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The Northeast Asian Economic Review

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While it includes studies on all aspects of economy and society in Northeast Asia, research in areas related to ERINA's research activities is particularly welcome.

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The Special Edition on Energy Issues in Northeast Asia

Tomoyoshi Nakajima
Head of the Editorial Committee

In this issue we raise as the featured topic energy issues in Northeast Asia. Russia, a major energy-supplier country in global terms also, is located in Northeast Asia, and in addition Mongolia also has become a major coal-exporter nation. Meanwhile, China and Japan, which are major energy-consumer nations, are also situated in Northeast Asia. When discussing the development of the Northeast Asian region, energy issues can be called an integral area. ERINA has been furthering "Northeast Asian Energy Security" research as part of its international collaborative research to date. In this special edition, against the backdrop of such achievements and personal networks, we have received papers contributed by specialists on energy issues from different parts of the world.

As regards content, from ERINA Tadashi Sugimoto has authored a paper on the Sakhalin energy development projects. From Jane Nakano of the Center for Strategic and International Studies we have received a contributed paper focusing on the natural gas and nuclear power sectors, regarding Sino–US energy cooperation. From Keun-Wook Paik of the Oxford Institute for Energy Studies we have received a contributed paper regarding Sino–Russian energy issues. We would be very pleased if this special edition, with such rich content, is able to offer widely the opportunity to raise understanding of and interest in energy issues in Northeast Asia.

U.S.-China Cooperation in Natural Gas and Nuclear Energy: Diverging Energy Profiles and Emerging Opportunities

Jane Nakano*

Abstract

Some notable divergence is emerging in recent years between the energy profile of the United States and that of China. The robust production of unconventional oil and gas is increasing the level of energy self-sufficiency for the United States while China's continued economic growth is increasing its import dependence. Political drive for bilateral cooperation in the area of clean energy, combined with comparative advantages arising from the diverging energy profiles, is bringing the two countries closer to cooperate on nuclear energy and shale gas.

Keywords: *United States, China, natural gas, nuclear energy, clean energy cooperation*

1. Introduction

As President Barak Obama gained a mandate to lead the United States for the second term and President Xi Jinping ascended to the helm of government in China, the two countries have a renewed political commitment to cooperation on clean energy and climate. In spite of the high level support for bilateral cooperation, the story of bilateral clean energy relations is complex and often embedded with tensions. Both countries see clean energy sources like renewable energy as a focus area for technology development and manufacturing, and similarly strive to expand global market share for their renewable energy technologies and equipment. For example, today the two economies are competitors in both solar panel and wind turbine industries.

Meanwhile, there are also some important differences between the US and Chinese energy economies. The development of unconventional energy is increasing the level of energy self-sufficiency for the United States as well as the US potential as an energy supplier in the global market. The *shale gas* revolution has also helped reduced the level of U.S. greenhouse gas emissions from its electricity sector. Meanwhile, China's energy consumption and import dependency continue to rise, fueled by economic and population growth and modernization trends. In an effort to address its energy import dependence and to achieve a more sustainable path of economic development, the Chinese energy policy places particular focus on the development of natural gas and nuclear energy, in addition to renewable energy. This focus was renewed, for example, in the country's White Paper on Energy Policy, released in October 2012. These areas are important to the United States, too. In fact, there is an emerging complementary nature in the two countries' energy profiles. Nuclear energy and natural gas have thus risen up as important dimensions in U.S.-China energy relations today. In fact, bilateral cooperation in nuclear energy and natural gas is born out of increasing divergence in the energy profiles of the United States and of China.

2. Nuclear Energy

Nuclear energy is a low-carbon emitting source of electricity that is commercially and technologically proven. Increasing focus on global climate change and clean energy technologies has kept nuclear energy among the mix of viable electricity sources.

2.1. US Scene

With 100 reactors online, the United States is home to the largest commercial nuclear fleet in the world. Nuclear energy provides about 20% of total national power generation capacity today. Since 2000, 73 reactors have received a 20-year license extension, including 11 units since the Fukushima accident in March 2011 (Nuclear Energy Institute 2013). Fourteen license renewal applications are currently under review. More significantly, the US Nuclear Regulatory Commission (NRC) issued in February 2012 the first construction and operation permit since the Three Mile Island accident in 1979. The Vogtle Project in Georgia will have two advanced nuclear reactors—Westinghouse AP-1000—in commercial operation by 2017/2018. Later in the same spring, another project received the NRC permit to build two AP-1000 reactors, in South Carolina. These four units brought the total number of reactors under-construction to five in the United States.

Nuclear energy is among the mix of clean energy sources promoted by the Obama Administration. In the immediate aftermath of the Fukushima nuclear accident, President Obama expressed support for nuclear energy. The US nuclear industry, however, faces a significant headwind today due primarily to large construction costs and the unresolved public policy question over spent fuel management. Also, the availability of economically competitive fossil fuel alternatives is compounding the challenge. Low price natural gas is putting pressure on the economic viability of nuclear reactors—as well as aging coal-fired power plants—across the country. In recent years, several US utilities have announced decision to decommission commercial nuclear reactors well short of when their operational licenses expire. The Oyster Creek plant in New Jersey, the Kewaunee plant in Wisconsin, the Crystal River plant in Florida, and the Vermont Yankee plant in Vermont all had valid operational licenses and their owners have cited the fierce competition from other energy sources among key reasons for their early decommissioning.

The US nuclear industry is now focused on Small Modular Reactors (SMRs) as a pathway to reverse its declining fortune and to maintain its global competitiveness. SMRs offer a range of benefits, including the ability to match smaller grid capacity in remote locations or developing countries, and smaller upfront investment requirements for construction. In particular, the size of the upfront investment appeals to US utilities. Unlike cohorts in many other countries, the US power sector is comprised of over 3,000 electric utilities and their average financial capacity is quite small—certainly not large enough to comfortably undertake nearly a 10 billion dollar commitment commanded by construction of an average 1,000+ megawatt nuclear reactor.

A number of US reactor builders are designing SMRs and the industry efforts are matched by US government support. The US Department of Energy announced in March 2012 a cost-sharing grant to companies that would facilitate design certification and licensing for up to two SMR designs over five years in efforts for SMR commercialization by 2022. Last fall,

Babcock and Wilcox won the first round of selection. The second winner will be determined by January 2014. Meanwhile, US stakeholders—including energy policymakers, nonproliferation experts and industry executives—continue to mull the implications of shrinking nuclear power generation on US national security and energy security without an obvious solution.

