

Energy geopolitics in Central Asia: China's involvement and responses

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Abstract: To ensure adequate oil supply and mitigate geopolitical uncertainties, China has diversified its sources of crude oil imports in recent years. Central Asia is a neighbor region of China, rich in oil and natural gas reserves, which can play an important role in China's strategy to reduce its dependence on energy supplies from the Middle East. The geopolitical attributes of energy and the geopolitical situation in Central Asia determine that Central Asia's energy development and cooperation are disturbed by domestic and foreign factors, and also face the risks of complex energy structural evolution and geopolitical games, which create a unique energy geopolitical pattern in Central Asia. This study proposes an analysis framework for energy geopolitics in Central Asia, arguing that the complexity of energy geopolitics in Central Asia can be demonstrated from the perspectives of both the main countries of energy development (game actors) and the whole-industry-chain of energy development (game themes). The most obvious feature of Central Asian energy geopolitics is the fierce game that is played between key countries and regions, Russia, the United States, China, the European Union (EU), Japan, India, Iran, and Turkey. Strategic geopolitical considerations and resource requirements necessitate the active participation of these players in Central Asian energy development and mean that the foreign policy agendas of states in this region are likely to become ever more crowded. Therefore, the energy cooperation between China and Central Asia faces the geopolitical risks of the great power games. It is necessary to develop reasonable and effective policies to establish guarantee mechanisms to minimize the risks of energy cooperation. This study characterizes the energy geopolitical strategies of Russia, the United States, China, and other related powers in Central Asia. It also assesses the country risks faced by energy cooperation between China and Central Asian countries. To withstand possible geopolitical and country risks, this study develops a series of policy frameworks which can be used to fortify the stability of the energy cooperation between China and Central Asian countries, and can also be effective in responding to the array of risks that might be encountered in the coming years.

Keywords: energy geopolitics; risk; Central Asia; policy frameworks; guarantee mechanism; energy cooperation; China

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1 Introduction

Central Asia is at the heart of Eurasia and comprises the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. This region boasts rich energy reserves and so occupies a key geostrategic position globally. The British Petroleum Corporation's *World Energy Statistics Yearbook 2019* states that proven oil reserves of Central Asia encompass about 4.1 billion tons, about 1.8% of the total world's proven oil reserves. Proven natural gas reserves of 21.7 trillion cubic meters represent about 11% of the total world proven gas reserves. These hydrocarbon reserves are located mainly in three countries: Kazakhstan, Turkmenistan, and Uzbekistan. Kazakhstan has the largest oil storage and development capacity in Central Asia; oil reserves of this country were 3.93 billion tons in 2017, 12th in the world, and about 1.8% of the total known global volume. In contrast, Turkmenistan has the largest storage and development capacity of natural gas in Central Asia; this country had a reserve of 19.5 trillion m³ in 2017, fourth in the world with a storage-to-production ratio of more than 300 years. Although the oil and gas reserves of Uzbekistan are slightly lower than those of Kazakhstan, natural gas production here is second only to Turkmenistan and there is a relatively complete pipeline in this country.

Thus, as a result of its unique geographic location and abundant energy reserves, Central Asia has become increasingly important in recent years in global oil and gas resource supply and demand and energy geopolitics. The oil and gas refining capacity of Central Asian countries remains generally low, however; compared with abundant known reserves and steadily increasing production capacity, consumption in Central Asian countries also remains relatively low and most production is exported. Before the disintegration of the Soviet Union in 1991, the oil supply capacity of Central Asia remained stable between approximately 50 million tons and 60 million tons. However, since 2000, oil and gas production has continued to rise with the assistance of multinational companies. The difference between production and sales exceeded 100 million tons (i.e., 109 million tons) in 2005 and has continued to grow in a relatively stable fashion. The difference between production and sales in 2016 was 122 million tons. This means that, without taking into account oil and gas production increases in the Central Asia-Caspian region, this former region alone could supply around 120 million tons of oil and gas annually over the next 20 years. Central Asia, therefore, occupies a very important position within the global oil and gas supply market. While Central Asia has physical possession of oil and gas reserves, it does not possess the capital and the technology that would allow it to go into production alone, a fact which brings in the countries and foreign companies with a share in production and revenues. Therefore, one important geopolitical consequence of the demise of the Soviet Union was the rise of intense political and commercial competition for control of the vast energy resources of the newly independent and vulnerable states of Central Asia (Arvanitopoulos, 1998).

The potential geopolitical implications on the competition for energy resources are complex. From the regional perspective, in addition to Russia and the United States, other major powers such as China, European Union (EU), Turkey, and India have all exhibited different levels of power, interests, and security demands within Central Asia. Mutual competition and coordination have shaped the evolution of geopolitics in this region; the 'great powers' (including the United States, Russia, and the United Kingdom) have carried out fierce geopolitical games across Central Asia. The essence of this newly regenerated geopolitical game

for energy is twofold: first, control of the production of the oil and gas, and second, control of the pipelines which will transfer the oil to the western markets (Islam, 2010). Differentiation, cooperation, and confrontation between the major powers have been both complex and varied. Due to the pursuit of energy security, China attempted to diversify its imports by developing closer relations with producing countries in Central Asia and has become an important emerging force in the energy geopolitics of Central Asia. Some analysts believe that the expanding links between China and Central Asia are likely to change the current economic, political, and energy landscape (Can and Mehmet, 2017). China's rise in Central Asia has caused a significant power shift, accelerating the competition among great powers to defend their interests in the region (Yu, 2014). At the same time, Central Asian countries are not passive pawns in the geopolitical game (Petersen and Barysch, 2011), which also affect the evolution of energy geopolitics in Central Asia. National development gaps within Central Asian countries have widened throughout the 21st century, while imbalances in resource and wealth distribution as well as the impact of uncertainty in Afghanistan have made this region prone to new conflicts and turmoil. Resource disputes and political contradictions within the Central Asian countries, the rise of resource nationalism, the persistence of extremist forces and separatism, energy cooperation legal defects, and imperfect institutions have all also increased levels of uncertainty about both internal stability and external cooperation.

At present, China is facing an increasingly severe international energy situation with rapid economic growth and increasing urbanization level. Central Asia is an important strategic area of China to carry out future international energy cooperation to diversify import oil & gas and enhance energy transport safety (Yang *et al.*, 2015). In the context of complicated energy geopolitics in Central Asia, the core issue for China is what kind of energy cooperation mode and policy guarantee mechanism to adopt to mitigate this series of potential risks. These questions are core to current research in energy geography and geopolitics. A great deal of work has therefore been undertaken by scholars from different perspectives to assess Central Asia geopolitics (Xu, 2007) as well as the Shanghai Cooperation Organization (Marketos, 2008), oil and gas resource export patterns (Kou, 2010), oil and gas pipelines (Chow and Hendrix, 2010), interaction between major powers (Ziegler and Menon, 2014), evolution mechanism (Li *et al.*, 2009), strategy adjustment (Xu *et al.*, 2007; Lu, 2011) and Belt and Road Initiative (Len, 2015). Researchers are also interested in understanding the opportunities and challenges faced by Chinese enterprises (Shi, 2010), China-Central Asian energy cooperation model and cooperation strategies (Yang *et al.*, 2015), and legal issues and institutional deficiencies in these areas (Yang, 2016). Research on geopolitical security risks and policy guarantee mechanisms remains deficient at the moment in both its integrity and systematic nature.

The aim of this paper is therefore to 1) characterize the energy geopolitical strategies of Russia, the United States, China, and other related powers in Central Asia; 2) analyze the geopolitical and country risks faced by energy cooperation between China and Central Asian countries, and investigate the consequences that such risks could pose to energy cooperation, and; 3) develop a series of policy frameworks that can be used to fortify the stability of the energy cooperation between China and Central Asia and ensure that it can respond flexibly to the array of risks that might be encountered in the coming years.

2 Methodology and data

2.1 Framework

The geopolitical attributes of energy and the geopolitical situation in Central Asia determine that Central Asia's energy development and cooperation are disturbed by domestic and foreign factors, and face the risk of complex energy structure evolution and geopolitical games, which create a unique energy geopolitical pattern in Central Asia.

