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China Energy Policy: Evidence of China-Russia Cooperation

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ABSTRACT

This paper proposed the importance of a social synergy approach in China-Russia cooperation. Traditional energy transportation activities are viewed as an element of the environmental concern in both countries. Liquefied natural gas (LNG) transportation might be a better solution as an alternative to other options. LNG market is becoming more and more developed and Russia is actively looking to incorporate this energy strategy. The shale gas revolution in the USA has led to environmental degradation in the affected areas. Extraction of this type requires a sophisticated and expensive technology, because of which many emerging countries don't have it. The results show that China is interested in the economic benefits of such investment activities and does not intervene in the political sphere of these countries.

Keywords: Alternative Energy Sources, Energy Policy, Resource Saving, Energy Efficient Development, Energy Indicators.

JEL Classifications: C30, D12, Q41, Q48

1. INTRODUCTION

Energy efficiency is closely dependent on energy policy of the selected country that, in turn, comprises of energy cost and emission reduction strategies. The most rational and the most efficient energy use consists of consumption optimization, optimal energy storage and low waste-to-energy ratio (Bolt and Cross, 2010). Energy policy should not be viewed as a solely company's social responsibility but also regulated by the government due to internal and external pressures.

There are four principles of energy policy introduced by Christoffersen (2012). The major principle is linked to energy efficiency programs and control over the energy resource use with the further positive results for a country.

Downs (2010) state that energy resource abundance should be well managed; otherwise, negative consequences are highly probable to occur in economic, political and social fields of the society. Developing the idea of resource policy Downs (2010) pointed out that there are several disadvantages in the fact that state-controlled

energy companies usually have leading roles on the market. He concludes with the statement that politicians are considered as a force that contributes to the increasing inefficiency and instability in the energy sector.

'Rentier states' is the definition for the countries which main asset for development is the energy sector. They are often a subject to poor resource policy. Therein lies a problem of boosting energy export while aggravating countries' political and economic outcomes.

Policy of receiving revenues from natural resources has led to the establishment of national wealth funds. According to the Ministry of Finance of the Russian Federation, the National Wealth Fund (NWF) has been mostly composed from oil and gas revenues (tax revenues, energy export revenues) It is main goal, according to the Russian government, is to promote domestic growth.

The fund was created to avoid the well-known dependency of the Russian Ruble on other foreign currencies which is flowing into the country from energy export and to help mitigate the negative impact on the national economy. Taking this into consideration, Grama

(2012) argues that external assets and foreign currency flows should not be used as a long-term accumulation but namely for promoting domestic growth and boosting positive investment climate.

2. LITERATURE REVIEW

Furthermore, Guizhou et al. (2015) categorized issues that might be faced by resource-rich countries. These issues go as follows: level of infrastructure development that is stimulating energy export; regulatory framework of any technical activities in the country risk of investing in the energy sector and state control over energy resources.

In the prospect of China's growing energy demand, Gulick (2007) focused on energy cooperation between Russia and China and also examined the importance of energy.

According to Christoffersen (2012), energy cooperation between two countries requires constant interconnected policy decisions from both sides. This concept of constant policies has been recently introduced as a reference regarding a cooperation strategy. In particular, the Russian-Chinese energy cooperation has been discussed when several conflicts of interest emerged in any resource-rich or resource-poor countries around the world.

For example, in 2012 the conflicts in the Middle East and North Caucasus brought Russia and China to the negotiating table.

Current Ukrainian crises has not only brought together two countries but has led to the new energy policy proposals, Henderson and Mitrova (2016). For the practical purposes, following section of the research will look at gas supply options.

The global natural gas trade has dominated and largely based on pipeline net that connects countries. In this context, several important issues should be reconsidered: various conflicts between countries, constant growing energy demand and the future of gas pipelines.

However, there is an alternative natural gas supply option, liquefied natural gas (LNG) which has recently become a more popular supply source (Mikhaylov, 2019).

Construction of gas pipelines is a challenging project, especially for those countries, which has their extraction sites far from borders of potential importers. Those are mainly cross-border and transit-pipelines; these types also constitute technical and political challenges for the countries, which are connected with a resource-rich exporter via pipelines (Hu and Ge, 2014).

However, LNG projects are not a solution for these problems, because LNG has several other technical issues (Røseth, 2017).

The countries, interested in the expansion of LNG, should develop a system of receiving terminals. The article The Future role of LNG written by Skalamera (2016) argues that a lack of sufficient facilities hinders development of LNG market.

