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PATH EXPLORATION FOR ADVANCING THE GASUYUAN STRATEGY

From a politico-economic perspective, this paper makes in-depth analyses of the market impetus and political logic for the formation of gasyuan, believing the market driver of gasyuan lies in supply-demand imbalances of natural gas and the concentration of comparative advantages for its formation, while the main political logic lies in the fact that natural gas, as a determinant of the energy era of gas, bears both financial and power attributes. Based on such basic conditions, this paper, through analyzing the feasibility of the gasyuan strategy, the concrete measures needed to be taken in this process as well as the challenges and opportunities it may encounter, aims to make explorations for an effective path for the advancement of the gasyuan strategy.

Keywords: gasyuan, petrodollar, internationalization of renminbi, energy transformation.

I. Emergence of gasyuan

With the transformation of global energy into clean energy and the discovery of natural gas reserves in large volumes and an increase in gas supply, the share of natural gas in global energy consumption will further rise. In its World Energy Outlook 2016, the International Energy Agency (IEA) pointed out that with the gradual transformation of the global energy system, natural gas and renewable energy are expected to become the biggest supplier to meet global energy demands in the future. The IEA also forecast that within the coming 25 years, natural gas will replace coal as a leading energy demand^{*}. So far, the driver of oil demand growth has mainly come from land transportation, aviation and petrochemical industry. Relevant statistics indicate that due to the transformation of energy consumption and a rising utilization efficiency of alternative energy sources, oil demands from above-mentioned sectors are on the decline. In the future, natural gas and oil are likely to become one of the two major energy categories along with oil or replace oil to become a dominant fossil energy, and the world will enter a gas-dominated energy era within a certain period of time.

As the biggest natural gas consumer and trader in the world, China has reasons to take hold of this opportunity to promote the use of yuan, or renminbi, in global gas trade to re-forge global fund flows, give play to the role of gasyuan as petrodollar does^{**}, better maintain China's economic interests and boost China's status in global economic governance while pushing for stable and healthy development of natural gas production and trade. Then, what are the opportunities and bases for gasyuan? What kinds of power and advantages does China have to advance the gasyuan strategy?

^{*} International Energy Agency, World Energy Outlook 2016.16 November 2016. <http://www.iea.org/newsroom/news/2016/november/world-energy-outlook-2016.html>, 2016年11月20日。

^{**} The term of "petrodollar" was first put forward by Egyptian-born American economist Ibrahim Oweiss, with both a broad and narrow sense. In a broad sense, petrodollar refers to all revenues oil exporting countries earn from the sale of oil while petrodollar in a narrow sense refers to their oil export revenues subtracting the spending on imports plus other outlays used for their domestic economic development. Given that oil is indispensable to any country's economic development, the United States chose to control world oil trading as a way of consolidating the status of the US dollar in the international monetary system in the 1970s. The term of "petrodollar" has ever since been coined.

This article tries to make analyses along the two lines of market and politics from a politico-economic perspective. From a market perspective, the formation of gasyuan stems from the push behind supply-demand imbalances at the natural gas market and the concentration of its comparative advantages. It is also a result of mutual balancing of interests among various subjects of economic behaviors against the backdrop of globalization out of considerations to lower transaction costs and circumvent market risks. Aside from the market logic, the political logic also remains equally important to the formation of gasyuan. For big powers in particular, competition, cooperation and conflicts involving “international currency power” usually serve as an important force to push a country’s currency to embark on a road of internationalization. From a deeper perspective, the source of fierce wrestling among big countries for a leading international currency power on the international political arena is an inherent power attribute of currencies^{*}. Gasyuan is an important propelling force and bond to the realization of renminbi’s internationalization, and it is simultaneously endowed with the attributes of “finance” and “power” in this process.

II. Experiences from the rise of petrodollar and definition of gasyuan

1) Experiences from the rise of petrodollar. The collapse of the Bretton Woods System in the early 1970s caused great repercussions to the status of the US dollar. To safeguard the dollar’s status in the international monetary system, the US secretly struck a deal with Saudi Arabia, then the largest oil exporter, on mutual assistances through promising to sign with it an oil trading agreement^{**}. According to the accord, the dollar would be continuously used as the settlement currency for oil trading. Due to the special status of Saudi Arabia in the Organization of Petroleum Exporting Countries (OPEC), other OPEC member states had to finally accept such a rule that has continued till now. The agreement stipulates that oil must be priced and traded in the dollar, laying the foundation for the dollar to become a leading currency for oil trade and consolidating its hegemonic status. According to relevant statistical data, after de-pegged from gold in the 1970s, the dollar did not witness drastic depreciations and instead maintained a strong momentum. The share of dollars in central banks’ foreign exchange reserves steadily rose from 54.4 percent in 1969 to 72.9 percent in 1977.