On the one hand, the study of energy geopolitics in Central Asia must take full account of the main actors in energy development in Central Asia. The pluralistic competition led by major powers is the key force in shaping the energy landscape in Central Asia. The great powers such as the United States, Russia, and China are the main countries in the geopolitical game in Central Asia. The EU, Iran, Turkey, Japan, South Korea, and India are also involved in Central Asian energy cooperation in different channels and ways. The above-mentioned countries are the main actors of competition and cooperation in the energy geopolitics of Central Asia. On the other hand, from the perspective of the whole-industry-chain of energy development, resource distribution, trade relations, production, and processing systems are areas among which countries compete and cooperate in Central Asia, thus forming the core themes of competition and cooperation in the energy geopolitics of Central Asia. Actors compete and cooperate around these themes, resulting in complex regional geopolitical relations and the international energy geopolitical game. The framework for the geopolitical analysis of energy in Central Asia is shown in Figure 1.

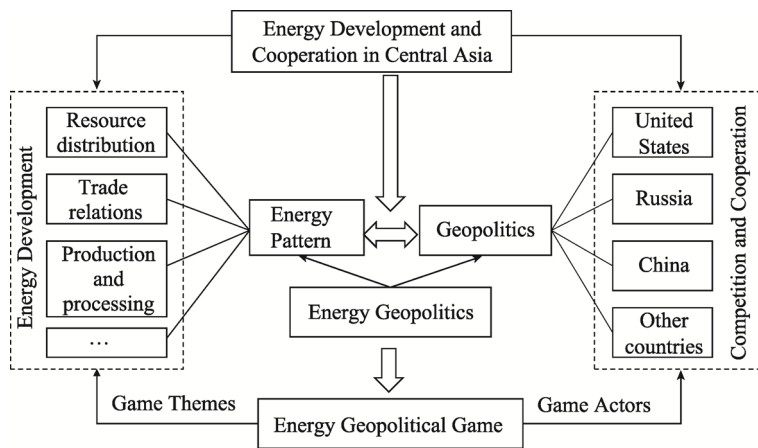


Figure 1 The analysis framework of energy geopolitics in Central Asia

In addition to the geopolitical risks mentioned above, country risks in the political, social, legal, and economic spheres within the Central Asian countries cannot be ignored, as Central Asia is undergoing a period of change in its political and economic transformation. Therefore, China's energy cooperation with Central Asia must take into account geopolitical and country risks, and develop a series of policy frameworks to promote harmonious coexistence with stakeholders.

2.2 Method and data

Based on the framework of energy geopolitical analysis in Central Asia, this paper mainly

adopts qualitative research methods such as historical analysis method and literature method, to focus on analyzing the strategies and specific measures of major countries to participate in the Central Asian energy game and their attitudes towards China and to identify the current main country risks of China's energy cooperation with Central Asia. At the same time, this paper draws on the oil and gas import and export data from United Nations Conference on Trade and Development (UNCTAD), and data from BP Statistical Review of World Energy, American Heritage Foundation, Transparency International, and other research institutions to support the view.

3 The regional perspective: the current energy geopolitics and the geopolitical risks

The geopolitical entity of Central Asia attracted immediate attention following the break-up of the Soviet Union in 1991. The important geographic location and abundant oil and gas resources of this region quickly meant that Central Asia became the subject of fierce competition between the major global political forces and international capital. Various political forces have launched a sharp and complex contest around energy resource development and the oil and gas pipelines that cross Central Asia. Incomplete statistics reveal that oil companies from the United States, the United Kingdom, France, Germany, Italy, Turkey, Canada, Japan, India, South Korea, Russia, China, Argentina, Hungary, Oman, and the United Arab Emirates have all developed presence in Central Asia for oil exploration and development, crude oil refining, sales, and other activities. Understandably, not all the above-listed countries claim significance in both geopolitics and energy supply. Multi-level competition and cooperation over energy led by the 'great powers' quickly became a key force shaping the geopolitical orders in Central Asia. The 'game' between China, Russia, and the United States in Central Asia became the dominant force changing the energy geopolitical order of this region and has determined the evolution of the international energy cooperation landscape. The EU, Japan, Iran, India, and Turkey all participate in Central Asian affairs through different channels and means and attempt, to influence energy cooperation developmental trends in this region to achieve their respective strategic goals.

3.1 Russia: a traditional leader of the Central Asian energy geopolitical order

Historically, the persistence of the Soviet Union's influence over Central Asia's energy sector led to the majority of the oil and gas flow north to Russia, and from there onward to the industrialized consumer countries of Western Europe (Hart, 2016). In fact, having somewhat recovered from the Soviet collapse, Russia has started to revive its traditional influence on the Central Asian energy sector. Indeed, Russia controls most oil export routes from reserves in Central Asia and around the Caspian Sea. Until 1997, within the energy transportation infrastructure inherited from Soviet times, Russian pipeline networks provided the sole way for land-locked Central Asian exporters to reach external markets and under the monopolistic control of Gazprom. Kazakhstan has maintained stable export-import relations with Russia in the energy sector with no significant changes in the past two decades, and roughly 85% of its oil exports (or some 80 million tons) goes to Europe, mostly via pipelines passing through Russian territory (Aminjonov, 2017). Throughout the year of 2018, the Gazprom

Group purchased 19.3 billion cubic meters of gas in Central Asia (Table 1). For the European importers, Russia can also exploit its pipeline monopoly to prevent supplier countries from exporting energy products (Savin and Ouyang, 2013).

Table 1 Gas purchases in Central Asia by Gazprom Group (billion cubic meters)

Countries	2014	2015	2016	2017	2018
For supplies to Europe					
Turkmenistan	11.0	3.1	–	–	–
Uzbekistan	3.6	3.5	4.3	5.5	3.8
Kazakhstan	10.9	12.6	12.7	13.8	12.3
For supplies to southern Kazakhstan					
Uzbekistan	3.7	2.9	1.9	1.7	2.9
For supplies to Kyrgyzstan					
Uzbekistan	0.04	0.0*	0.0*	0.0*	0.0*
Kazakhstan	0.06	0.2	0.2	0.3	0.3

Source: Gazprom website, <https://www.gazprom.com/about/marketing/cis-baltia/>, Note: *= Less than 0.05

Russian policy has focused strategically on the Central Asian energy economic community and integration to build an institutional platform for cooperation and to strengthen its strategic interests. The Russian-led Eurasian Economic Union (EEU) was formally established in 2015 and an Advisory Committee for Oil and Gas comprised of the national energy sectors of member states was created to assess and coordinate policies. This committee approved the ‘Concept for Development of the Common Gas Market of the EEU’ and the ‘Program of Establishing Single Market Space for Oil and Petroleum Products’ and other documents for strengthening regional energy cooperation across Central Asia.

Similarly, Russia has signed a 25-year gas supply agreement with Turkmenistan, 25-year oil cooperation agreements with Kyrgyzstan and Tajikistan, and influences all aspects of energy from production to sales in Kyrgyzstan and Tajikistan. Russia boasts extensive bilateral energy cooperation with all Central Asian countries, including the joint exploration and development of oil and gas resources, the promotion of bilateral natural gas trading, improvements to oil and gas transportation pipelines and other infrastructure, and the promotion of joint research and development on resource exploration and development technologies. The comprehensive ‘double control’ of resources, pipelines, and processing exerted by Russia in this region influences the international energy strategies of Central Asian countries.

In terms of pragmatic cooperation with Central Asian countries, it is clear that Russia possesses incomparable advantages in terms of the history, extent, and scale of energy cooperation. Indeed, given the power of large-scale energy companies, Russia has dominated the cooperation process across Central Asia and has penetrated all aspects of the energy industrial chain. In terms of exploration and the development of the upstream sector, the Russian company Rosneft and the Kazakh company KazMunayGaz signed a contract for the joint development of the Kurmangazy oil field for 55 years in the Kazakh sector of the Caspian Sea (Eric, 2005), while in the field of downstream oil and gas refining, the Russian Lukoil Oil Company and the Uzbek National Oil and Gas Company have built joint natural gas chemical plants in Uzbekistan. In the middle reaches of pipeline construction, Russian company Gazprom and Uzbek National Oil and Gas Company have cooperated to transform

the 'Central Asia-Central' and 'Bukhara-Ural' gas pipelines, while in the field of oil and gas resource distribution in the downstream sector, Gazprom's subsidiary in Kyrgyzstan in 2014 has exclusive rights to import natural gas to the Kyrgyz Republic and owns the national gas transmission and distribution systems (Gazprom, 2020). In the field of service trade in oil and gas exploration and development, Russia actively participates in the design and construction of energy infrastructure, including oil and gas pipelines in Central Asian countries, and has provided relevant technical guidance and personnel training services for many years.