The Asia-Pacific region is viewed as an isolated region in terms of LNG imports. However, the emerging countries, which are focusing

on energy supply diversification, are looking for alternative energy suppliers. Diversification as a strategy has occurred right after the realization of growing energy interdependence between countries (Su and Li, 2016; Mikhaylov, 2018a).

However, to put it into a simple definition, diversification is a process of creating a balanced portfolio of procurement resources and supply routes (Amini and Reinhart, 2011; Bansal et al., 2013; Mikhaylov, 2018b).

Diversified portfolio of exporting and importing resources and different ways of deliveries are essential in order to avoid an unstable supply in future. Taking into consideration what was mentioned above, the relevant analysis of pipeline and LNG supply options was conducted to have a deeper understanding of the growing competition in the gas market.

3. METHODS

It is worth starting with the cost of transmission lines and LNG transportation. There are essential components underpinning the cost of pipeline transportation that make pipeline projects very expensive. Total cost of pipelines will mostly consist of integral technical inputs such as diameter, length and operating pressure. There are additional factors, which have an impact on the formation of expenses: climate and weather conditions, employment cost, government regulations, and population concentration along the stations that are controlling construction and operating activities.

Nyngarika et al. (2019a,b) believe that pipeline transportation is less complex, however, more expensive in comparison with other methods.

Pipeline capacity is calculated using the following formula (Rui et al., 2011):

$$V = SL \quad (1)$$

$$S = \pi \left(\frac{D}{2} \right)^2 \quad (2)$$

where V is the pipeline capacity; S is the pipeline cross-sectional area; L is the pipeline length; D is the pipeline diameter.

Considering LNG projects, such supply option is less costly than it was before. Cost for LNG is inherently dependent on capacity and complexity of liquefaction process. Distance between natural gas importer and exporter matters as well. Apart from the cost and price paying for the gas, capacity of two supply options is essential for the final decision on preferred supply option.

Taking into consideration main components that build up the cost, we can refer to the capacity parameters:

- The experts concluded that generally, a large diameter is 46-60 inches (117-153 cm) and is qualifying to transfer amount of gas equating to about 15-30 bn. m³ per year.
- The largest LNG shippers have a capacity of 135,000-138,000 m³.

The question to what extent the ship transportation can replace pipeline supply in terms of capacity rises if an energy importer decides to switch from pipelines to LNG.

Specific attention should be paid to date of natural gas delivery. Therefore, supply chain policy plays a significant role and helps to respond correspondingly to the challenges encountered.

Russia has been trying to diversify its export destinations by developing a new pipeline construction as well as focusing on LNG expansion, because of increasing natural gas demand from the Asian countries.

For instance, the Russian leading independent natural gas producer, NOVATEK, the French energy company Total and the Chinese energy company CNPC are cooperating together on the LNG project that started delivering a liquefied natural gas in 2017 from the Yamal LNG plant to Europe.

According to NOVATEK's official website, the project's shareholder structure is as follows: Novatek-60%, Total-20%, CNPC-20%.

China's oil and petroleum reserves help to reduce speculative demand shocks and reduce dependence on supplies from Russia (Figure 1-5). Demand shocks caused by exogenous events such as revolutions, invasions or wars in Syria could increase demand for oil reserves, which would also lead to higher oil prices.

China holds oil reserves as a buffer against any potential disruption in oil imports. The release of reserves can increase the market supply of oil, putting downward pressure on oil prices.

CNPC Chairman Zhou Jiping and Non-executive Director of Novatek Gennady Timchenko discussed project policy, investment financing of the Yamal LNG plant and specified that CNPC will get around 3 million tons (20%) of LNG supplies annually from Yamal plant.

LNG projects have been changing policies regarding new pipeline construction around the world. This transformation has been driven not only by emerging conflicts between countries but also by an active role of energy companies that are competing for energy market share.

Generally speaking, the relationship between state-owned and private companies is paramount to watch in the light of the recent reform that is focusing on opening energy market for private enterprises in China (Morris and Barlaz, 2011).