Two main chain has been formed for petrodollar circulation: 1) after oil prices sharply rose in the mid-1970s, increased oil revenues of OPEC countries, after subtracting expenditures for economic development and other items, tried to pursue other investment channels. Due to the US’ powerful economic strength and its full-fledged capital market, these surplus funds, or petrodollars, chose to flow back to the US’ in the forms of deposits, stocks, government bonds and other securities assets, thus forming the first chain of petrodollar circulation; 2) the rapid rise of “Asian tigers” – the Republic of Korea, Singapore, Taiwan and Hong Kong – in the 1960s and 70s under their export-oriented strategy, and the high-speed development of China after the reform and opening-up, caused East Asia a big exporter of cheap commodities, thus forming an enormous trade surplus with the US and causing the large-volume flow of dollars to East Asia. Meanwhile, China, Japan, the ROK and China’s Taiwan were all plagued by scarcity of resources at that time and thus needed to import a large quantity of resources and raw materials, which caused them to use dollar reserves to purchase such primary commodities and resources as oil and mineral products from the Middle East, Africa, and Latin America, forming the second chain of petrodollar circulation.

Under the petrodollar system that is composed of the two main petrodollar circulation chains, dollars have circulated unblocked worldwide and become the most important reserve currency. Through issuing dollars, the US can gain needed commodities at an extremely cost and utilize above-

^{*} Zhao KE, “The Rise of Deutsche Mark --- An Analysis of Internationalization of Currencies from a Politico-economic Perspective”, a PhD academic dissertation of the Graduate School of Chinese Academy of Social Sciences, 2013.

^{**} Wang Hong, “The Rise of Petrodollar and Its Influences on the International Monetary Market”, a master’s thesis of Jilin University, 2013.

mentioned two major chains to fill up its own trade and fiscal deficits, which has helped the US bolster its sustained economic growth and maintain its economic hegemonic status. It can be said that the dollar-denominated valuation and trading of such bulk commodities as oil and iron ores has laid a cornerstone for the existence of the two major petrodollar circulation chains. With its special economic and financial status, the US has successfully maintained dollar circulation and its long-term consumption inflation and a foreign trade deficit have managed to coexist with its absorption of foreign capitals in large volumes, from which its economic growth has benefited a lot.

Undeniably, the formation and development of petrodollar has benefited from numerous historical conditions and backgrounds, but from it we can learn some referential experiences for a possible gasyuan and its future development.

2) Conceptual definition of gasyuan and its realistic bases. So far, the academic circle has failed to make a relatively accurate definition of gasyuan. This author tries to make an initial definition of it from the politico-economic perspective.

Gasyuan, a term similar to petrodollar, refers to the extensive and large-volume use of yuan, or Chinese renminbi, in the investment, production and trade of natural gas, to push for gas valuation and settlement in renminbi at the global gas market. With gasyuan established, the import of natural gas will cause yuan to flow abroad, while gas exports, through purchasing China-manufactured products, services and investing in yuan-denominated financial products, will cause yuan to flow back to China. Given that natural gas is expected to become one of the main bulk commodities in the world, the renminbi circulation chain formed via the renminbi-based natural gas valuation and settlement will considerably raise the share of renminbi in global trade settlement and thus boost its internationalization. By that time, China would have gained a corresponding “seigniorage” by taking advantage of renminbi’s dominant status, and lowered renminbi’s financing costs.

Above-mentioned conceptual definition of gasyuan is mainly based on the following considerations:

1) Supply-demand imbalances at the natural gas market have increased China’s comparative advantages.

A 2015 survey conducted by BP indicated that global natural gas reserves mainly concentrated in the Middle East, Eurasia and Africa. In 2015, the Middle East accounted for 42.8 percent of global gas reserves, ranking the largest region home to gas reserves, with reserves estimated to be used for 129.5 years^{*}. Due to the limitations of pipeline transportation, global gas trade has a strong regional characteristic. At present, the three major regions for global gas trade are North America, Europe and Asia-Pacific region. As a big gas consumer in the future, China needs to import natural gas in large volumes and its future gas trade is expected to continuously rise. Meanwhile, China’s comparative economic and geographical advantages bring it a favorable condition to set up a gas trading center. Through SWOT analysis and marketization evolution analysis, Tong Xiaoguang pointed out that China should adopt a comprehensive development strategy by “relying on a supply-demand pattern to gradually push for the establishment of a natural gas trade center; following policy expectations to energetically advance the building of a reserve system; taking advantage of comparative advantages to form a regional interest community; learning from foreign experiences to strengthen market-based reform and set up a regulatory system”^{**}.^② In terms of the development status quo of China’s gas trading market, Hu Aolin further pointed out that China enjoys certain advantages in pursuing a say

^{*} BP, Natural gas reserves. <http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/natural-gas/natural-gas-reserves.html>, Nov 15, 2016.