It is clear that from the Russian perspective, Central Asia is a region with special geostrategic significance. Russia, therefore, acts to strongly exclude any foreign political and economic forces from entering the region. Oil and gas resources in Central Asia are not only an important political and economic lever for Russia to influence these countries but are also an important guarantee that maintains the Russian strategic position in the international energy market. To resist the expansion of the United States power in Central Asia, Russian President Vladimir Putin proposed the creation of an energy club in June 2006 within the Shanghai Cooperation Organization (SCO). At the same time, however, Russia relies increasingly on the Eurasian Economic Community (EAEC) to promote economic integration across the Commonwealth of Independent States (CIS) region. Russia does not want the SCO to decentralize and weaken energy cooperation between Russia and Central Asian countries within the EAEC, so this former organization has yet to establish a multilateral energy cooperation framework and mechanisms widely accepted by member states. At the same time, China has been a pioneer of energy export diversification across Central Asia and so the two countries experience contradictions on this issue. In tandem with Chinese concerns, Russia is also very sensitive to oil and gas cooperation projects in Central Asian countries; for example, after Kazakhstan and Turkmenistan signed an agreement with China to build oil and gas pipelines, Russia signed agreements with Kazakhstan, Uzbekistan, and Turkmenistan to rebuild and build the same kinds of structures, to expand the capacity of the Central Asia-Centre (CAC) gas pipeline network. Russia also proposed to purchase natural gas from Turkmenistan and Uzbekistan at 'European prices' to seize and contain Chinese sources. Finally, Russia has encouraged India to enter the Central Asian energy market to balance and reduce the impact of China in Central Asia.

3.2 The United States: power projection in Central Asia to strengthen its control of the global energy market

The interests of the United States in Central Asia can be summarized as security, energy, and democracy (Cohen, 2006). A key United States national security concern is energy source diversification, and so the Caspian region provides a significant alternative source of fossil fuels. The United States energy strategy in Central Asia, therefore, includes two goals, the first of which is to integrate Central Asia into their national global energy supply system to decentralize and reduce dependence on Middle East oil and promote the diversification of international energy supply. Secondly, the United States actively intervenes in the Central Asian Caspian region and therefore hopes to control this 'geostrategic pivot' in energy to dominate the evolution of the global energy geopolitical landscape.

In terms of strategic layout, United States energy deployment in Central Asia has undergone a transition from a short-term plan to a long-term strategy. It has therefore expanded

from emphasis on countries to the surrounding area and from a purely energy economic interest to geostrategic considerations (Xu *et al.*, 2016). To ensure that the United States has free access to the Central Asian-Caspian energy market, this country has formulated a 'profit-share' energy strategy which aims to balance different interests of western countries in Central Asia. This means that the United States and its partners can benefit from energy development in this region. Subsequent to the 9/11 incident, the United States adjusted its focus towards a global energy strategy. Thus, by combating terrorism and leading the Afghan war, the United States was able to view the Gulf and Caspian regions as well as Central Asia as a new 'geostrategic pivot' and adopted numerous political, economic, and military measures aimed at weakening the role of OPEC and other international oil organizations to manipulate oil prices on the international market. In 2006, the United States launched the so-called 'Greater Central Asia' plan, and proposed an open cooperation strategy to expand the energy sector in Central Asia. In 2011, the Obama administration launched a new Silk Road strategy to enhance United States control of international energy transportation in Central Asia, reduce the traditional control exerted by the Russian energy pipeline across the region, and minimize the impacts of Iran and China on the construction of international energy channels. Similarly, Exxon-Mobil, Citroen-Texaco, ConocoPhillips, and other companies have exerted an important influence on oil and gas pipeline construction in Central Asia. In 2006, with strong support from the United States, an international consortium led by British Petroleum (BP) officially launched the Baku-Tbilisi-Ceyhan (BTC) pipeline, which avoiding Russia and politically unstable areas such as Armenia. From its inception, the BTC pipeline was designed to challenge Russian hegemony over energy in the Caspian region (Piskur, 2006).

In terms of pragmatic energy cooperation, the United States has actively built a bilateral cooperation platform to support the American oil companies that conduct business in Central Asia through a variety of military and diplomatic means. In 1994, the United States government announced a strategy of promoting international investment and trade in Central Asia. In order to control oil from the Caspian Sea in Central Asia, American multinational oil companies became deeply involved in exploration and development at the instigation of their government. Thus, in 1997, the United States and Kazakhstan signed an oil exploration and development contract worth USD 26 billion, and in 2001, American oil companies including Exxon-Mobil, Chevron-Texaco, and their international partners invested around USD 30 billion in energy infrastructure construction in Central Asia. The American International Petroleum Corporation also acquired a range of oil and gas rights in Central Asia and across the Caspian Sea in the form of equity cooperation and joint development. The United States government has proposed 40 specific infrastructure projects since 2011 under their new Silk Road strategic framework to strengthen energy control in Central Asia.

Curbing economic and trade investment and international energy cooperation between China and Central Asian countries is one of the key ways in which the United States can prevent further Chinese expansion and influence in this region. Many American scholars argue that cooperation between the United States and Central Asia should be 'strong, direct, and long-term'; these workers believe that the United States needs to supplement its 'Pivot to the Pacific' through another 'Pivot to Eurasia' to curb the rise of China and to ensure that the global economic and security architecture evolves in line with their interests (Muza-

(Muzalevsky, 2015). As it has huge capital, technological, and pre-emptive advantages, the United States has been able to suppress China in oil cooperation projects in the Caspian Sea in Central Asia. In recent years, the United States has made breakthroughs in shale gas technology too and the commercial exploitation of this source has reduced dependence on overseas energy. In the Central Asian energy market, however, United States competition against Chinese oil and gas companies has not decreased. The Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline as a new Silk Road project has had the effect of 'killing two birds with one stone', and reveals the strategic intention of the United States to compete for natural gas resources with China and pull India into the 'game'. It is hoped that the inclusion of India will control the rise of China, while the United States also relies on third-party forces to promote the European Union, Turkey, Japan, and India to participate in energy cooperation in Central Asia and the Caspian Sea.

3.3 China: an important emerging force in Central Asian energy cooperation

With steady economic growth, China has quickly risen to the top ranks in global energy demand over the past few years. China has become the world's largest energy consumer, accounting for 23.6% of the world's primary energy consumption in 2018 (Dudley, 2019). This has also turned China into the largest net importer of oil today, from being an oil exporter in the 1990s, and with its oil import dependency ratio reaching currently around 70%, up from 50% a decade ago (Figure 2). Given its limited domestic supply of oil and gas, China is trying to establish long-term energy security by investment in oil and gas fields abroad and by diversifying its providers, and has to get this massive amount of new energy from somewhere else in the world (Fazilov *et al.*, 2013). Central Asia is a neighbor region, rich in oil and natural gas reserves, which seems the most likely to play an important role in the Chinese strategy to reduce its dependence on energy supplies from the Middle East (Pop, 2010). In this context, the economic relations with the Central Asian countries, mainly in the energy field, have been developing faster.

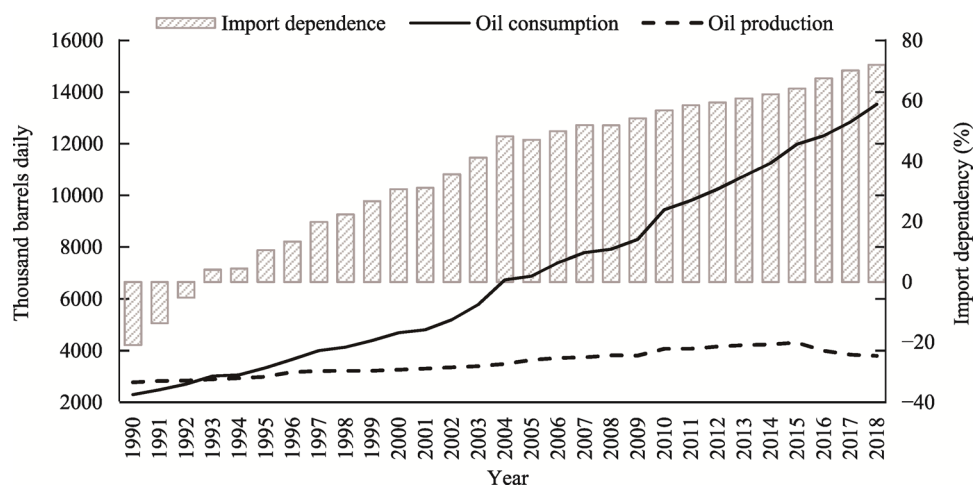


Figure 2 China's import dependence for oil, 1990–2018

Source: BP Statistical Review of World Energy June 2019

The emergence of China as the important actor in the Central Asian energy sector has profound geopolitical and geoeconomic consequences. Indeed, prior to Central Asia’s opening to China, this landlocked region had just one outlet for its energy exports, through the Soviet-era pipeline network into Russia. Differences in energy endowments mean that China’s imports from Central Asian countries are not the same with natural gas accounting for a high proportion. Central Asian natural gas imports in 2015 accounted for 87.36% of the country’s total imports, while oil imports accounted for less than 1.5% of its total. Natural gas is mainly imported from Kazakhstan, Turkmenistan, and Uzbekistan, while oil imports come mainly from Kazakhstan. In terms of the oil trade relationship with Central Asia in 2005 and 2015 (Figure 3), China’s main importers remained Saudi Arabia, Iran, Iraq,