2.2. Chinese Scene

The picture could not be more different for China's nuclear industry. With 30 reactors under construction—roughly equivalent to 40% of the global nuclear construction, China has the fastest growing nuclear energy program in the world. For a country whose commercial nuclear power generation program took off only under the Tenth Five-Year Plan (2001-2005), the Chinese nuclear sector has a remarkably ambitious expansion plan (World Nuclear Association 2013). China has brought 17 reactors online that represent about 1 to 2% of total national electric capacity today.

Nuclear power production is a key focus for China, whose energy mix is dominated by coal, and reducing coal's share is a priority in China's broad energy strategy. For example, the mandatory 20 percent energy intensity reduction target in the 11th FYP (2006-2010) and the calls under the 12th FYP (2011-2015) for a 16% reduction in energy intensity as well as a 17% reduction in carbon intensity strongly supported the expansion of nuclear power generation.

Following the Fukushima nuclear accident, China suspended government approvals for new nuclear plants while undertaking safety reviews. Due to the resulting construction delay, China's current installed capacity target for 2020 is 58 GW—far short of their pre-Fukushima aspiration to 86 GW (World Nuclear Association 2013). Nonetheless, China remains committed to nuclear energy and the country's White Paper on Energy Policy stipulates plans to "invest more in nuclear power technological innovations, promote application of advanced technology, improve the equipment level, and attach great importance to personnel training" (Information Office of the State Council 2012). The country's targets for installed capacity may rise to as much as 200 GWe by 2030, and 400 GWe by 2050 (World Nuclear Association 2013).

Chinese aspirations, however, face challenges in terms of technology development, institutional capacity, and human capital development. On the technology front, China has ambition to become a global reactor supplier and has been striving to indigenously develop advanced reactor designs that are in line with what is produced and sold by globally established suppliers. However, roughly half of the units under construction prior to the Fukushima nuclear accident were based on designs originally developed in the 1960s and they do not capture many advances that have been made available in the newer reactors. Because nuclear reactors generally operate for roughly half a century, building today the reactors developed several decades ago would mean that such a fleet of reactors would be about a century behind. If there were such a thing as a positive consequence of the Fukushima accident, however, China introduced a new nuclear safety plan after the accident and the stricter standards called for under the plan will likely facilitate phasing out older designs (Zhou 2012).

Also, institutional capacity has been another area for improvement. Concern is growing over a gap between the pace of nuclear power expansion in China and infrastructural capacity and human capital requirements. For example, China is yet to finalize and unveil an atomic energy law which has reportedly been under consideration since the 1980s. Additionally, the effectiveness of its nuclear regulators and the lack of human resources have been cited as key

concerns (World Nuclear Association 2011). For example, China is said to need 25,000 additional nuclear experts by 2020 (Kong 2010).

2.3. Civilian Nuclear Energy Cooperation

The US and Chinese governments have enjoyed a wide scope of cooperation in the nuclear energy field, covering nuclear energy technology, safeguards and security, spent fuel management, emergency management, radiological security as well regulatory affairs. For example, under the auspices of the *U.S.-China Peaceful Uses of Nuclear Technology (PUNT) Agreement,* signed in 1998, the two countries cooperate on technology matters for the current fleet of operational reactors and the research and development of advanced civilian nuclear technologies, such as fast reactor technologies. Also, since 1981, U.S. and Chinese nuclear regulators have been engaged in the exchange of information and specialists, as well as collaborative research and joint seminars on matters including assessment and inspection of construction, operation and decommissioning, emergency preparedness and radiation protection (U.S. Nuclear Regulatory Commission 2008).

Bilateral cooperation is deepening and expanding especially since the Chinese purchase of Westinghouse designed AP-1000 reactors in 2007. For example, personnel training have always been a key part of the bilateral cooperation and the NRC has been hosting Chinese regulators, but following the AP-1000 sale, the NRC has also sent several resident inspectors to China to gain lessons learned from ongoing AP-1000 construction projects in China (Nuclear Energy Agency 2012).

The purchase in 2007 of Westinghouse developed AP-1000 reactors was a significant development for China. The decision to deploy reactors that had not yet been certified by the US regulators presented both a risk and opportunity to the Chinese. Yet, in the end, the Chinese determined that the value of the AP-1000 reactors to its ongoing efforts to develop advanced reactors outweighed the risks associated with serving as a test bed for this new reactor design. Construction of the advanced pressurized water reactor (PWR) thus started in 2009, and the Sanmen Unit 1 in China's Zhejiang Province is slated to be the world's first AP1000 reactor to commence operation in 2014.

This development brought the nuclear industry of the two countries closer than ever before. For example, Westinghouse has been partnering with State Nuclear Power Technology Corporation (SNPTC) and Shanghai Nuclear Engineering Research & Design Institute to jointly develop a AP-1000-based reactor, which China hopes to begin exporting later in this decade (World Nuclear News 2012). Moreover, Westinghouse and SNPTC now have plans to develop SMRs that are based on Westinghouse's SMR technology with the aspiration to market them globally.

The United States has the wealth of regulatory and operational expertise as well as the design capability, yet the US nuclear industry has lost the robustness it once had in manufacturing and deploying nuclear reactors. In contrast, China has a growing nuclear energy sector with a strong potential for exporting its domestically developed reactors yet is short of regulatory and operational expertise. Notwithstanding the competition that will likely arise as China's nuclear industry matures, the nuclear industries of the two countries are currently in a highly complementary situation, yielding cooperation in both public and private sectors. This cooperation will likely continue for some decades.

3. Natural Gas

Natural gas markets around the world have experienced dynamic growth and transformational change over the last several decades, driven by the advent of U.S. shale revolution. With its lower carbon emitting profile than coal, natural gas is an increasingly attractive energy source for economies around the world, including the United States and China.

3.1. US Scene

Only a decade ago, the United States was expected to become increasingly reliant on natural gas imports. The Energy Information Administration's (EIA) 2003 forecast suggested nearly a 50% rise in domestic natural gas demand to 34.9 trillion cubic feet (tcf) in 2025, and a production decline to 22.5 tcf in the same year (EIA 2003). The domestic natural gas outlook could not be more different today. The success and scale of this development has fundamentally reshaped the US gas market. Shale gas, which accounted for a negligible share of total US gas production a decade ago, now makes up roughly a third of domestic gas output. By 2035, this share is expected to grow to about half of domestic production.