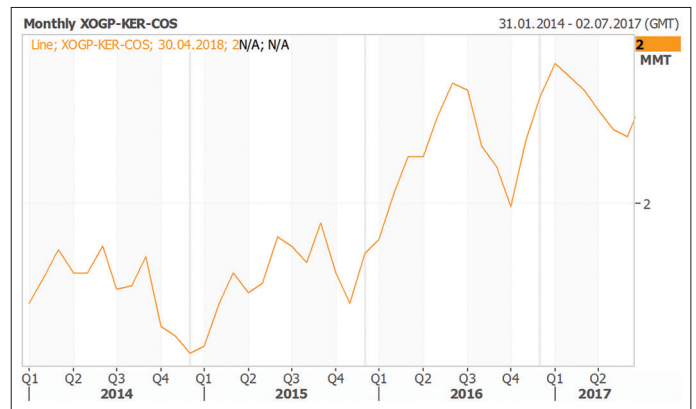
Nevertheless state-owned companies are main players which possess 70% of worldwide oil and gas reserves. There were 6,770 state-owned enterprises in 2013 in China.

The following chapter will focus on energy state-owned companies and their role in the economy.

4. RESULTS

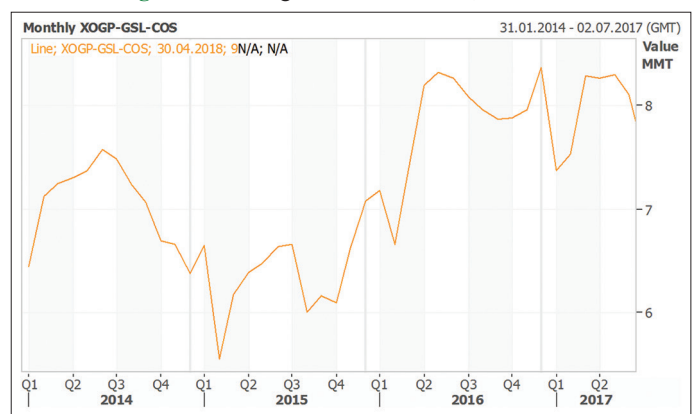
There are different types of state-owned enterprises (SOEs) that can be defined based on different sectors they operate