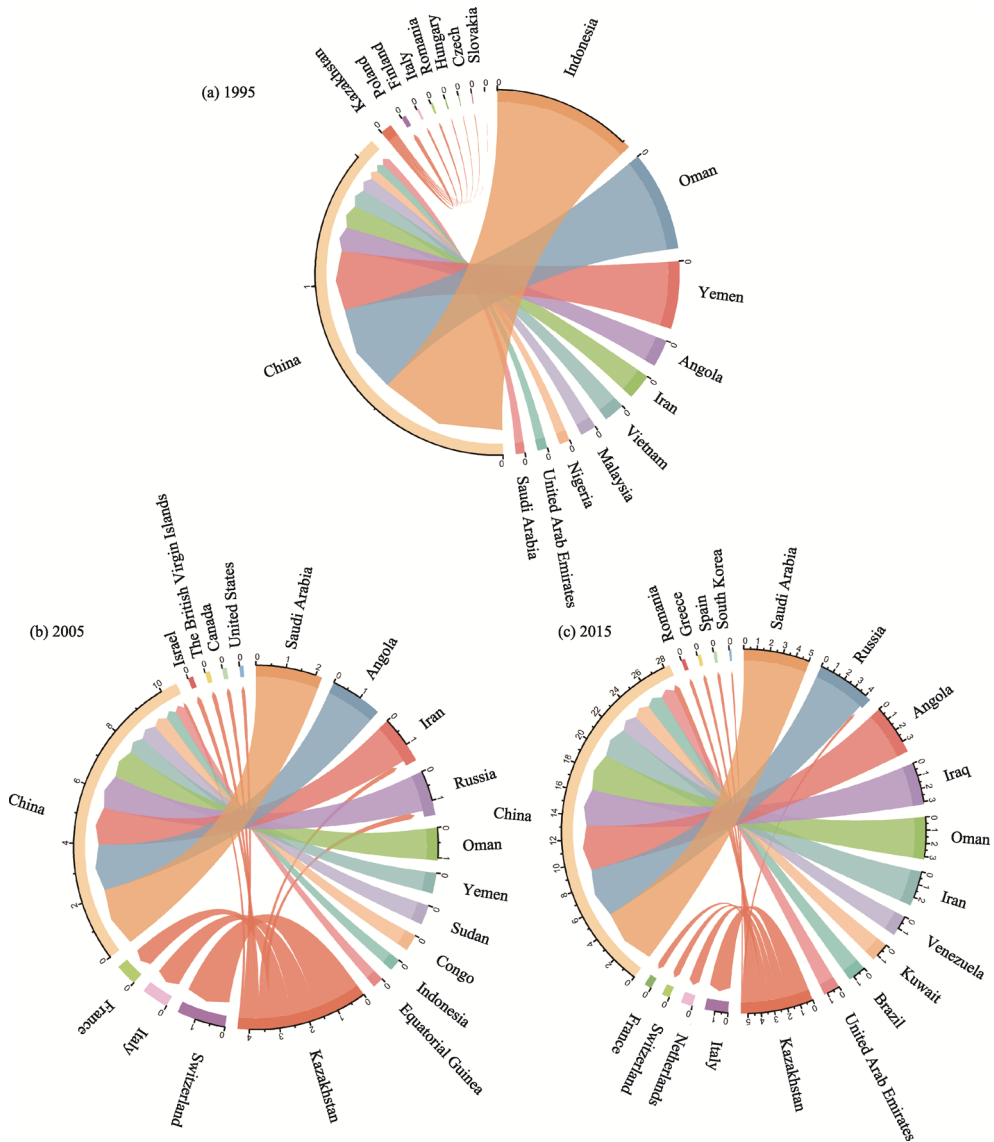


Figure 3 Trade in oil between China and Central Asian countries in 1995, 2005, and 2015 (10 million tons)
 Source: UN Comtrade website, <https://comtrade.un.org/data/>.

Kuwait, the United Arab Emirates, and other Middle Eastern countries as well as Venezuela, Brazil, and other Central and South American countries. Exporting countries of Central Asia remain relatively scattered and are mainly concentrated within the European Union; priority, in this case, is afforded to ensuring that European Union oil exports comprise the main Central Asian direction. China is therefore not the main direction for oil exports from Central Asia although the implementation of energy export diversification strategies, especially the construction of Sino-Kazakh oil and gas pipelines and China-Central Asian natural gas pipelines, has meant that oil and gas trade between the two regions has been strengthened. Subsequent to 2005, Central Asian oil and gas exports to China gradually increased; China is now the most important exporting country for Central Asia, accounting for 40.9% of annual oil and gas exports (2015) (Figure 4). The degree of trade interdependence between the two sides in oil remains significantly different, however, and there is an asymmetry in mutual trade. Kazakhstan's dependence on China's oil exports is higher than China's dependence on Kazakh oil imports (Figure 5).

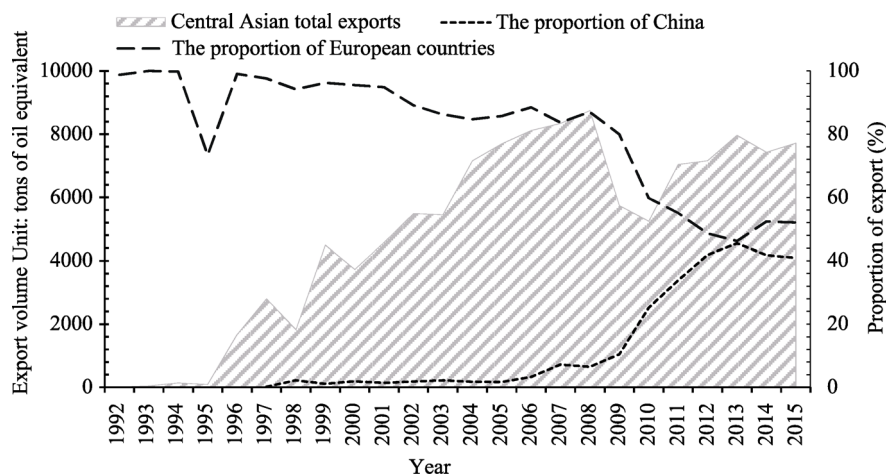


Figure 4 Changes in volumes and main export directions of Central Asia
 Source: UN Comtrade website, <https://comtrade.un.org/data/>.

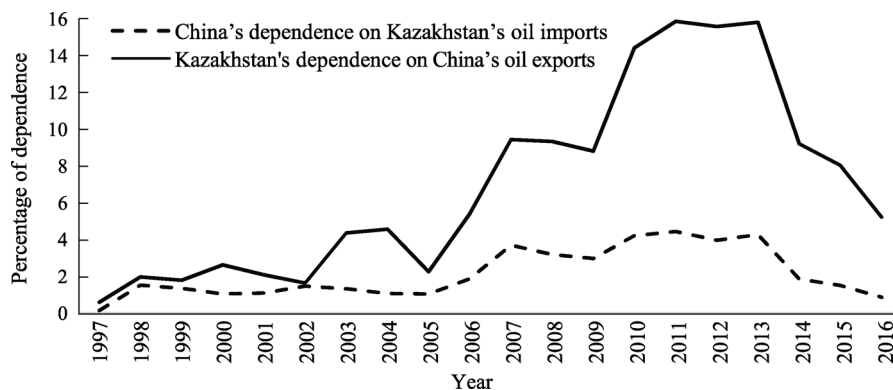


Figure 5 Oil trade interdependence between China and Kazakhstan
 Source: UN Comtrade website, <https://comtrade.un.org/data/>.

Indeed, Kazakh dependence on China's oil exports exceeded 10% between 2010 and 2013 while China's dependence on Kazakh oil has always remained below 5%.