The successful development of shale gas has had several key implications for the US economy. In the power sector, natural gas has become a viable fuel choice, facilitating the retirement of aging coal-fired power plants and nuclear power plants. The fuel-switch in the power sector, combined with the economic downturn of recent years, has lowered the level of greenhouse gas emissions in the United States. Shale gas development has also spurred investment interest in manufacturing sectors that rely on natural gas feedstock, as well as investment interest in transportation related natural gas fueled technologies and infrastructure. Additionally, the United States is now expected to become a net natural gas exporter by 2020. Natural gas producers and liquefied natural gas (LNG) terminal project stakeholders are eying natural gas markets abroad as important outlets for the commodity they believe to be undervalued.

3.2. Chinese Scene

Natural gas has emerged since the early 2000s as a fuel option that may help the Chinese leadership address the country's growing energy import dependence and environmental concerns. China's domestic natural gas production has been on the rise—27.2 billion cubic meters (bcm) in 2001 to 94.5 bcm in 2010 (BP 2010)—although the demand continues to outstrip supply. China plans for the share of natural gas in total energy requirements to reach 8% by 2015 and 10% by 2020. Shale gas can play an important role in the government efforts to foster natural gas use in the country. A 2013 assessment of international shale oil and gas resources by the EIA cited technically recoverable shale gas resources in China at 31.58 tcm (1,115 tcf), making China the top resource holder in the world. The Chinese government appears eager to capitalize on this development. China aims for an annual production level of 60–100 bcm (NDRC 2012), which would be equivalent to the entire volume of natural gas the country produces today.

China's shale gas industry, however, is still in a nascent stage and the road to successful commercialization may be long and winding. First, Chinese geology is believed to be more

difficult for shale gas extraction. For example, Chinese shale formations lie much deeper than their American counterparts, thus raising the cost of extraction. Also, their high clay content renders it difficult for Chinese shale formations to shatter during the injection process and, thus, lowers their productivity. The lack of technology and domestic expertise add to the challenge China faces in exploiting its shale gas resources. The US shale gas revolution has resulted from a confluence of technological, economic and regulatory factors, but the advancement in technologies and accumulation of expertise were two of the most crucial factors. Technological advancements in hydraulic fracturing and horizontal drilling, as well as the use of real time integration of down-hole data have immeasurably expanded the productivity of shale gas plays in the United States. Moreover, the ability to manage and apply reservoir-specific technologies—which the US experts gained through the first-hand experiences over several decades—was essential to unlocking the shale gas potential in the United States.

Additional hurdles for China may include price controls on natural gas, which slows the deployment of natural gas—conventional or unconventional—by forcing companies to import gas at a loss, as well as the country's natural gas pipeline system, which is already committed to carrying conventional gas supplies. China is showing some progress in shale gas infrastructure development in that China National Petroleum Corporation announced in June 2013 its decision to build the country's first ever pipeline dedicated to shale gas transportation. But, the pipeline network needs to expand further if the country wishes to transport newly found shale gas to capitalize on its resources.

3.3. Natural Gas Cooperation

The launch of the United States-China Shale Gas Resource Initiative in November 2009 was a dawn of high-level bilateral engagement on shale gas. Announced by President Obama and then Chinese President Hu Jintao, the initiative covers resource assessment, technical cooperation, investment promotion, study tours, and workshops. The two countries have also come to exchange insights into matters associated with regulatory and environmental framework that are considered essential for the sustainable development of shale gas.

The private sector is an integral part of bilateral engagement over shale gas, just as it is over nuclear energy. US industry experiences with shale gas and the shale gas resource wealth in China present a multitude of opportunities for the two economies to engage. This engagement encompasses investments as well as trade between the two countries.

First, political stability and a transparent legal system have illuminated the attractiveness of US shale gas for investors around the world, including Chinese. Since 2008, U.S. shale plays have attracted over $133.7 billion, including $26 billion from 21 joint ventures between U.S. and non-US companies (EIA 2013). Also, countries like China that are considering unlocking the economic potential of domestic shale gas resources see involvement in US shale projects as an opportunity to shorten their technological learning curve.

In November 2010, CNOOC Ltd., purchased assets in the Eagle Ford Shale Basin in South Texas for $1.08 billion from the US company Chesapeake Energy Corporation. This development was followed by the CNOOC acquisition of one-third of Chesapeake Energy's Niobrara shale project in Colorado and Wyoming for $570 million two months later (Polson and Duce 2011). Momentum appears to be picking up since the beginning of this year. In May 2013, Sinochem of China entered into a joint venture with Pioneer Natural Resources—a US energy company based

in Texas—for $1.7 billion and acquired a 40% stake in the Wolfcamp shale play in West Texas (BusinessWeek 2013). In July 2013, Sinopec closed a $1.02 deal with Chesapeake Energy Corp. to purchase a 50% stake in an Oklahoma field (Chesapeake 2013).

Second, the Chinese shale sector presents opportunities to US and western oil and gas companies and oilfield service companies that wish to capitalize on their shale gas expertise in China today. China's shale industry is at a nascent stage where a significantly limited number of wells have been drilled thus far.

Since early 2012, US-based Chevron has been exploring for shale gas in Guizhou Province (Guo 2012). Also, ConocoPhillips—another US-based multinational energy company—is undertaking with Sinopec a joint study on unconventional oil and gas development, including resource surveys and test well drilling in Sichuan Province (Zacks Equity Research 2012). Other international oil and gas companies are carefully assessing their business prospects in China. BP—a multinational energy company based in the United Kingdom—is working with Sinopec to conduct risk assessments in Kaili deposits in Guizhou Province (Bai and Chen 2010), while Anglo-Dutch energy company Royal Dutch Shell and PetroChina, a subsidiary of China National Petroleum Corporation, have signed a 30-year agreement to appraise and possibly develop shale gas reservoirs in Sichuan Province (Oster 2010). As for service companies, US-based Baker Hughes joined forces with Honghua Group, China's largest oil-drilling equipment exporter, to assess shale gas prospects in China in December 2013 (Guo 2013). Also, Anton Oilfield Services Group of China sold a 20% stake to Schlumberger—a French company with a significant presence in the United States—as part of the two companies' ongoing efforts to develop drilling fluids and well-cementing services (Hart 2012).

Lastly, the US shale revolution presents natural gas trade opportunities between the two economies. In terms of LNG export approval, the current US law differentiates the export projects only by whether or not the project destination economy has a Free Trade Agreement (FTA) with the United States. Of the 18 economies that have a FTA with the United States requiring national treatment in natural gas trade, only South Korea and Chile are in the top 15 consumers of global LNG supplies.