Figure 1: China crude oil inventories, mln. tones



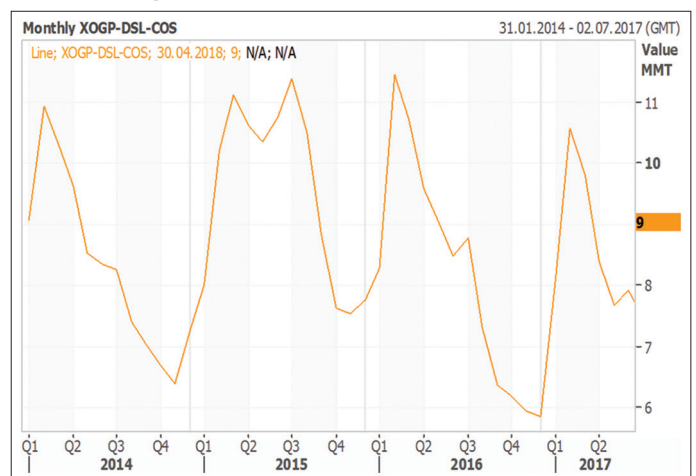
Source: Thomson Reuters

Figure 2: China gasoline inventories, mln. tones



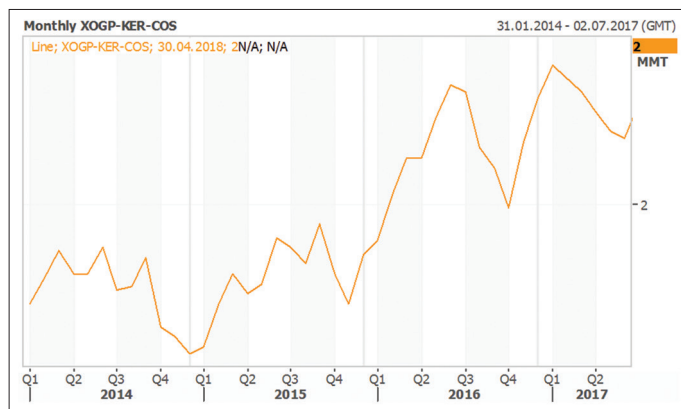
Source: Thomson Reuters

Figure 3: China diesel inventories, mln. tones

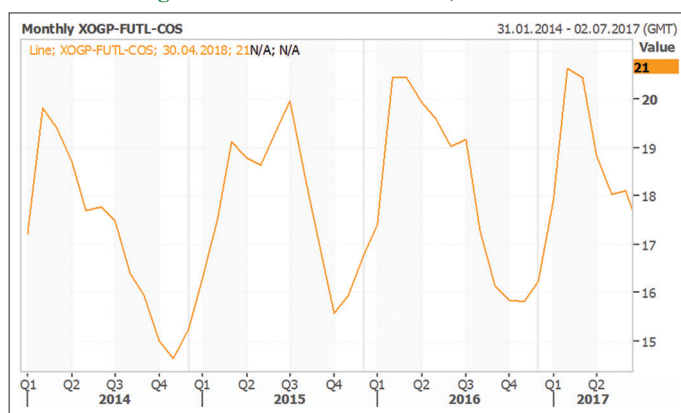


Source: Thomson Reuters

in. Depending on the sector, SOEs are different in properties, strategies and profit maximization approaches (Mikhaylov et al., 2018, 2019). A state-owned enterprise is an enterprise where the state has a majority or substantial minority control. Therefore state's supervision and intervention is unavoidable. The Russian Energy Strategy 2035 and Chinese Energy Policy specify that energy is a market of public good.

Figure 4: China kerosene inventories, mln. tones

Source: Thomson Reuters

Figure 5: China fuel inventories, mln. tones

Source: Thomson Reuters

In general, the debate over SOE leads to a comparison of state owned companies and private ones.

Denisova (2019) states that state-owned enterprises differ from private with regard to the amount of goals they set in business strategy, to whom they are accountable and how many constraints they might face to achieve their target numbers. SOEs and private energy companies play a significant role for developing countries.

Experts from International Energy Agency point out that energy investments from private sector are more profitable but neither private nor state-owned companies can achieve the goals alone, thus contribution in energy fields (Extraction of resources, Storage, Transportation and Processing) should be balanced (Ahmed et al., 2014; Meynkhard, 2019; Nyangarika et al., 2018).

The debates around SOEs have ended up with discussion over the monopoly power in energy industry (Bove and Lunghi, 2006; Lopatin, 2019). They believe that a market economy in China can be consistent with an active participation of state-owned companies which will prioritize incentive policy.

In the context of developing and emerging countries, state-owned companies are more powerful than private companies. For this reason, industrial development relies mostly on state-owned

companies which can reach foreign assistance more easily rather than the private sector.

Building upon the importance of SOEs, the role of trust between national energy companies is highlighted throughout the literature review. Trust has a high priority in inter-organizational relations and greatly affects negotiating performance and an ability to develop and maintain positive outcomes (Denisova et al., 2019).

As for the Chinese state-owned enterprises, the main focus was done on their global goals. "Going global" strategy of state-owned enterprises has been developing in China since 2005. They mainly are managing energy, infrastructure, transportation and other traditionally state controlled sectors.

This strategy is fully supported by the Government for two main reasons. First, to support globalization strategy of the enterprises. Second, to promote government economic policy through the involvement in international projects.

The outlined reasons have led to the policies aimed at increasing investments support. Resource scarcity in China has led to the development of natural resource exporters in foreign countries. There is a strong desire expressed by the state-owned enterprises to invest in high-tech sector in order to stay competitive on the global market.

All overseas resource developments, in which Chinese government is interested, are funded by the Chinese state-owned enterprises. To conclude, the Chinese SOEs are no longer traditional but modern enterprises playing a significant role in the Chinese economy.

5. CONCLUSION AND DISCUSSION

Key sub-themes from these findings are as follows:

- 1) The extraction of unconventional resources in China faces a number of country specific challenges, which include lack of water required during for extraction and mostly high costs.
- 2) To develop unconventional resources, the Chinese energy companies have to agree on joint ventures (JVs) with foreign energy companies that bring investment to China.

Russian and Chinese energy companies such as Gazprom, Rosneft, CNPC and Sinopec are state owned companies. These companies are controlling the supply chain and consider this to be a big competitive advantage in terms of efficiency.

Energy has a strategic position in the economies of these countries and will always be closely monitored by government. However, in order to develop the energy sector, private investments should also be encouraged.

The Chinese government initiative to open the energy sector for private investment may be understood as a future vision rather than an immediate call for action.

In terms of cross border pipelines and the role of the governments, the paper emphasizes the importance of a social synergy approach.

The environmental concern of these project is crucial for developing future interconnected policies between two countries.

LNG transportation is an alternative supply option and considering that the LNG market is becoming more and more developed. It is being incorporated into the Russian energy strategy right now.

The shale gas revolution in the USA has led to environmental degradation. Extraction of shale gas requires specific technologies that not all the countries with shale gas possess.

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