Oil and gas cooperation between China and Central Asian countries have diversified over time. The scale of this cooperation has continuously expanded and its degree has deepened, gradually expanding from trade in oil and gas resources to exploration and development, pipeline transportation, oil refining and sales. China has created a complete business chain in the upper, middle, and lower reaches of energy development in Central Asia, including engineering and technical services, and has now further expanded to other related construction areas. Supplies of oil and gas are mainly founded on pipeline transportation, supplemented by road and rail. In terms of diversity and depth of cooperation, China and Kazakhstan have enjoyed the longest time of energy cooperation. Indeed, China has the largest proportion of exploration and development rights as well as export engineering technology services within Kazakhstan with Turkmenistan a close second. In addition to natural gas pipeline construction, China has strengthened cooperation with Turkmenistan in technology services. China's oil and gas technology services in Uzbekistan have also evolved from petroleum equipment spare part exports to the provision of geophysical exploration, drilling, and logging into upgrading oil and gas engineering technologies and recovery.

The gap in Chinese oil and gas resources is expanding, and so it is necessary to constantly search and identify new supply channels. Energy imports into China are mainly dependent on shipping with 80% of total oil imports transported through the Straits of Malacca. Thus, strengthening oil trade with Central Asia will also improve the safety of international energy transportation channels and reduce the risks and costs. Kazakhstan is key at the moment to China-Central Asian energy cooperation, but relationships with Turkmenistan and Uzbekistan are also growing. Turkmenistan is the most important natural gas importer for China while Kazakhstan remains an important oil importer. Strengthening oil and gas trade cooperation with Central Asian countries is therefore an important strategy to ensure Chinese energy security. Advancements in the Belt and Road Initiative (BRI) mean that interconnections between railways, highways, aviation, telecommunications, power grids, and energy pipelines across China and into Central Asian countries will be greatly enhanced. Energy cooperation between China and Central Asia will therefore be all-round, large-scale, and high-level and developments in core areas of oil and gas resource exploration, development, and production will also deepen.

3.4 Other countries: important balancing forces between Russia, the United States, and China

In addition to the three dominant political forces of Russia, the United States, and China, other external players including the European Union, Japan, India, Iran, and Turkey have also actively participated in energy development in Central Asia because of their own geopolitical and resource strategic considerations. These regional powers are important actors that balance the United States, Russia, and China for Central Asian countries. It is clear that the foreign policy agendas of Central Asian states are likely to become more crowded with the entry of a new actor that is likely to displace or fill, the void left by some of the actors presently engaged in the region (Rumer *et al.*, 2016).

3.4.1 EU

EU trade with Central Asia has grown and the EU is now the region's main trading partner, accounting for about a third of its overall external trade. EU-Central Asia trade is driven by the energy sector. About 80% of EU imports from Kazakhstan are oil products (Peyrouse, 2017). Strengthening cooperation with Central Asian countries to reduce dependence on Russia has long been an important strategy for European Union energy security. Thus, almost all large transnational oil companies based in European Union member states have penetrated Central Asia and effectively control at least some oil and gas resources. Subsequent to the outbreak of the 2006 Ukrainian crisis, in 2006, the European Union comprehensively upgraded the status of Central Asia as a component energy security via a series of measures including the Transport Corridor Europe-Caucasus-Asia (TPACECA), INOGATE¹, and the Baku Initiative. The European Union formulated its first Central Asia Strategy Document (the EU and Central Asia NEPAD Strategy) in 2007. This new document no longer directly links democracy, human rights, and development assistance to energy policy; it clarified for the first time the important role of Central Asia in ensuring European Union energy security and achieving energy supply diversification. This agreement was a breakthrough in international energy relations between the European Union and Central Asia. The European Union has also made a series of breakthroughs in Azerbaijan on the west coast of the Caspian Sea with the support of the United States. The Baku-Tbilisi-Ceyhan (BTC) pipeline and its counterpart, the Baku-Tbilisi-Erzurum (BTE) Pipeline, now supply oil and gas to Europe. Construction of the Trans-Anatolia and Trans-Adriatic natural gas pipelines was also initiated in 2014 and 2015. Constraints from Russia, however, mean that European Union energy cooperation has suffered setbacks.

As the world's second-largest energy consumer, China is in direct competition with the European Union and experiences a number of contradictions in terms of energy access and transportation pipelines. A report by the European Commission, which dubbed China 'an economic competitor' and a 'systemic rival' noted China's ambitions to become a leading global power (European Commission, 2019). The European Union even fears that China will create a 'new hegemony' in Central Asia, shifting the region from over-reliance on Russia to over-reliance on them, undermining the European Union's access to energy.

3.4.2 Japan

Japan is also extremely short of energy. As diplomatic relations with Central Asian countries were initiated, the Japanese Mitsubishi Corporation and International Petroleum Exploitation Corporation (INPEX) inspected and conducted energy exploration, exploitation, and transportation in Central Asia. These entities actively sought opportunities for investment in the region. Subsequent to the 1990s, Japan proposed a new strategy of Silk Road diplomacy aimed at enhancing political mutual trust and oil and gas resource cooperation with Central Asian countries. Recently, cooperation on energy such as on nuclear energy and nuclear related issues, strengthening transportation infrastructures, aid programs and conducting periodic diplomatic talks are main pillars of Japan-Central Asian countries relations (Öğütçü, 2017). Via a substantial increase in official development assistance, Japan also deployed a

¹ INOGATE is one of the longest running energy technical assistance programmes funded by the European Union. It started in 1996 and works within the policy frameworks of the Baku Initiative and the Eastern Partnership.

series of oil and gas processing projects in Central Asia and participated extensively in exploration and development and pipeline construction projects in cooperation with western multinational oil companies. Japan owns shares in major projects in the region including the BTC pipeline, the Kashagan oil field, and development of the Caspian oil field but lacks any communication rights.

Japan also competes with China in terms of energy cooperation in Central Asia. Due to the complicated rivalry over war history and territorial claims between China, Japan and Korea, it is therefore difficult for Japan to carry out cross-border energy cooperation with Central Asia in Northeast Asia. To find a breakthrough, Japan has actively assisted Central Asian countries to build a 'southern route' from Afghanistan to the Indian Ocean in order to bypass long-distance cross-border transport through China and Northeast Asia. Thus, in 2004, Japan launched the bilateral dialogue mechanism 'Japan + Central Asia' in order to restrict the SCO and balance the influence of China and Russia in the region. In 2006, the Foreign Ministers' Meeting of 'Japan + Central Asia' adopted a plan of action for energy cooperation, investing in the construction of highways and oil and gas pipelines connecting Tajikistan and Afghanistan and transporting oil and gas from Central Asia to Japan through the Indian Ocean sea passage. Japan has also long been concerned about the SCO developing into an exclusive regional group dominated by China and Russia in the hinterland of Eurasia. Japanese participation in Central Asian energy competition is therefore not just to obtain resources but also to increase the cost of Chinese imports by influencing price fluctuations and pipeline construction.

3.4.3 India

India is always aware of the enormous energy reserves within its geographically proximate Central Asian region that could potentially fulfil its energy demands (Stobdan, 2016). Subsequent to the late 1990s, India has made Central Asia its preferred region for energy security in order to reduce its dependence on Middle East oil. However, because of the tensions between India and Pakistan and the problems of transportation and transit, India cannot obtain an oil and gas supply from Central Asia via Pakistan. Thus, pushed by the United States, India has signed a series of framework agreements for oil and gas cooperation with Turkey, Iraq, and other countries and has entered the TAPI project. As emerging economies, India and China share similar energy interests and strategic aspirations globally; this has led to isomorphic competition between the two countries in Central Asian energy markets. This kind of competition often causes the bidding price of oil and gas blocks, or enterprise mergers and acquisitions, to be artificially raised which also increases production costs and damages their interests. In one example, PetroChina paid an additional USD 1 billion in 2005 to acquire the Kazakh PK oil project because of disturbance from the Indian Petroleum Corporation. In 2013, PetroChina beat PetroIndia to acquire an 8.33% stake in the Kashagan Oilfield at a huge price. As the strategic energy demands of China and India increase, so will energy competition in Central Asia.