Potential importers, including the Chinese, are attracted to the prospect of a gas trade that is based on a more flexible pricing term linked to the Henry Hub pricing point, as opposed to the traditional one linked to the global oil price level. There are some significant price differentials between the North American and Asia-Pacific gas markets today: gas prices are about $4 per million British thermal unit (mmBtu) in North America, and $13–$16/mmBtu in the Asia Pacific. This price differential—even after costs incurred for liquefaction and shipping raised the price of North American natural gas delivered to Asian markets—make the prospect for exports to Asia particularly attractive to many producers in the United States as it would arguably drive up the currently low price of natural gas in the United States and create jobs in their industry.

Moreover, LNG import from the United States can bring about supply diversification benefits. Asia, including China, is forecast to account for nearly two-thirds of global LNG demand growth through 2030. China's natural gas imports are sourced half from pipeline gas and the rest in the form of LNG, where traditional LNG suppliers like Australia, Qatar and Indonesia lead the pack (EIA). The addition of US natural gas supplies can further the Chinese sense of energy security through supplier diversification.

4. Conclusion

Nuclear energy and natural gas are important parts of the US and Chinese energy economies today. These energy sources are seen to advance energy security and clean energy objectives of policymakers in the two capitals today. However, the industry landscape presents different strengths/advantages to the United States and China, respectively. The US nuclear industry has a wealth of expertise that is left underutilized today while the Chinese nuclear industry faces its expansion vision that surpasses its institutional and technological capacities. The contrasting situations are bringing together scientists, and regulators as well as business executives from the two countries. As for natural gas, the successful commercialization of shale gas resources in the United States and China's urgent tasks to address severe air pollutions and rising energy import dependence are starting to generate investment and trade opportunities between the two. The United States and China may find each other competitors in the future, but there is much to be gained by both economies through cooperation in nuclear energy and natural gas fields today.

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Sino–Russian Energy Relations: Heading for a new era?

Keun-Wook Paik ,* with Miyeon Oh[1]

Abstract

Sino-Russian energy relations have witnessed a series of drastic changes during the last ten years, but are set to experience a huge expansion in terms of both scope and degree in the coming ten years. Sino–Russian energy cooperation is being driven by China's necessity of taking the maximum crude supply from Russia, while the continuously delayed Sino–Russian gas price-deal became the main stumbling block for Sino–Russian energy cooperation. The scale of the bilateral energy cooperation will expand hugely once a compromise on the long-delayed gas price-deal is made. This price-deal breakthrough will usher in a new era of Sino–Russian energy cooperation. On top of this, Sino–Russian coal and electricity cooperation is gaining momentum, and the scope of Sino–Russian energy relations will likely broaden rapidly and its contribution to the trading volume of both countries will be significant. One thing certain is that the current boundaries of Sino–Russian energy cooperation will expand substantially in the coming years and the implications towards regional and global politics and energy trading will not be small.

Keywords: Russia; China; oil, gas and energy cooperation

1. Review of Sino–Russian Oil and Gas Cooperation during the 1990s and 2000s[2]

1.1. Oil Cooperation

Sino–Russian energy relations during the last two decades have witnessed many ups and downs. The preparation process that during the 1990s started to build the groundwork for bilateral energy cooperation continued until the first half of the 2000s, but Sino–Russian oil and gas cooperation during those periods produced very few concrete results. There were a number of meaningful deals in the middle years of the second half of the 2000s, and cooperation began to produce some tangible achievements, even though these were still not of the magnitude hoped for during the 1990s. The most tangible achievement was the completion of the first section of the Eastern Siberia–Pacific Ocean (ESPO) oil pipeline at the end of 2009, along with the spur pipeline to China at the end of August 2010. The second stage of the pipeline was completed at the end of 2012, and according to Nikolay Tokarev, CEO of Transneft, "the American market is receiving 35% of the oil through Kozmino, the terminal of the ESPO, Japan is receiving another 30%, China 25%–28%, and the rest goes to Singapore, Malaysia and South Korea" as of December 2012. In 2013, the total volume was projected to reach 36 million tonnes per year (mt/yr).[3]

Even if Russia manages to secure a 50-mt/yr crude supply for the ESPO, there is no guarantee that China would get a higher allocation of Russian oil exports from Kozmino because other Northeast Asian consumers such as Japan and the ROK are anxious to secure bigger volumes of Russian supply. However, the Sino–Russian summit in March 2013 and the subsequent meeting in St Petersburg in June 2013 gave the highest priority to the increase of the crude supply to China. Why?

Due to the decline of production from oil fields in the three northeastern provinces (Heilongjiang, Jilin and Liaoning) in China, particularly the decline of the Daqing field, the crude supply from Russia to Heilongjiang was China's highest priority. Even though the rate of decline in Daqing production had slowed somewhat, Chinese energy planners were anxious to maximize the volume of Russian imports in order to diversify Daqing's sources of oil supply. In view of China's heavy dependence on oil imported by sea, pipeline supplies became a matter of urgency for the Chinese planners as part of their diversification strategy.

Two factors have caused oil sector cooperation to receive the highest priority in Sino–Russian energy relations. First of all, China had no choice but to enter into negotiations on crude oil imports from Russia due to a sharp decline in production at the Daqing oil field. Even though the decline in the production rate was not as severe as the early projections, Beijing's planners had to find an alternative supply source and Russian crude supply by pipeline was an ideal option. Since some of the refineries in the northeastern provinces had already been refurbished to receive Russian crude oil, China had to secure at least a minimum volume of crude oil from Russia. Second, the price negotiations on the crude deal between China and Russia did not pose any major obstacles (even though there was a renegotiation of the original price agreement in the wake of the crude oil price increase). Since international oil pricing had already been accepted in China, there was no difficulty in finding a price formula that was mutually acceptable to both countries. From the Chinese leadership's viewpoint, the reliability of crude supply was the top priority and the authorities in Beijing were ready to take any steps necessary to increase the volume of imports from Russia. In short, Sino–Russian oil cooperation was driven by China's need to secure its crude supply from Russia. This will remain very strong in coming decades.