^{**} Tong Xiaoguang, Zhengjiong and Fangbo, “A Strategic Thinking on China’s Establishment of a Natural Gas Trading Center”, Natural Gas Industry, No 9, 2014.

in the pricing of global gas and setting up a gas market pivot in Northeast Asia, and offered a concrete development approach^{***}.

2) Financial attribute of natural gas accelerates internationalization of renminbi.

As a global leading natural gas trader and importer, it is reasonable to use China's currency, or renminbi, as a major gas transaction currency. The increasingly strong global gas demands and the rise of emerging economies will also promote the rapid accumulation of gasyuan. In the context of internationalization of the financial market and all countries extensively opening-up their domestic financial markets, natural gas as an investment commodity by itself is endowed with a financial attribute. The significant influences such a financial attribute on the gas price formation and pricing mechanism serve as an important factor to facilitate the rapid growth of gasyuan.

3) A powerful "power" attribute of gasyuan.

Mainstream economists hold that the main function of currencies lies in lowering market transaction costs and reducing risks and uncertainties and, as a kind of transaction medium and a price measurement unit, currencies are also mainly to resolve the problem of "efficiency" in economic operation; Considering that currencies bear a powerful resources and wealth redistribution capability, the power of "coinage" has always been a power all governments try to gain and dominate, which means currencies bear a born "power" attribute.

Similar to the logic of petrodollar that leads the dollar to become a global reserve currency, the development of gasyuan is also expected to promote internationalization of renminbi. In this sense, the formation of gasyuan and the establishment of a China-centered global natural gas trading center will inevitably result in interests struggling and balancing among countries.

III. Feasibility of advancing the gasyuan strategy

On Oct 1 2016, renminbi was formally included in the Special Drawing Rights basket of the International Monetary Fund, signaling another important step toward renminbi's internationalization. With the gradual implementation of the ① Hu Aolin, Qinyuan and Chen Xuefeng, "A Thinking on China's Natural Gas Spot Trading", Natural Gas Industry, No10, 2011; Hu Aolin, "How to Build China's Natural Gas Trading Market", Natural Gas Industry, No 9, 2014. 7 China-advocated Belt and Road Initiative, the process of renminbi's internationalization will further accelerate. This, along with the continuous transformation of the international economic structure, the gradual change of global consumption structure and ever-increasing demands for green and clean energy, will also cause renminbi transaction volumes with natural gas as the carrier to continuously rise^{*}. Considering that the share of natural gas will continuously rise in China's and global energy consumption and that natural gas will become one of the most important bulk commodities, the use of gas trade as an important platform for renminbi's internationalization will further raise its status in global trade settlement and thus accelerate its internationalization process. In view of the current background of international political economy and the trend of globalized energy development in the future, the advancement of the gasyuan strategy has its practical feasibility, which is reflected by the following three aspects:

(I) Stable growth of gas trade in the future will become a carrier of renminbi's internationalization.

A BP survey indicated that the daily natural gas output in 2010-2015 generally maintained a rising momentum. In spite of only a 1 percent growth in global energy consumption in 2015, natural gas output still reached 3.5386 trillion cubic meters the same year, an increase of 2.18 percent year-

^{***} Hu Aolin, Qinyuan and Chen Xuefeng, "A Thinking on China's Natural Gas Spot Trading", Natural Gas Industry, No10, 2011; Hu Aolin, "How to Build China's Natural Gas Trading Market", Natural Gas Industry, No 9, 2014

^{*} Aside from conventional gas, what that constitute natural gas also include such unconventional gas as shale gas, coal-bed methane, tight gas. In the post-Paris Accord low-carbon era, natural gas that is comparatively clean will inevitably play a more important role in economic and social development and is expected to become a blood vein of industrial civilization. So far, natural gas has become the world's third energy source only behind oil and coal.

on-year. At the same time, natural gas accounted for 23.8 percent of global primary energy consumption while oil and coal respectively accounted for 32.9 percent and 29.8 percent **. In the near future, gas consumption is very likely to surpass oil and coal to hold a dominant status in the global energy consumption market.

Emerging economies represented by China will become a main power of global gas consumption. A report published by a CNPC Economics & Technology Research Institute indicated that China's gas consumption was 191 billion cubic meters in 2015, increasing by 3.7 percent year-on-year, a new low in 10 years. However, while China's total gas consumption has slowed down, its dependence on gas imports has been rising. In 2015, China's gas import reached 62.4 billion cubic meters, with its ratio of dependence on gas imports rising to 32.7% *.