3.4.4 Iran

Iran is superbly located both geographically and strategically. The country not only has the possibility of the shortest connections to traditional and emerging energy markets but can also become an important transport knot for Central Asia's gas stream (Savin and Ouyang, 2013). Subsequent to the disintegration of the Soviet Union, Iran pursued pragmatic multi-

lateral diplomacy in a range of areas. Thus, using various multilateral mechanisms, Iran has actively participated in oil and gas cooperation with Kazakhstan and Turkmenistan in order to enhance its voice in energy affairs within Central Asia. Amongst the energy export routes from Central Asia, the 'South Stream' scheme, which transports resources through Iran from the Persian Gulf to all parts of the world, is the best choice and is very attractive to Central Asian countries. Iran has opened the Korpeje-Kordkuy and Dauletabad-Salyp Yar pipelines in this context, deepening cooperation with Turkmenistan, and has actively promoted the construction of the Iran-Turkey-Europe Natural Gas Pipeline Project (ITE) as well as the Kazakhstan-Turkmenistan-Iran oil pipeline alongside Kazakhstan and Turkmenistan. Iran also has abundant oil and gas resources in its own right and so the purpose of this cooperation in Central Asia is not about obtaining resources. This means that Iran and China have no fundamental conflicts of interest in Central Asia. Indeed, due to blockade and containment from the United States, the Iranian position within the energy structures of Central Asia and globally is severely restricted. Iran is more willing to establish workable energy cooperation with China in order to hedge containment from the United States.

3.4.5 Turkey

One equally important actor on the Caspian energy transport corridor is Turkey. For BTC, the role of Turkey as an indispensable transit country is most obvious. Turkey also takes advantage of the current favorable opportunity to 'de-Russia' among Central Asian countries. This nation has therefore also developed all-round cooperative relations with Central Asia and strives to play the role of regional power. In terms of energy, Turkey needs to acquire oil and gas resources from Central Asia but also strives to build an energy transmission hub connecting Europe and Asia. Thus, with the support of western countries, Turkey actively promotes the energy strategy referred to as the 'East-West Energy Corridor'. In light of the current containment and isolation of Iran, most newly built pipelines of the United States and European Union across Central Asia pass through Turkey, including the BTC and BTE pipelines, the under construction Trans-Anatolian Natural Gas Pipeline (TANAP), the trans-Adriatic pipeline (TAP), and the aborted Nabucco Natural Gas Pipeline. Turkey reached a framework agreement with Turkmenistan in 2014 regarding the construction of a Caspian Sea pipeline and the entry of natural gas into Europe that will strengthen its position as an energy hub. Turkey also does not want China to become the dominant energy force in Central Asia and competes with China in many areas. Future conflicts between China and Turkey are likely in the context of Central Asian oil and gas supplies.

3.5 Development of an energy geopolitical order in Central Asia

It is certainly the case that multi-party competition is a new feature of the energy geopolitical order in Central Asia. Struggles and coordination among energy exporters, importers, and transit countries have exerted a profound impact on the energy order of Central Asia (Yang *et al.*, 2015). A number of scholars believe that one of the main challenges to regional stability here will be to maintain a geopolitical balance, especially between Russia, China, the United States, the European Union, and others, as well as the creation of a multilateral system of partnerships with various countries and international organizations (Rakhimov, 2018). Energy geopolitics in Central Asia are constantly changing and dynamic.

China, Russia, and the United States are the three most influential powers in Central Asia.

In recent years, all the three have proposed strategic ideas for this region. Following the global financial crisis in 2008, both the United States and Russia accelerated adjustments to their strategies in Central Asia and competed for energy geopolitical dominance. The United States put forward the ‘New Silk Road’ initiative in 2011 which aimed to create a new international strategic passage through Central Asia into South Asia with Afghanistan at its core. Simultaneously, Russia issued a report entitled ‘A new integration project for Eurasia: The future in the making’ which explicitly proposed the establishment of a ‘Eurasian Union’ within the area of the former Soviet Union for the first time. China then proposed the BRI in the autumn of 2013 and via the subsequent release of the ‘Vision and Action to Promote the Construction of the Silk Road Economic Belt and the Maritime Silk Road in the Twenty-first Century’. Unlike the West, China makes no demands for political reform from Central Asian governments. Unlike Russia, China does not use political pressure to keep the region in its general orientation (Stronski *et al.*, 2018). In contrast to the United States and Russia, China’s energy strategy in Central Asia is mainly achieved via practical energy project cooperation involving economic and trade means. China has developed an energy cooperation model based on bilateral cooperation, supported by multilateral relationships and benefits sharing. Compared with Russia and the United States, Chinese participation in the institutionalization of energy cooperation across Central Asia still lags behind these competitors and its position and role within the order are still not commensurate with national strength. Some analysts believe that Chinese participation in Central Asian energy cooperation will intensify geopolitical competition within the region. China will inevitably compete with Russia, the United States, and other major countries for both energy development and pipeline construction. Chinese officials have pointed out on many occasions that the BRI is an economic cooperation initiative rather than a ‘geopolitical tool’; indeed, the increasing involvement of China in global energy markets should be seen as an opportunity to enhance cooperation and interdependence rather than as a threat (Andrews *et al.*, 2014).

Although the geopolitical imagination of large powerful countries acting in Central Asia has contributed to the integration of this region into the global economy, these forces have also led to destructive competition between the United States, China, and Russia. A number of authors (e.g., Farkhod, 2010; Andre, 2013; Muzalevsky, 2015; Pantin, 2017) have hypothesized the possible future geopolitical evolution of Central Asia. It is generally accepted that this region is experiencing changing ‘push and pull’ forces from various external powers and that complexity and uncertainty might become characteristic features in the future. Several analyses have shown that China is likely to exert a stronger and stronger economic presence in Central Asia and that it is possible to establish ‘comprehensive influence’ in economic, cultural, political, military, and security fields (Muzalevsky, 2015). There is no doubt that China, Russia, and the United States regard Central Asia as a region of great strategic interest and that these three countries will maintain a long-term presence. Addressing the relationship between these countries in the future will be a major strategic issue; China needs to consider how to soften the geopolitical energy pattern in Central Asia, reduce destructive competition, and prevent entry into the region from causing geopolitical repression between the three main entities.

4 Country levels: the country risks caused by internal changes in Central Asia

The complexity of the geopolitical environment within Central Asia is not just reflected in the competition and cooperation between the big powers but also in Central Asian countries confronting by complex challenges including international terrorism, religious extremism, illegal drug trafficking, transnational water sharing, transnational criminal, boundary issues. In addition, Central Asian countries are entering a critical phase of internal change, uncertainties in the development of different countries such as democratic transformations, economic reforms, domestic governance, and other external factors such as the new 'great game'. The country risks faced by Central Asian countries include complexity, comprehensiveness, and linkage, mainly manifested in political and cooperation systems, legal policies, and treaty agreements.

4.1 International energy cooperation in Central Asia is significantly influenced by political systems

Central Asia comprises five culturally and ethnically diverse countries that have taken different paths in terms of political and economic transformation over the nearly 30 years since their independence from the Soviet Union. The development of these five countries has been extremely unbalanced, characterized by territorial differences and the lack of a platform for cooperation in regional affairs. In terms of security, the situation in most parts of Central Asia remains relatively stable even though it is undeniable that the hidden danger of religious extremism still exists. Kazakhstan boasts the best security environment while the situation in the three countries bordering Afghanistan (Uzbekistan, Tajikistan, and Turkmenistan) is more serious, especially in Tajikistan. In terms of the economic environment, almost all countries have failed to achieve significant success in building a competitive, diversified, and open economy. High dependence on oil and gas industries means that Central Asian countries have implemented highly monopolized resource development policies. The international energy policies of Central Asian countries are therefore based more on political considerations than purely commercial behavior; this situation means that serious corruption can occur easily alongside power rent-seeking and economic crimes. Resource cooperation processes are also seriously affected by these political systems. One report published in 2018 by the American Heritage Foundation's Economic Freedom Index (Figure 6) ranked Kazakhstan 41st in terms of global economic freedom (i.e., a moderately free country) while Uzbekistan (152nd) and Turkmenistan (169th) are economically 'repressed'. The majority of Central Asian countries also scored low in terms of property rights, judicial efficiency, and government integrity. Weak judicial systems have also hindered foreign investors and slowed down the modernization of Central Asian countries. Corruption also remains a major problem in the region, especially in Turkmenistan and Uzbekistan, where this presents an additional burden. The World Corruption Perceptions Index report issued in 2018 by Transparency International ranked Kazakhstan 122nd in the world, the highest level of integrity in Central Asia, followed by Kyrgyzstan (135th), Uzbekistan (157th), Tajikistan (161st), and Turkmenistan (167th). World Bank global governance indicators (Figure 7) suggest the average percentile ranking of regional 'Control of Corruption' is just 11.35 (i.e., less than 12%

