraction, measures taken by the authorities to create incentives and qualify more people to work in the industries across the global supply and value chains of renewable energy technologies are just as essential as licensing agreements and FDI from foreign technology developers. After all, renewable energy’s wide availability and self-replenishing ability have led to changes in energy security planning at corporate, national, regional and

international level. The long-established patterns of energy relations built on petroleum no longer fully apply in an all-renewable energy world, where petroleum consuming countries could be turned into renewable energy producers, petroleum producing countries into renewable energy consumers, and petroleum transit countries into renewable energy new players. Supportive domestic policies for renewable energy technologies that hold a balance between low-carbon solutions, their commercial viability and human capital development thus have to be developed in parallel with transfer of technological “know-how” and “know-why” from the great powers and leading countries. Whereas knowledge transfer and joint innovative research are of particular importance to open new prospects for Kazakhstan to become more in tune with the leading countries in energy transition, the Republic’s lack of human capital to carry out value-added manufacturing and services for the renewable energy sector is a major stumbling block, not to mention the minimal consideration of clean and low-carbon energy development centred on electricity utilization at national and intra-regional level. Time will tell if the influx of tens of thousands of educated young men from Russia – who refused to respond to their country’s partial military mobilization – since September 2022 could be streamlined to manufacture and deploy technologies and solutions that enable reduction in man-made GHG emissions to help foster Kazakhstan’s participation in the supply and value chains of renewable energy.

Taking into account the status quo formulated by the oil-centred energy order, in addition to the growing tripolarity in international relations currently dominated by the triangular relationship among the West, Russia and China, Kazakhstan’s energy diplomacy on the basis of its multi-vector foreign policy has shown potential to respond to a wide variety of energy issues at national, intra-regional and extra-regional levels. The neorealist notions of balancing or bandwagoning for security appear to have been displaced by a form of multi-layered interdependence in the Republic’s energy relations with other countries, enabling the Republic to consolidate

energy interests of different countries and forge win-win partnerships through its petroleum production as well as contribution to energy transition. A model of “hybrid diplomacy” that accommodates both petroleum and renewable energy thus is anticipated to carve a niche in foreign energy relations in the short-to-medium term. For the long term, by mid-century, the share of renewable energy within this hybrid model is deemed to increase drastically. Although it can be argued that huge quantities of petroleum are continually found under Earth’s surface and all petroleum-producing countries could wait on the availability of viable and commercially sensible carbon capture technology to maintain the status quo, the reality is that it is unfeasible to replace fossil fuels once they are extracted and consumed, meaning sustainable energy diplomacy is to be rested on the transition toward renewable forms of energy.

Conclusion

This article aims to use a case study on Kazakhstan to broaden the understanding of the effects of the ongoing energy transition on energy diplomacy. The latest development acknowledges that the energy transition opens new doorways for Kazakhstan to contribute to global energy security and the Republic’s energy diplomacy is geared towards consolidating the energy interests of a variety of intra- and extra-regional actors. The theoretical framework constructed by the notions of balancing and bandwagoning embedded in neorealism appears to be in contradiction with the emerging multi-layered interdependence in the Republic’s energy relations with other countries, which targets at producing win-win rather than win-lose for all parties involved. Playing a key role in global energy security amid energy transition with its petroleum exports, reserves of critical raw materials and rare earth elements and cross-border electricity interconnections in the format of the CAPS, Kazakhstan’s energy diplomacy could be speculated to be adopting a hybrid model consisting of petroleum and renewable

energy that accommodates the new landscape of global energy while forging cooperative energy security with its intra-regional neighbours. A landmark breakthrough in human capital growth could accelerate all related development.

On this basis, it is of utmost importance to address how a country can take advantage of being both a petroleum producer and an advocate of a fossil-free future with the minimum of friction and the maximum of goodwill in the international community. It will also be a new research

direction to discuss how human capital has become an important component for Kazakhstan to achieve action and policy alignment with the leading countries in renewable energy adoption.

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Энергетикалық дипломатияның тенденциялары мен сын-қатерлері: Қазақстан мысалында

Аңдатпа. Жаңартылатын энергия көздерін пайдаланудың өсуінің геосаяси салдары энергетика саласындағы халықаралық қатынастарда жаңа майдан ашты. Бұл мақала энергетикалық ауысу жағдайындағы энергетикалық дипломатияның тенденциялары мен проблемаларын зерттеу үшін Қазақстан бойынша жағдайлық зерттеуді пайдалануға бағытталған. Соңғы оқиғалар Қазақстан мен Орталық Азияның басқа да елдері орнықты, бірлескен, нәтижелі және экологиялық энергетикалық болашаққа үйлестірілген өңірлік тәсілді енгізе бастағанымен, көршілес өңірлердегі ұлы державалар мен «екінші эшелонның» жекелеген елдері инфрақұрылымға инвестициялар, аса маңызды шикізат өндірісі сирек жер элементтері, сондай-ақ технологияны беру және білім алмасу тұрғысынан маңызды әріптестер болып табылатынын көрсетеді. Мұнай мен жаңартылатын энергияны қамтитын «гибридті дипломатия» моделі энергетика саласындағы халықаралық қатынастарда өз орнын алуы күтілуде.

Түйін сөздер: жаңартылатын энергетика, энергетикалық ауысу, энергетикалық дипломатия, Қазақстан, неореализм.

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Тенденции и вызовы энергетической дипломатии: на примере Казахстана

Аннотация. Геополитические последствия роста использования возобновляемых источников энергии открыли новый фронт в международных отношениях в области энергетики. Эта статья направлена на использование тематического исследования по Казахстану для изучения тенденций и проблем энергетической дипломатии в условиях энергетического перехода. Последние события указывают на то, что, в то время как Казахстан и другие страны Центральной Азии начали внедрять скоординированный региональный подход к устойчивому, совместному, результативному и экологичному энергетическому будущему, великие державы и отдельные страны “второго эшелона” в соседних регионах являются важнейшими партнерами с точки зрения инвестиций в инфраструктуру, производства важнейших сырья и

редкоземельные элементы, а также передача технологий и обмен знаниями. Ожидается, что модель «гибридной дипломатии», включающая в себя как нефть, так и возобновляемые источники энергии, займет свою нишу в международных отношениях в области энергетики.

Ключевые слова: возобновляемая энергетика, энергетический переход, энергетическая дипломатия, Казахстан, неореализм.

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