It is estimated that China will become the only country among the major natural gas consumers that depends on gas import and its future gas trade will keep a rising momentum. China's gas trading volume will increase from 15 billion cubic meters in 2010 to 226 billion cubic meters in 2035 and become the world's largest liquefied natural gas importer in 2035, with its LNG import expected to account for one-third of world's total LNG supplies. According to relevant calculations, China's additional gas demands are expected to account for 30.7 percent of the world's new demands from 2009 to 2020, and 25 percent from 2020 to 2030 **. By that time, China will be the only one of the five biggest gas consumers that depends on gas imports ***. With China's environment reaching or approaching its upper bearing capacity, it will attach more and more importance to the development of clean energy, leaving space for relatively fast growth of its gas trading in the future. The drastic growth of global and China's gas trade will offer the best carrier and also create a solid foundation and ideal conditions for internationalization of renminbi.

(II) LNG development offers more conveniences for gas trade and conditions for global gas trade.

With the improvement of pipeline infrastructure and the rising of LNG transportation capability, natural gas has gradually had conditions for long-distance and cross-regional trading. Prior to the 1960s, natural gas, as an energy commodity, was mainly consumed inside producing countries themselves. With the successive discovery of large gas fields, both the verified reserves and output of natural gas have been on the rapid rise, which has caused gas producing countries to gradually ease previous restrictions on their natural gas markets, and gas manufacturers to begin gas exports to neighboring countries. However, due to the limitations of pipeline transportations, global gas trade still carries a distinct regional characteristic. Currently, global gas trade has formed three major local markets, namely North American, European and Asia-Pacific markets. Of the three markets, North American and European markets are dominated by pipeline gas trade while LNG trade holds a minor part. The Asia-Pacific market is more complicated, with China mainly carrying out pipeline gas trade but also actively pushing for LNG trade, while Japan, the ROK and China's Taiwan basically depending on LNG trade to maintain the development of their gas industry.

At the current stage, the international gas market is still dominated by pipeline gas trade while LNG trade plays a lesser role, but the latter faces huge development potentials. According to the IRA estimation, LNG trade will increase from 15 percent of total global gas trade volumes to 40 percent by 2030. With the rapid construction of LNG infrastructure and cross-regional pipelines in the new century, the influences produced by the separation of producing areas from consumption areas on gas

** BP, BP Statistical Review of World Energy. June 2016, <http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>, Nov 10, 2016.

* CNPC Economics & Technology Research Institute, "A 2105 Development Report on Domestic and Foreign Oil and Gas Industry", <http://finance.huanqiu.com/roll/2016-02/8525161.html>, Nov 10, 2016.

** Jia Chengzao, Zhang Yongfeng and Zhao Xia, "Prospect and Challenges of China's Natural Gas Industry", Natural Gas Industry, No 2, 2014.

*** The five biggest natural gas consumer are the US, China, Russia, Iran and Canada.

trade have become smaller and smaller, and gas trade has gradually expanded from a local market to the global market^{****}. The establishment of a global gas market in the future will have to depend on short-term gas trade and the development of LNG trade. Due to conveniences in terms of transportation and storage, and more important, being free from local trade limitations, LNG is now well-positioned to have global trade.

(III) China's advantageous economic and geographic conditions facilitate the establishment of a regional or global gas trade center.

From a global perspective, China enjoys ideal geographic conditions for the establishment of a gas trade market. Its pivotal status in Central Asia's gas supplies and Northeast Asia's gas consumption has put China in an advantageous position to build a transnational gas pipeline network. The completion of the Central Asian pipeline and China-Myanmar pipeline will help China gain a gas import transportation capacity of nearly 200 billion cubic meters. At the same time, China has conducted gas cooperation projects with such three Central Asian countries as Turkmenistan, Uzbekistan and Kazakhstan. In 2006, China and Turkmenistan signed an agreement, which accorded China a drilling and exploration right of a large gas field in the right bank of Amu Darya, Turkmenistan. In 2008, China National Petroleum Corporation signed with Turkmenistan national oil and gas company a 30-year gas supply contract, which, after the construction of the west section of line 2 of China's West to East Gas Pipeline, has caused Turkmenistan to transport to China 30 billion cubic meters of gas since 2012 and will increase the volume to 45 billion cubic meters annually in years as stipulated by the contract. In 2014, Russia, after negotiations with China, agreed to the West Line and East Line projects in its gas transmission to China, of which the West Line has an annual transmission capacity of 30 billion cubic meters, while the East Line has an annual transmission capacity of 38 billion cubic meters.