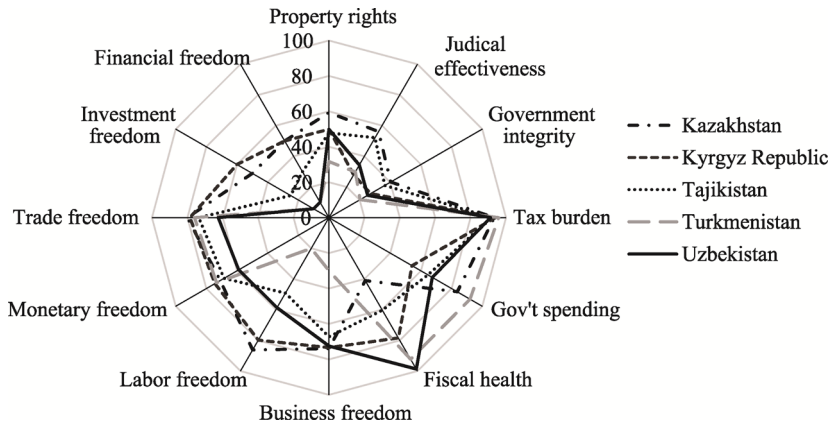


Figure 6 Economic freedom index values for five Central Asian countries

of countries globally are more corrupt than those in Central Asia). One clear obstacle to international trade, corruption at border crossings increases the cost and time required for trade exchanges and leads to opacity in terms of actual customs and taxation. Corruption has been a major impediment to global international trade (Anderson *et al.*, 2002) and has led to increased transit difficulties and transportation costs in Central Asia (Raballand *et al.*, 2005). Although international energy cooperation should establish close ties with oil and gas authorities, a relationship must also be developed with the Kazakhstan Oil and Gas Company, and relationships must be rationalized with relevant government departments in order to successfully obtain and implement cooperation projects. International oil and gas cooperation often also involve large amounts of money and time scales which increase their risks.

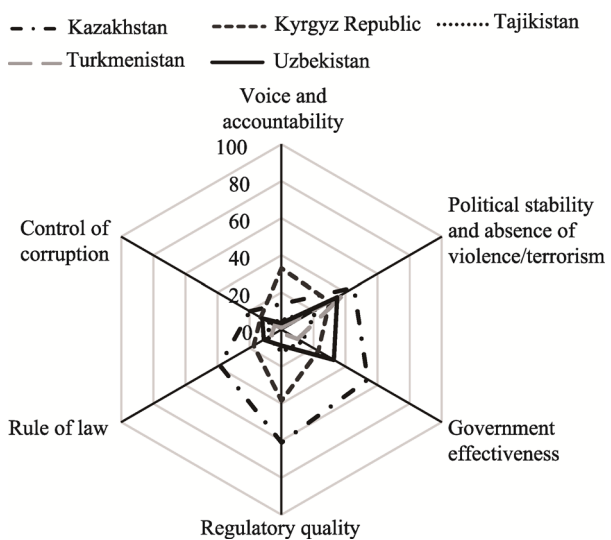


Figure 7 Global governance indicator rankings for Central Asia

4.2 International cooperation systems for Central Asian energy lack integrity and are non-systematic

Although a multi-level and multi-field energy cooperation system is present in Central Asia, complexity and fragmentation are obvious. The international energy cooperation system in Central Asia presently encompasses three facets. The first of these is the energy cooperation system coordinated by international organizations, including multilateral mechanisms under the framework of cooperation including the Central Asia Regional Economic Cooperation (CAREC) Program led by ADB. The second main system comprises bilateral energy cooperation and dominated by big powers outside of Central Asia, including within the BRI framework, under the ‘New Silk Road’ strategy of the United States, and under Russian energy strategy

2035. The third system in place comprises multilateral cooperation within the EEC framework and Trans-Caspian oil and gas cooperation. An increase in 'institutional density' within Central Asia has led to an inter-relationship phenomenon and even conflict between these systems. Amongst the numerous energy cooperation systems, no single dominant approach has received widespread support from all parties, a factor which creates numerous uncertainties for future energy cooperation prospects. The five Central Asian countries, together with the three leading powers (China, the United States, and Russia) and other countries such as the European Union, Japan, South Korea, India, Iran, and Turkey have also reached energy cooperation agreements and formed exclusive energy cooperation blocks. Numerous countries also participate in this region via international oil companies as main actors. This means that the positions and identities of Central Asian countries in cooperation with other nations and international oil companies are split. The diversification of power and system decentralization will inevitably lead to an energy cooperation dilemma in Central Asia.

4.3 Lack of consistency in international energy investment laws and policies

Central Asian countries are generally short of funds and technology. This means that providing preferential conditions for cooperation and attracting foreign investment have become important ways to develop the energy economies in this region. Central Asian countries have formulated and promulgated a series of laws and regulations for the oil and gas industry to stimulate development. Kazakhstan, for example, has enacted the Petroleum Law, The Subsoil Code, the Foreign Investment Law, and the Code 'On Subsoil and Subsoil Use' (SSU Code, 2017), while Turkmenistan and Uzbekistan have enacted the Foreign Investment Law of Turkmenistan and the Foreign Investment Law of the Republic of Uzbekistan, respectively, and have initially established relatively complete legal systems just for energy investment.

The laws and policies of Central Asian countries remain inconsistent, however, and are influenced by the government; this means that the risk of legal changes remains relatively high. Central Asian countries have also made arbitrary amendments to existing legislation by signing policy documents like presidential decrees; these actions also reduce the binding force and credibility of laws and increase the legal risks of foreign oil and gas resource investments being taxed.

It is particularly noteworthy that from the 21st century on, influenced by the worldwide nationalization of energy production, Central Asian countries have more frequently amended and supplemented laws and regulations that apply to the oil and gas industry, strengthened the control and supervision of this sector, and replaced mild and relaxed foreign investment environments and fiscal and taxation policies with mandatory ones. In Kazakhstan, for example, a new tax policy was introduced in 2009 to dramatically adjust the collection methods for oil and natural gas exploitation, new mineral resource exploitation and oil and gas export revenue taxes were levied, and the calculation protocol for excess profits was modified. Kazakhstan has also revised its code 'On Subsoil and Subsoil Use' many times, expanding control over its own resources and strengthening its supervision over previous oil and gas contracts. Government intervention, legal changes, tightening policies, and other factors have become important risks for international energy investment in Central Asia.

4.4 Ambiguous energy cooperation treaties and agreements between China and Central Asia

Two forms of energy investment treaties and agreements have been adopted by China in Central Asia. The first of these are international treaties and regional agreements. The Washington Convention of 1966 and the Seoul Convention of 1985 are still the main sources of law that apply for the settlement of international disputes in Central Asia. China, Kazakhstan, Tajikistan, Kyrgyzstan, and Uzbekistan all joined the SCO in 2001 (to the exclusion of Turkmenistan) to establish and expand cooperation frameworks in political, economic, and energy fields. Energy-related agreements within the 'Action Plan on Implementation of the Programme of Multilateral Trade and Economic Cooperation of SCO Member States' have provided important legal foundations for countries in the region to engage in energy cooperation and investment. Most of the contents involved are nevertheless just principled or framework provisions, and the multilateral energy cooperation mechanism remains imperfect. The second group of agreements is mainly based on bilateral investment treaties (BITs) which themselves contain different degrees of legal status provisions with respect to ownership and international investment dispute settlement mechanisms alongside vague provisions on matters related to energy investment. Indeed, only China and Uzbekistan re-signed the BIT in 2011, which means that agreements with other countries were signed in 1992 or 1993. The political situation, economic environment, and investment behavior of bilateral agreements have also changed significantly over the last two decades. Compared with bilateral agreements signed between China and developed countries, those with Central Asian counterparts tend to be simple in content, lack clear and operable provisions in several important areas, and can no longer be adapted to current investment. This means that Central Asian countries are relatively weak overall from the perspective of bilateral agreements. These agreements therefore tend to be significantly influenced by international politics, military affairs, economic development, and international trade, and are sensitive to external environmental changes. Agreements signed with China therefore tend to have marked conservative tendencies.