Sino–Russian oil cooperation in the 2000s can be summarised as follows:

- China, very much disappointed by the failure of the Angarsk–Daqing pipeline during the first half of the 2000s, did not fully understand the internal and external political dynamics which led Russia to take this decision;
- But a desperate oil supply need, and the lack of substantially large-scale alternatives (in Central Asia) forced China to commit herself to major investments, as well as financing supply and infrastructure, without being permitted to take any equity positions in Russia's upstream projects;
- China's proactive stance towards Sino–Russian oil cooperation did not reflect a genuine trust in Russia but expressed the urgency of the Chinese oil supply situation;
- In the end, the Russians have achieved most of what they wanted, which includes major infrastructure development in Eastern Siberia and more diversity in its oil exports to Asia;
- But China did not get the massive and secure quantities of oil which it had been aiming for.

1.2. Natural Gas Cooperation

Unlike Sino–Russian oil cooperation, cooperation in the natural gas sector showed very few tangible advances; some announcements during the second part of the decade turned out to be overly optimistic. Gazprom prioritized Altai (West Siberian) gas exports to west China. The development of exports from Altai was not regarded very positively by the Beijing authorities since they gave a much higher priority to the supply of East Siberian gas to northeastern China. Even though it was not Beijing's most favoured supply option, Beijing would not have hesitated to allocate Altai gas to the West–East Gas Pipeline (WEP) III, if the first Altai initiative had

been convincing and attractive enough. But since China has decided to prioritize Central Asian (in particular Turkmenistan) gas as an equity supply source, Altai gas no longer looks like a "must-have" option for China. The main obstacle for Sino–Russian gas cooperation was the price. While Gazprom was seeking the European border price for its gas exports to China, China National Petroleum Corporation (CNPC) was responding that there is no chance for China to accept the oil-related border price. Chinese planners find Gazprom's demand excessive because CNPC cannot increase domestic gas prices which are strictly controlled by the National Development and Reform Commission (NDRC)'s pricing department. As soon as it became clear that this gas pricing stalemate would continue, Beijing made the final decision to construct the WEP II pipeline in order to bring gas from Central Asia. The equity gas option offered by the Turkmenistan authorities was enough to compensate for the burden of the high border price for imports.

The Beijing energy planners were fully aware of the risks involved in Gazprom's strategy of prioritising Altai rather than East Siberian gas exports and they are very uncomfortable with Gazprom's "swing supplier" strategy. After the 2008 global financial crisis, the EU's appetite for Russian gas has contracted, which has driven Gazprom to a more aggressive Asian gas export policy. China had not bargained for a gas supply which was shared with the European gas market in accordance with Gazprom tactics. But, as long as East Siberia remained without a developed pipeline structure, Altai gas exports fitted neatly into Gazprom's strategy of switching its European gas exports to China. The concept is similar to the ESPO which allowed Russia to export its crude oil to the Asian market directly, not depending on European buyers only.

The Chinese planners have no wish to be blamed for "robbing" the Europeans of their gas when in fact they would prefer to buy Russian gas not from Altai, but from East Siberia. The key point is that the Chinese do not need Altai for the WEP system to work because they can obtain Central Asian gas. They need East Siberian gas because the regional gas capacity in the three northeastern provinces of China is relatively small and, without access to East Siberia or Sakhalin, the alternative is large-scale LNG imports. As discussed later, the Sino–Russian summit between Xi Jinping and Vladimir Putin in March 2013 confirmed that Russia's gas exports to China will be based on eastern-route exports first.

In summary, Sino–Russian gas cooperation in the first decade of this century was so limited because Russia tried to replicate its oil export strategy in natural gas, but found China unwilling to agree. This unwillingness was due to four main factors: first, Russia refused to allow equity in fields or pipeline projects, and therefore refused China any control in the value chain, which is what the Chinese wanted; second, Russia demanded unattractively high prices; third, China had alternative import options (the Central Asian republics, Myanmar, and LNG imports) as well as the potential to expand domestic production; and, fourth, there was a lack of trust on both sides. Russia did not want to depend completely on the Chinese market, while China wanted to avoid over-dependence on Russia as a source of supply. The failure of the price negotiations between the two countries is a reflection of all of these problems.

In short, Sino–Russian energy cooperation during the 2000s can be summarized as "half-full and half-empty".

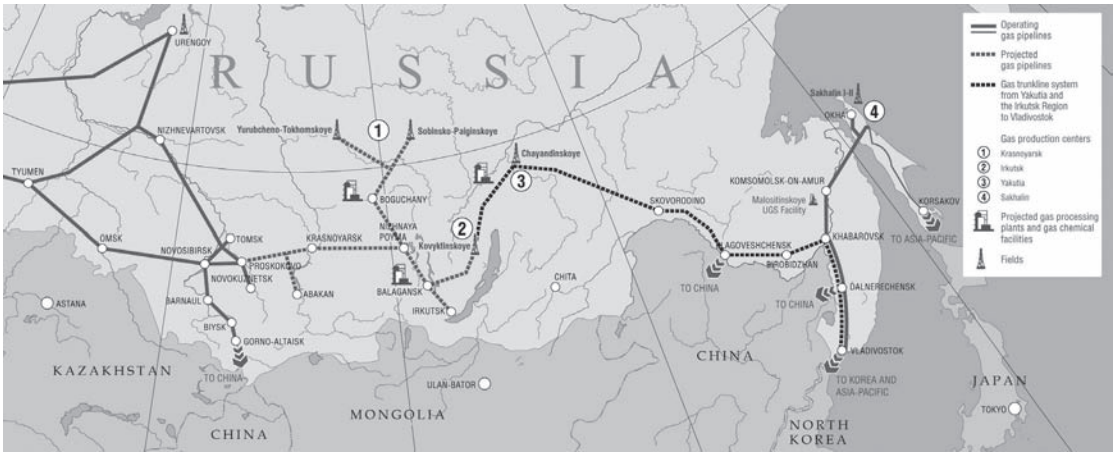
2. Update of Sino–Russian Oil and Gas Cooperation: The 2010s[4]

Since the 2006 spring announcement of a gas supply to China of up to 68 billion cubic meters per year (bcm/yr), the most important attempt to strike a gas price-deal was made during the St Petersburg Investment Forum in June 2011. However, both sides failed to narrow the gap, despite negotiations and preparations between deputy premiers Igor Sechin and Wang Qishan, in parallel with the negotiations between Gazprom and CNPC.

Immediately following the Russian presidential election in March 2012, Putin urged Gazprom not to ignore the exploration and development of gas resources in East Siberia and Russia's Far East, and said that Russia should try to gain a significant share of the global LNG market, focusing first on supplies to promising Asian markets.[5] Accordingly, Gazprom stated that it planned to draw up an investment study for Vladivostok LNG in the first quarter of 2013, and considered 2017–20 the "most favorable period" to target Asia.[6] However, Russia's dilemma was that the price of Vladivostok LNG based on Sakhalin-III gas would not be competitive.