In the meanwhile, China also enjoys relatively good geographic conditions and regional advantages in terms of LNG imports, given that Australia, Indonesia and Malaysia, three major emerging natural gas suppliers, are not distant from China's southeastern coastal regions, which can facilitate China's gas imports from them via sea transportation. With a continuous decline of international gas prices in recent years, the gas demands of main LNG importers in Asia have decreased, which, along with the large number of global LNG production lines now under construction, means there will be a sizeable LNG supply capacity at the future market. For China, this, undoubtedly, is an opportunity to considerably raise its gas supply capacity and offer enough guarantees for continuous transactions at the gas market. Given that the cost of gas transportation and storage is bigger than that of gas exploitation, there is small space for site choosing of gas trade and only those regions where pipelines, natural repositories and sea transportation routes converge are likely to form a gas delivery network. That means only countries in European continent, North American continent and Eurasian continent are armed with sufficient conditions to set up a complete gas delivery system while island countries and those regions without a broad market fall short of basic conditions for the establishment of a gas delivery center. In this sense, other Asian countries or regions, such as Singapore, Japan and Malaysia, are not armed with conditions to set up an independent gas trade market. Abundant gas supplies and huge gas consumption accord China favorable conditions to set up a regional and even global gas trade center.

Moreover, with the advancement of the shale gas revolution in the US, gas supplies in North America have considerably increased. The generally loose global gas supply has gradually enabled natural gas to become an independent energy category and made the previous model of global gas pricing being pegged to oil prices unsuitable to realistic development and needs. China should take advantage of its favorable economic and geographic conditions and emerging market opportunities to

^{****} Duan Zhaofang, "A Review and Prospect of World Natural Gas Development", China Mining Magazine, No 11, 2008.

set up a gas spot futures trading market so that it can gain a say in gas pricing and push forward the process of renminbi's internationalization.

IV. Concrete measures for pushing for the gasyuan strategy

At present, it is best time for China to set up a regional and even global gas spot and futures trading market. Mature trading system designing will enable China to become a gas pricing and trading center in Asia-Pacific and even the whole world. This, if true, will not only enhance China's influences in the world gas market, realize the de-pegging of gas prices to oil prices and create conditions for resolving the "Asian premium" problem in gas trade, but will also create an ideal carrier for renminbi to "go globally".

1) Establishing a Northeast Asian and even global gas spot and futures trading center. In view of China's advantages in gas consumption volume, production capacity and pipeline-based transportation facilities, the conditions for China to set up a regional gas spot and futures trading center has become increasingly mature. Such three Northeast Asian countries as China, Japan and the ROK, and Russia, Central Asian countries can start from negotiating gas spot trading on a bilateral basis and then gradually set up a Northeast Asian gas trading market (center), which will help China to set benchmark gas prices and form a renminbi-denominated gas trading 12 mechanism.

However, China must take into full consideration the interests of parties concerned in its efforts to pursue the participation of Russia, Central Asian countries, Japan and the ROK in China-led gas trading center. For Russia and Central Asian countries, energy trade with China, Japan and the ROK offers them strong economic complementarity. After the Ukraine crisis in particular, the US and European countries imposed a round of economic sanctions on Russia, prompting Russia to shift the focus of its oil and gas export eastward, and it is expected Russia will shift more oil and gas exports to China, Japan and the ROK. In recent years, oil and gas trade between China and Central Asian countries have also been on a steady rise. Strengthened oil and gas cooperation of Russia and Central Asia with China, Japan and the ROK will help them get a stable market for their abundant oil and gas resources; China, Japan and the ROK, in return, will also get better guarantees for their oil and gas supply safety and ensure the sustainability of oil and gas trading. Statistics shows that in 2013, the base price of the natural gas trade system that China, Japan and the ROK abide by, or Japan's average LNG cost insurance and freight (CIF), was \$16.17 per million British thermal units, nearly 1.5 times Germany's and Britain's imported gas prices and even six times gas prices in the US' Henry Hub^{*}. It can be seen that "Asia Premium"^{**} remains more outstanding in the gas market than in the oil market. As an important global gas importer, especially a LNG importer, Northeast Asia seriously lacks its say in the pricing power of global gas market. In this sense, the common gas trading market built by China, Japan and the ROK will help them struggle for a say in the pricing of international gas.