5 Comprehensive strategies for energy cooperation to meet geopolitical and country risks between China and Central Asia

The energy cooperation between China and Central Asia is based on the common interests of both sides, and is also based on the complementary energy endowment and energy market of both sides. As implementation of the BRI has accelerated, the scale and breadth of investment and personnel flow between China and Central Asia will be greatly enhanced and interactions between the two regions will become more frequent and ever closer. The overall security situation in Central Asia may also become more severe which will also increase the security risks to overseas interests. In order to build a risk prevention mechanism for energy cooperation between China and Central Asia, the former should not only consider the 'great game' amongst big powers but should pay attention to the country risks within Central Asian countries. In view of the potential geopolitical game played by the big powers as well as rising country risks within Central Asian countries, comprehensive strategies are proposed so that China minimizes the risks of energy cooperation.

5.1 Establishing energy cooperation partnership with great powers

To effectively cope with the geopolitical risks and national risks of energy cooperation in Central Asia, there is a clear need for cooperation among major powers. Although the complex interactions between China, the United States, and Russia in Central Asia have intensified the fragmentation of the security landscape in the region, there are still some ways to alleviate the zero-sum competition among major powers. The great powers have more to gain from cooperation than outright competition. In order to reduce the doubts and counter-measures caused by other big powers on China's excessive growth in Central Asia, China must coordinate its energy cooperation with other major powers in Central Asia. Throughout the process of promoting energy cooperation with Central Asia, China should fully consider the energy interests and economic penetration of Russia, the United States, and other major countries in Central Asia. This will enable China to formulate a multilateral cooperation framework involving different stakeholders including energy exporters, transit countries, and importers, as well as form a community of energy destiny that safeguards common interests.

5.2 Promoting the establishment of a pragmatic and efficient multilateral energy cooperation mechanism

Traditional experience shows that building a pragmatic and efficient regional multilateral energy cooperation mechanism can effectively safeguard regional energy security and bring collective benefits to participants. The bulk of relevant international energy cooperation frameworks and agreements in Central Asia are currently principled but there is still no substantive framework for energy cooperation. The priority here is to strengthen government-led multilateral energy conversation mechanisms. Thus, taking into account the current energy situation in China, difficulties in bilateral cooperation, and the complex energy geopolitics of Central Asia, it will be necessary to strengthen Chinese capacity for multilateral energy dialogue from a strategic perspective. China could also coordinate the energy agencies of China, Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, and Tajikistan to establish a multilateral energy dialogue mechanism specifically for Central Asia. The countries that participate in such a multilateral energy dialogue should share their energy information and deepen political trust to ensure the practicability and stability of multilateral cooperation. China should also strengthen SCO energy cooperative consultation under the auspices of the BRI and create a multilateral energy cooperation mechanism that has both practical significance and binding force.

5.3 Promoting the diversification of energy cooperation entities

Optimizing the corporate structure of energy cooperation across Central Asia is another key measure that must be taken. China presently participates in the energy affairs of Central Asian countries via state-owned energy enterprises. Energy as a strategic resource and thus the overseas economic activities of state-owned enterprises are usually labeled as state behavior, a categorization which will cause concern for the governments and people of Central Asian. At the same time, the shortcomings of the state-owned enterprise system, long-term decision-making processes, and a lack of flexibility will weaken the competitiveness of

Chinese energy companies in the context of overseas cooperation. In order to consolidate existing energy cooperation platforms established by state-owned enterprises, China should actively encourage small- and medium-sized energy enterprises to participate in Central Asia. This will strengthen the cooperation between state-owned enterprises and private enterprises, establish 'going out' industrial alliances, and form strategic relationships with Central Asian national petroleum companies. These activities will also enable the avoidance of all kinds of natural and human risks caused by insufficient access to energy resources in local economic and social environments.

5.4 Innovating the cooperation models of energy projects

The operating model for energy cooperation projects between China and Central Asia can also be innovated. China can give full scope to the advantages of exploration technology and strengthen technical trade services in this sector alongside the development of oil and gas fields as well as the construction and maintenance of infrastructure, and 'turnkey projects' for product processing. China should also sign similar technical assistance programs or technology trade service contracts with Central Asian countries to help them improve their energy industrial chain technologies at the right time. This will fundamentally promote the modernization of the energy sector in Central Asian countries. Finally, China can also enhance the depth and breadth of cooperation with Central Asian countries in production services industries such as logistics, trade, finance, labor export, and management.

5.5 Exploring a co-construction zone and establishing a joint reserve mechanism

Exploring the establishment of a cross-regional energy joint reserve mechanism is also concordant with the long-term energy strategy development needs of China and Central Asian countries. This is also an important component of Chinese and Central Asian needs to deepen energy security. Thus, building a transnational energy reserve mechanism will also be conducive to stabilizing the long-term energy supply of a host country, reducing the impact of wars, extreme events, and changes in the international political situation. This process will also help supply countries to avoid the impact of price fluctuations in the energy market and ensure long-term oil and gas income. Cross-regional energy joint reserves are not limited to bilateral cooperation; however, China can implement joint energy reserves with Kazakhstan, Turkmenistan, and Uzbekistan to start with in Central Asia. It should also be possible to coordinate the transnational reserves of these three countries at the same time to maximize the energy income of Central Asian countries and ensure a stable supply for China.

5.6 Establishing energy advisory service institutions and information platforms

The creation of a professional energy advisory service organization and an energy information platform that draws in wide participation is also urgent problems for Central Asia. It is necessary to set up a semi-independent energy consulting organization composed of experts from various fields including energy technology, strategy, economics, law, enterprise management, and information. This organization should emphasize the professionalism and independence of non-government personnel including experts, scholars, and consultants in

decision-making services. A broad and targeted platform for energy cooperation can then be established to rapidly share data, eliminate information asymmetry, save transaction costs, improve the efficiency of energy cooperation, and reduce risks.

6 Conclusions and discussion

International Energy Agency (IEA) predicts, by 2030, continued increases in demand for transport fuels means that China will become the world's largest oil consumer, taking over from the United States. Import dependence, especially for oil, reaches levels that require annual spending of nearly half a trillion dollars on energy imports by 2040, posing potential risks to energy security. Central Asia has long possessed large volumes of oil and natural gas, which is emerging as an important strategic region for China's international energy cooperation. Central Asia can alleviate China's increasingly tight overseas oil and gas resources in terms of energy supply, energy transportation security, and geopolitical security. Deepening energy cooperation with the region is an important strategy for China to diversify overseas oil and gas imports and to ensure energy transportation security. It is important to note that China and Central Asian energy cooperation are strategically complementary and will have broad strategic advantages in the fields of oil trade, oil and gas resources exploration and development, and product processing technology.

The growth of China's economy at historically unprecedented speed and scale over the last three decades has completely altered the supply-demand equation of global energy (Fazilov *et al.*, 2013). China is emerging as one of the most influential players in Central Asia, and is reshaping the energy geopolitics in Central Asia. The energy geopolitical complex that characterizes Central Asia involves the development of energy resources and the direction of oil and gas pipelines, areas where various political forces have initiated aggressive and complex contests. China, Russia, and the United States have all launched a fierce energy 'game' in Central Asia which will determine the strategic direction of the international energy cooperation in the region. Countries and transnational regions including the European Union, Iran, Turkey, Japan, South Korea, and India have also all intervened in Central Asian affairs using different channels and means to influence developments and trends and increase the geopolitical risk of Chinese energy cooperation. Therefore, the balance of competition and cooperation is very important in Central Asia. This paper presents the strengths of various actors in the energy sector in Central Asia, and the next step of the research should focus on exploring the key drivers, evolutionary mechanisms, and risk transfer mechanisms of energy geopolitics in Central Asia. In addition, Central Asia is a key area for China, a rapidly developing country, to implement the BRI with energy cooperation as a core component. The implications of the BRI for the energy geopolitics in Central Asia deserve further study.

It should be noted that because of deepening energy cooperation, China and Central Asia will be more closely linked, therefore, risks at regional and national levels are bound to be related to both internal and external linkages. Contemporary Central Asia in the process of transformation and facing considerable political, social, cultural changes challenges, and the resulting country risks require special attention. Although the five Central Asian countries are described as a group of countries in this paper, there are significant differences between

these countries, and therefore, China should adopt a differentiated strategy when engaging in energy cooperation with Central Asian countries.

China's energy cooperation in Central Asia is facing geopolitical risks and country-specific risks. Choosing a reasonable model of cooperation can, to a certain extent, reduce the risks of energy cooperation and maximize the security of energy supply. This paper suggests some models for cooperation between China and Central Asia in energy cooperation, but it is important to note that the models do not exist in isolation from each other and that the choice of models is not absolute. The next step in the study should be to explore how cooperation models or combinations of models can be proposed for different countries and projects to maximize the stability of energy supply and ensure energy security.

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