It took almost a year to witness a renewed effort from China to Russia on a gas price-deal. During the World Gas Conference held in Kuala Lumpur, Malaysia, during 4–8 June 2012, Gasexport CEO Alexander Medevdev said that "in an attempt to find a solution, the Chinese side has proposed an integrated approach–to consider the possibility of jointly transporting gas to target markets and marketing together. We have agreed to consider whether it will somehow bring in additional revenue, adding that work on the markets of end consumers is part of our strategy."[7] This was when China's offer of a very large-scale upfront payment without interest was made to narrow the target border price gap.

Figure 1 : The "Power of Siberia" Gas Pipeline Map



Source: Gazprom (2012)

The major step taken by Gazprom in autumn 2012 was a surprise. On 29 October 2012, Gazprom CEO Miller informed President Putin that after having started pre-development operations on Sakhalin Island and the Kamchatka Peninsula, Gazprom set itself the task of starting the second stage of the Eastern Gas Program, and established new gas production centers. First of all, these are the Yakutia and Irkutsk gas production centers. Mr. Miller said that "having started operations at the Chayandinskoye field, we are planning to construct a gas pipeline from

Yakutia to Vladivostok via Khabarovsk (the gas pipeline length will be 3,200 kilometers). After that, along with the Kovyktinskoye field pre-development, we are planning to start construction of a gas pipeline that will serve as the second part of an 800-kilometer gas pipeline from Yakutia." He added that the Investment Rationale for the Yakutia–Khabarovsk–Vladivostok gas pipeline construction had already been adopted. The gas pipeline will be constructed by the end of 2017.[8]

At the end of 2012, Gazprom made China a new price offer for gas supplies along the Altai route. Gazprom CEO Miller said that "we did some rigorous work in the space of a few months, involving design institutes in cost optimization. The main purpose of this was on one hand to preserve the principle of net-back parity in gas prices with Europe and on the other to lower the base price for gas supplies to China somewhat. The new price offer is based on this optimization." However, Mr. Miller did not say how much the base price had been lowered. An interesting point was that in early December, Deputy Premier Arkady Dvorkovich confirmed that Russia was reviewing the Chinese proposals on advance payments under contracts.[9]

The outgoing Chinese leadership (President Hu Jintao and Premier Wen Jiabao) gave the huge homework task of a Sino–Russian gas price-deal to the incoming leadership, President Xi Jinping and Premier Li Keqiang. President Xi did not hesitate in highlighting the importance of the Sino–Russian relationship. Indeed, on 22 March 2013, Xi Jinping arrived in Russia on the first stop of his maiden overseas tour as President of China. At a press conference, Xi called Russia China's "friendly neighbor", and said that the fact that he was visiting so soon after assuming the presidency was "a testimony to the great importance China places on its relations with Russia". He added that "China–Russia relations have entered a new phase in which the two countries provide major development opportunities to each other".[10]

Ahead of the visit, Vice-Foreign Minister Cheng Guoping outlined that a highlight of the trip will be "breakthroughs" on major projects of strategic significance, including energy, aviation, space flight and investment. He added that the two neighbors are complementary in their overall and local development plans. For example, Russia's exploration in the Far East and Siberia, and China's blueprint to revive the Northeast and develop the western regions presented huge opportunities for cooperation.[11]

A brief note by the Brookings Institution summarized the results of the March 2013 China–Russia summit very clearly. The summit sets the stage for dramatically increasing flows of oil, coal, and natural gas from Russia to China. First, Rosneft pledged to triple its oil deliveries to China from 300,000 barrels per day (b/d) to as much as 1,000,000 b/d, which is double the amount of oil that Russia exported to China in 2012 and equal to the amount of oil that Saudi Arabia, China's top crude oil supplier, delivered to China in 2012. Second, China's Shenhua Group and Russia's En+ Group agreed to develop coal resources and related infrastructure in East Siberia and the Russian Far East with an eye to expanding Russian coal exports to China. Third, Gazprom and CNPC signed a memorandum of understanding for the delivery of 38 bcm of natural gas to China over a 30-year period starting in 2018, with the option of expanding deliveries to 60 bcm. The note highlighted the role of the China Development Bank (CDB). The increased volumes of oil that Rosneft pledged to deliver to China reportedly are being used to support a US$2 billion loan from the CDB. The bank also agreed to extend a US$2 billion line of credit to Shenhua Group and En+ Group for the development of coal resources and the infrastructure to transport them to markets.[12]

The two most important points that should be highlighted from this March 2013 summit

are the following: first, that Russia agreed to allocate a maximum for crude for China, which will affect the role of ESPO crude in the Asian market; and second, that Russia finally accepted China's preference for the eastern-route gas supply, even though the Russian preference was for Altai-route exports. The crude supply deal reconfirms that the driving force of Sino–Russian oil cooperation is China's dire necessity. A big question is whether Russia can balance the volume of crude supply to China and Nakhodka, and time will tell how the balancing is performed. The eastern route based on gas supply to China also confirms the importance of a market for the gas stranded in the middle of East Siberia. In this context, Russia's dream of imposing Russian terms and conditions on the gas supply to China was a mere pipe dream.

In May 2013, China's financial media group Caixin reported that "over the years, the biggest obstacle for the countries to reach an agreement has been price. A source close to CNPC said the company wanted the price to be cheaper than the gas it imported from Turkmenistan, while Russia wanted China to pay the same price European countries did… The average cost, insurance and freight (CIF) price that China paid for gas imported from Turkmenistan in 2012 was 2.5 yuan per cubic meter, data from the CNPC Economics and Technology Research Institute shows. However, Germany was paying Russia about 3 yuan in 2012. Meanwhile, the Chinese government told CNPC to sell gas from the West–East Gas Pipeline that was intended for industrial use for 1.19 yuan per cubic meter… CNPC has been losing money even on the gas imported from Turkmenistan, the source close to the company said… In 2012, CNPC's imported gas segment posted a loss of 42 billion yuan and it expects to record a deficit for this segment of 60 billion yuan this year. CNPC could not pay the price that Russia asked for."[13] This coverage indirectly explains why China had to develop the formula of equity gas for the Turkmenistan gas imports, and indicates that China needs to find a compromise formula that can satisfy the expectations of both sides.