On July 1, 2015, Shanghai Petroleum and Natural Gas Exchange (SHPGX), a national energy trading center, was put in operation on a trial basis mainly for pipeline gas and LNG spot trade. The center will conduct both listed transactions and competitive price transactions for natural gas, liquefied natural gas, petroleum and other resource products. It also plans to have mid- and long-term spot transactions and financial derivative trading in the future, with the final aim of developing itself into a gas trading center in Asia-Pacific that matches the US Henry Hub and UK National Balancing Point (NBP). Undoubtedly, the establishment of an Asia-Pacific gas trading market with renminbi as the settlement currency will create conditions for gaining for China and even the Northeast Asian

^{*} Jiang Chunlin and Liu Dingjia, "An Important Step Toward Marketization of Gas Prices", Economic Information Daily, Jan 12, 2015.

^{**} "Asia Premium" refers to higher oil import prices Asian countries have to pay than the US and European countries do as a result of the different crude oil pricing models adopted by oil exporting countries in the Middle East toward different regions, out of their consideration over political, economic and other factors.

region a bigger say in the pricing of natural gas and offering a strong impetus for renminbi's internationalization.

2) Promoting construction of gas pipeline facilities and interconnectivity in Northeast Asia and Russia. Good infrastructure can effectively lower oil and gas transportation and trading costs, and strengthened construction of cross-regional oil and gas infrastructure serves as an important basis for promoting the establishment of an Asia-Pacific natural gas trading market. To build an Asia-Pacific gas trading market, China must strengthen the construction of gas pipelines and LNG storage and transportation facilities. At the same time, it also needs to increase efforts to push for the construction of gas infrastructure linking China, Japan and the ROK to Russia and Central Asian countries and promote their interconnectivity, and strengthen oil and gas exploitation and trade cooperation among them.

The ever-increasing improvement of China's gas pipelines and other facilities has offered relatively convenient conditions for the storage and delivery of gas futures market in Asia-Pacific. So far, China has built a trunk gas pipeline network of more than 100,000 kilometers, and formed three major channels – Northwest, Northeast and Southwest channels – for gas imports via land routes. Furthermore, due to considerably increased investment in oil and gas pipelines and LNG receiving stations in recent years, China's pipeline transportation and LNG receiving capacity has also continuously increased. This has offered reliable infrastructure conditions for China to set up a regional and even global gas trading center.

Considering Russia's increased gas exports to China, the construction of an undersea oil and gas pipeline alone that links China's Shandong or Liaoning province to the ROK and Japan will help the three Northeast Asian countries realize pipeline 14 interconnectivity after Russia's oil and gas pipeline is linked to China's pipeline network. Currently, China's academic circles widely hopes China's Daqing can import oil and gas from Russia and these imported oil and gas sources can be transmissible to the undersea oil and gas pipeline that links Weihai and Qingdao, in Shandong province, or Dalian in Liaoning province to the ROK and Japan *. Nevertheless, the academic circle in the ROK extensively hopes to build an oil and gas pipeline that links Vladivostok, Russia to the Democratic People's Republic of Korea, then is extended to the ROK and to China's Shandong province through constructing an undersea pipeline, which, along with China's domestic oil and gas pipeline network, can transmit oil and gas resources to China's energy consumption markets in the eastern coastal areas. Despite disputes existing among Northeast Asian countries over the route of the expected oil and gas pipeline, it is already their consensus to build such a pipeline to promote oil and gas facility interconnectivity between Northeast Asia and Russia and Central Asian countries.

3) Steadily advancing the reform of the domestic oil and gas industry and the foreign exchange management system. China boasts uniquely advantageous conditions for setting up a gas trading center with renminbi as the valuation and settlement currency, but it still faces numerous domestic policy and institutional obstacles in its bid to smoothly advance the establishment of such a center. Currently, the unitary market transaction subjects, insufficient legal guarantees, the lack of an advanced information service platform, imperfect contract transaction procedures and delivery arrangements, and the lack of enough renminbi convertibility have all restricted China's bid to set up and improve a gas trading platform. This makes it particularly important for China to steadily push for the reform of its domestic gas industry and foreign exchange management system.

First, China should promote diversification of gas trading subjects and fair opening-up of its gas pipeline operations. As a big gas importer, China's gas trading subjects have not realized diversification, and large-size oil and gas enterprises, due to State regulation and the country's

* Liu Xianyun, "What does Russia's Eastward Focus of its Oil and Gas Exports Bring?" <http://energy.people.com.cn/n/2014/1208/c71661-26170096.html>, Nov 10, 2016.

integrated operation tactics for upstream and downstream sectors, are basically reluctant to participate in gas futures trading. The failure to fully open up its gas import power will make China unable to form an influential regional and global gas trading market. Given large numbers of global gas import sources, the opening-up of the country's gas import power will unlikely lead to international oligopoly as in the iron ores sector. At the same time, China needs to gradually push for the reform of gas pipeline operation to ensure the sector's opening-up to a third party in a fair manner.

Second, China should perfect the domestic gas pricing mechanism so that the market can play a decisive role in resources distribution. At the current time, China adopts a government-guided pricing mechanism for the domestic gas market and fails to put in place a marketized price formation mechanism, which is not only unfavorable to setting accurate gas prices, but also unhelpful for China to gain greater influences and a bigger say in global gas pricing. From the perspective of correctly transmitting a price signal and stabilizing market supply, it is necessary for China to reform its domestic gas pricing mechanism.

Third, China should promote gradual opening-up of its capital accounts so as to create needed foreign exchange conditions for carrying out renminbi-denominated gas trading. The country needs to continuously push renminbi to go globally and raise the internationalized level of its financial sector while advancing the reform of marketized renminbi exchange rates in an orderly manner and gradually open up its domestic capital market. When it comes to the implementation of concrete policies, China can successively launch experimental measures in some free trade zones.

All in all, China should actively advance various domestic reforms, accelerate international gas cooperation and better make trading layouts and contract designing to create conditions for launching a renminbi-denominated gas trading market in Asia-Pacific as soon as possible. In so doing, China can, by using gasyuan as the carrier, speed up the process of renminbi's internationalization and facilitate gasyuan's development into an important prop of China as a responsible power.

V. Challenges and opportunities facing China's gasyuan strategy

With the acceleration of renminbi's internationalization and the ever-increasing share of natural gas in China's and global energy consumption, natural gas is expected to become one of the most important commodities in the world in the future, and China can take advantage of this opportunity to further boost the status of renminbi in the settlement of global trade. Certainly, gasyuan's internationalization will not be always even or barriers-free, and it will encounter numerous challenges ahead while boasting opportunities.

(I) Challenges to the gasyuan strategy

1) *Domestic factors.* First, insufficient domestic gas output and consumption puts restrictions on the building of China's gas trading market. The establishment of a Northeast Asian and global gas trading center only comes after there are considerable gas trading volumes, which can accurately reflect market supply-demand relations and make trading prices become regional or global benchmark gas pricing. However, due to relatively backward gas exploration and exploitation technologies and the lack of well-developed policies on the gas industry, China's gas reserves have not realized efficient exploration and exploitations, its gas utilization scale is still incommensurate to its economic strength and its gas market potentials are yet to be fully tapped.

Second, China still faces quite a few obstacles if it wants to turn potential gas market, resource and geographic advantages into realistic productivity and competitiveness, which mainly include: 1), on the upstream front, the country's gas exploration and exploitation capabilities remain insufficient and gas importing subjects are excessively unitary; 2), on the midstream front, the country's gas pipelines are still monopolized by three major oil companies, and gas storages are seriously insufficient; 3), on the downstream front, the country's gas supplies cannot satisfy gas demands, its

domestic price mechanism is unreasonable, its regulatory system is unsound and its peak-shaving problem still remains outstanding.

2) *International factors.* First, there isn't enough political trust among Northeast Asian countries, which has caused difficulties to mutual economic interests coordination. The push for the 17 construction of a common gas trading market in Northeast Asia is an important means to promote the establishment of gasyuan. The building of such a market conforms to the common security and interests of China, Japan and the ROK and also enjoys a bright prospect, but the lack of enough political trust and difficulties to coordinate mutual economic interests will give rise to certain obstacle on the way to the target.

Second, resistances from the US and gas exporting countries may arise. The advancement of China's gasyuan strategy may be viewed as a move to threaten the dollar's hegemonic status and the US' economic interests. The US will undoubtedly acutely detect China's such a move and thus employ economic or other means to block the use of renminbi by gas trading countries to replace the dollar for the valuation and settlement of gas trading. At the same time, the move will also weaken the influences of the US on Japan and the ROK, its two Asian allies, thus causing impacts on the US' diplomatic interests, a result undesirable to Washington. Out of their considerations for diverse interests, gas exporting countries do not expect China to set up a unified pricing power for gas trading in Northeast Asia. Such kind of disputes is actually a process of interests compromise and balance among different countries, so we should not overstate the obstructions it may bring about.

Third, China still lacks a strong military power to prop up such a move. Currently, the US is the world's most powerful military power, and its super-strong military muscle constitutes a forceful support to the dollar's hegemonic status. Relevant researches show that a majority of countries or regions where US troops are stationed have adopted the system of pegging their exchange rates to the dollar or a full dollarization system^{*}. So far, China has not developed a military strength that can match that of the US, so it has no binding force to push for the use of renminbi as the settlement currency of gas trading. This may be the largest obstacle China has to overcome in its efforts to promote the gasyuan strategy. However, such kind of obstacle is not insurmountable. On the one hand, with the contraction of the US' global military deployment, the US' overseas military influences are on the wane; on the other hand, China can completely take advantage of mutual benefit and win-win results with gas trading countries in the economic field to gain their supports for the establishment of a gas trading center. In addition, given that the share of petroleum in total energy consumption volumes is not expected to considerably decline within a rather long period in the future, gasyuan will unlikely replace petrodollar within a short period. In other words, petrodollar will coexist with gasyuan within a rather long period in the future. In this sense, the gradual advancement of China's gasyuan strategy will not constitute a realistic challenge to the dollar's international status.