In June 2013, when Vice Premier Zhang Gaoli attended the St Petersburg International Economic Forum, Professor Zhu Feng, Deputy Director of the Center for International and Strategic Studies at Peking University pointed out that for the first five months of 2013 bilateral trade had fallen 2.6% on the previous year, with Chinese imports from Russia dropping 15.2%, even though the trading record between the two countries reached US$88.2 billion in 2012. He said that the drop was mainly caused by an economic slowdown in China which has sapped demand for commodity imports, and added that China's economic restructuring calls for deeper and wider cooperation between the two economies. Currently, Sino–Russian economic cooperation is mainly focused on the energy sector.[14]

Based on its massive foreign reserves (as of June 2013, US$3.5 trillion[15]), China has played the money card very skilfully and effectively. On 21 June Rosneft agreed on a US$270 billion deal to double oil supplies to China. Rosneft's CEO Sechin said his firm will supply China with 300,000 barrels per day (b/d) over 25 years starting in the second half of the decade, on top of the 300,000 b/d already committed to China. The deal, one of the biggest ever in the history of the global oil industry, will bring Rosneft US$60–70 billion in upfront prepayments from China (but it is not an interest free deal). It will also allow Rosneft, the world's biggest publicly listed oil firm, to steeply cut its heavy debts and develop new remote Arctic fields. According to Standard and Poor's, Rosneft faces large debt maturities in 2013, 2014, and 2015 of US$6.6 billion, US$15.9 billon, and US$16.2 billion, respectively. Prepayment from China would allow Rosneft to lighten the burden on its balance sheet by reducing its debts to banks.[16]

This massive money injection from China to Russia allowed China to be protected from

the continuous delay of gas price negotiations with Gazprom. On the same day, President Putin made the announcement of the gradual end of state-controlled Gazprom's monopoly on exports of natural gas, which opens the way for rivals Novatek and Rosneft to compete for the huge new Asian markets, and immediately after Novatek signed a deal to supply at least 3 million tonnes of liquefied natural gas annually to China. CNPC also agreed to buy a 20% stake in Novatek's US$20 billion Yamal-LNG project in northwest Siberia.[17] This was a fatal blow to Gazprom whose Asian export policy was a complete failure, as it had produced no tangible results since the big announcement of 2006. After the working group meeting with CNPC right before the St Petersburg Investment Forum in June 2013, Gazprom CEO Miller said that "the price of gas to be supplied to China won't be linked to the US Henry Hub Price",[18] and announced that Gazprom expects to sign an agreement in September on the basic terms of a deal to provide gas supplies to China and aims to conclude the deal by the end of this year.[19] It was another excuse for a price-deal failure.

Interestingly, in August 2013, Interfax reported that field operator LLC Gazprom Dobycha Irkutsk's materials show that the development of field infrastructure at the Kovykta gas condensate field in the Irkutsk Region will begin in the third quarter of 2013 and be completed in the third quarter of 2016.[20] It was also reported that Gazprom plans to start producing gas at the South Kirinskoye field on the Sakhalin shelf in 2018. At the moment, South Kirinskoye's C1+C2 reserves total 560 billion cubic meters (bcm) of gas. According to Mr. Vsevolod Cherepanov, Gazprom hopes that these two wells will help boost C1 proven reserves. The project involves constructing an LNG plant on the Lomonosov Peninsula (Perevoznaya Bay), comprising three processing trains, each with a capacity of 5 million tonnes of LNG a year. The first train will be commissioned in 2018.[21] It was quite unusual to see this type of report on Gazprom's activity in the Far East during the summer-break period. It indicates Gazprom was getting real pressure to show President Putin tangible results without any further delay, and in fact the business environment is becoming very unfavorable for Gazprom to work in.

Right after the G20 meeting, the Gazprom website announced that "Alexey Miller, Chairman of the Gazprom Management Committee and Zhou Jiping, Chairman of China National Petroleum Corporation (CNPC) signed today in Saint Petersburg an Agreement outlining the major terms and conditions of pipeline gas supply from Russia to China via the eastern route in accordance with the accords reached previously. The document is legally binding... All the major terms and conditions of future Russian natural gas supplies to the Chinese market via the eastern route were agreed on, namely, the export volume and starting date, the take-or-pay level, the period of supply buildup, the level of guaranteed payments, the gas delivery point on the border as well as other basic conditions of gas offtake. The price conditions will not be linked to the Henry Hub index."[22]

However, the announcement hid the failure to reach a Sino–Russian gas price-deal. One day earlier, the Russian business daily Vedomosti reported that "Gazprom delayed the start of the construction of its Power of Siberia gas pipeline to transport gas to China from November [2013] to the first quarter of 2014", citing sources close to Gazprom and its affiliates.[23] China's influential monthly Caijing also reported the gas deal announcement had no substance on the price deal.[24] Despite the failure of a final price breakthrough, CNN highlighted Sino–Russian relations during the G20 meeting in St Petersburg, by reporting that President Xi Jinping, who calls the Sino–Russian relationship the "best" among major countries, says they will always be good neighbors who aspire to "never be enemies".[25]

Diplomacy is merely diplomacy, however. What President Xi said in Moscow is one thing and what President Xi really emphasized in Turkmenistan is another thing. On 4 September, President Xi Jinping and his Turkmen counterpart Gurbanguly Berdymukhamedov celebrated the completion of the first phase of the Galkynysh gas field, and reconfirmed another 25 bcm/yr of gas supply from the Galkynysh field. Both presidents said a total of 65 bcm/yr of gas will be supplied to China through the world's longest gas pipeline.[26] The super-giant gas field's development has provided huge comfort to the Chinese leadership, and the strengthened relationship between China and Turkmenistan was a big reminder of the Russian wisdom of blocking equity gas options for the East Siberian gas development.