(II) Opportunities for the gasyuan strategy

With the world's transformation to clean energy as well as the discovery of large volumes of gas reserves and a considerable increase in gas supply, gas will further rise in its percentage of global energy consumption volume. Natural gas is expected to rise to a parallel status with oil and even surpass oil to become a dominant fossil energy in the world, which will possibly bring the humankind to an energy era of gas within a certain period of time.

^{*} Given that the Middle East is abundant in oil and its strategic and geographic position is of great importance, the US has stationed large numbers of troops in Saudi Arabia, Kuwait, United Arab Emirates, Bahrain and Turkey. To gain military protection from the US, it is reasonable for above-mentioned oil exporting countries to use the dollar for oil trade settlement. In addition, the US also stations massive military forces in such Asian countries as Japan, the ROK, Australia, Thailand and Singapore, which means it is within reason for the US' such allies or followers whose national security strategy is closely bound with the US and has also been under relatively large military and political influences from the US, to adopt an exchange rate system and a floating exchange rate system pegged to the dollar.

At present, global gas supply remains relatively relaxed and natural gas has already become a separate energy category, making its pricing and transaction mode being pegged to oil prices unsuitable for actual conditions. The shale gas revolution in North America has led to a continuous rise in the explored shale gas reserves in the US and Canada, causing part of previous LNG exports to North America to shift to Japan and the ROK. The two countries have even acquired contracts of LNG exports from the US, which, despite not being in large volumes, have referred to LNG prices in the US Henry Hub for price-setting. Besides, Northeast Asia also has had more and more LNG imports from Qatar, Australia and other natural gas exporting countries, causing impacts to Northeast Asia's traditional gas pricing practices. Against this backdrop, China, Japan and the ROK in Northeast Asia urgently need to change the extent gas pricing mechanism, set up a regional gas trading market and take advantage of their own powerful purchasing power to influence gas prices.

The dollar hegemony, established with petrodollar as an important prop, and the US's egoistic monetary policy and market manipulation have always been under worldwide controversies. By taking advantage of petrodollar, the US has not only acquired the "seigniorage" and an absolute influence and manipulation over oil prices that bear huge wealth distribution functions, but has also greatly raised the flexibility and self-deciding power of its monetary policies. Any time when the US economy shows signs of recession, its loose monetary policies will cause excessive liquidity to export to the rest of the world; when there are signs of the US' economic recovery, monetary tightening and dollar appreciation, dollars would again flow back to the US. The creation of euro has to some extent formed a kind of balancing power to the dollar. Russia and Middle Eastern countries have also been exploring oil and gas trade settlement in non-dollar currencies. After the Ukraine crisis, US-Russia ties tended to be more strained, and Russia have shown stronger desires to break the dollar's monopolistic status. In this sense, to push for renminbi-denominated gas trade conforms to international calls to set up an international financial and monetary system with a more reasonable structure.

VI. Conclusion

China boasts a huge gas production potential and a colossal gas consumption market and thus is a gas consumption hub in Northeast Asia. It has gas supplies from Central Asia and Russia, is linked by the China-Myanmar oil and gas pipeline and enjoys particular conveniences for pipeline gas and sea LNG imports. Uniquely favorable geographic conditions put China in an advantageous position to build a trans-national gas pipeline network and set up a Northeast Asian gas trading center. On this basis, China's effort to advance renminbi-denominated cross-border gas settlement and trading will greatly expand the space and scope of renminbi's use, facilitate renminbi's internationalization and promote the reform of its domestic gas industry and the low-carbon transformation of its energy structure.

The situation of global oil and gas supplies exceeding demands and the focus of Russia's oil and gas exports shifting eastward has enhanced the capability of China, Japan and the ROK acquiring oil and gas resources and pursuing a bigger say in gas pricing, thus offering good opportunities for Northeast Asia to create a common gas trading market. Despite inadequate politically mutual trust and difficulties to coordinate economic interests in trilateral cooperation, China is still likely to gradually advance cooperation with Japan and the ROK in various fields and set up a regional gas trading market to lay a solid foundation for the implementation of the gasyuan strategy.

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