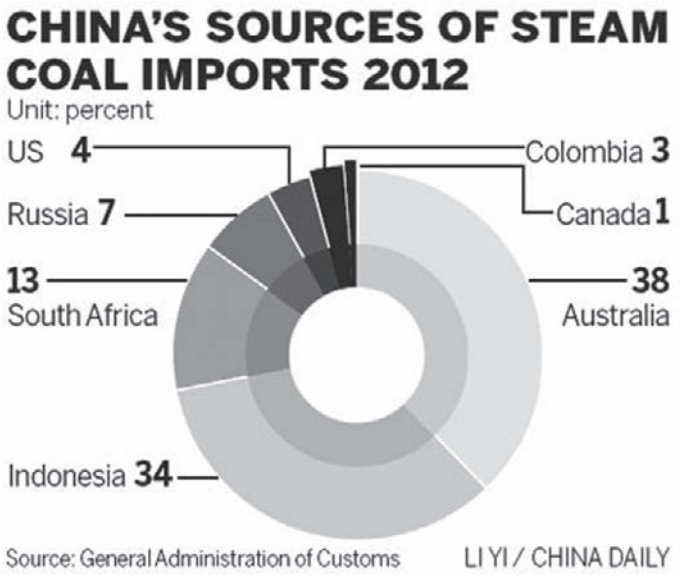
3. Sino–Russian Coal and Electricity Cooperation

In parallel with oil- and gas-sector cooperation, Russia and China have been widening the boundaries of cooperation in the coal and electricity sectors during the last few years. The coal sector cooperation since 2009 has been expanding very rapidly, but steady growth has not been comprehensively shown. Electricity supply from Russia to China is also expanding, but the trading scale is still confined to the provincial level.

Historically, China has been a net coal exporter. In 2003, China's coal exports peaked at 94 million tonnes (mt) with coal imports at 11 mt. Since China produced 1,835 mt of coal and consumed a similar amount in the same year, imports had very little impact on China's overall coal balance at the time. In 2008, however, China's coal situation markedly changed when China's imports and exports equalized. In 2009, China imported 126 mt of coal and became a net coal importer for the first time. Based on this background, a quality study by the Carnegie Endowment for International Peace pointed out that several factors could be contributing to China's sudden entrance into coal import markets, including transportation bottlenecks, environmental and safety considerations, economic factors, and concerns about depleting coking coal reserves.[27]

The coal imports from Russia in 2009 were recorded at more than 12 mt.[28] In 2010, China agreed to increase imports of Russian coal in return for a US$6.0 billion loan. According to the Russian energy ministry, Russia will raise shipments to China to at least 15 mt annually in the next five years and more than 20 mt in the subsequent 20 years.[29] The import figure rose to 19.3 mt in 2012 when China imported 290 mt of coal. As shown in the figure below, coal supply from Russia accounts for roughly 7%, while Australia and Indonesia account for 38% and 34%, respectively). According to the China Daily, "a decade ago, China produced about 1.4 billion tonnes of coal annually at an average cost of $11 a ton. Last year, its annual output reached 3.7 billion tonnes, but the cost for each ton of coal rose to $37… The unit cost for Indonesian coal production is currently about $30, according to Platts… As Chinese coal-fired power generation companies benefit from increasing amounts of cheaper imported coal, the domestic coal industry is suffering serious overcapacity, weak demand and a huge decline in profits".[30]

Figure 2 : China's Sources of Steam Coal Imports 2012



Source: Du Juan, "China coal imports to continue affecting global prices: Platts", China Daily, 22 May 2013. http://www.chinadaily.com.cn/bizchina/2013-05/22/content_16518558.htm

Russia's coal supply to China looks very likely to expand. According to the estimate of Russia's Ministry of Energy released in April 2013, Russian coal supplies to China in 2013 should rise to 20 mt, as against 19.3 mt in 2012. During the first half of 2013, a number of coal supply deals between Russia and China were signed. In March, Mechel and China's Baosteel Resources (a Baosteel Group subsidiary) announced a deal for the supply of 960,000 tonnes of coking coal a year. In April, Russia's En+ group, owned by the billionaire Oleg Deripaska, has signed a US$2-billion deal with China's Shenhua Group. (As discussed earlier, the framework agreement was signed in late March during a visit to Moscow by the Chinese leader, Xi Jinping.) In June, Russia's coal giant Mechel signed its third long-term agreement of the year for coal supplies with Chinese Shasteel Group with a volume of from 40,000 to 80,000 tonnes of coal a month via ports in the Far East.[31] Like Sino–Russian oil cooperation, it is fair to say that Sino–Russian coal cooperation is driven by China's necessity. Once Russia's infrastructure in the Far East is improved, the expansion of coal supply will be accelerated.

Beijing is a big fan of large-scale hydropower developments. They are clean, and based on long-proven technology with low operating and maintenance costs. Unlike wind or solar power, it is less dependent on the weather and can be switched on to meet demand. Beijing plans to double its current capacity as part of a plan to generate 15% of its energy from renewable sources by 2020. China aims at building hydropower generating capacity of 250 gigawatts by 2015, but it requires a massive investment. By taking advantage of Russia's abundant hydroelectricity in East Siberia, the financial burden to construct new hydro-dams can be reduced. Russia is already the world's fifth-largest generator of hydropower, and only 20% of its potential has yet been realized, with an even lower proportion in the great river basins close to the Chinese border. In this context, the surplus hydroelectricity from East Siberia to Heilongjiang Province can deliver mutual benefit to both sides.

The first electricity supply from Amur Oblast to Heilongjiang Province was made as early as 1992 when the first high voltage (110kV) power grid (25.75 km long) was put into service.[32]

Then in 1997 a governmental agreement was signed for natural gas and electricity supply from East Siberia to China. The US$1.5 billion electricity deal over 25 years envisaged a supply of 20 billion KW/h of electricity from Irkutsk to either Shenyang or Beijing.[33] Based on these initiatives in the 1990s, Heihe began receiving electricity from Russia in 2004. The volume increased after the State Grid Corporation of China took over the business from a local private-sector company in 2009. Inter RAO, Russia's largest power exporter, set up Eastern Energy Company, a subsidiary for exports to China, in 2007. In 2012, the company installed a high-voltage 500-kilovolt power transmission line over the Amur River, in addition to the existing 110-kilovolt and 220-kilovolt lines. China has also completed a new substation in Heihe, giving the city the capacity to receive 2.6 billion kilowatt-hours of electricity a year from Russia, more than twice that in 2011.

According to Rasim Khaziakhmetov, Director of Technical Policy at RusHydro, Russia's largest hydroelectric power company, only 5% of the potential hydroelectric power generation capacity in the Far Eastern region is utilized. The proportion for Siberia is 20%. In February 2012, Eastern Energy Company clinched a contract with the State Grid Corporation of China to supply 100 billion kilowatt-hours of electricity over the coming 25 years. The company plans to increase power exports to China from the Far Eastern region and Siberia to 60 billion kilowatt-hours a year by 2020. The volume represents only about 1% of China's electricity demand in 2011, but is almost equivalent to the amount sold annually by Chugoku Electric Power Company.[34]

It is also worth noting that the booming energy trade between Russia and China has triggered environmental protests and legal action against a new hydropower scheme in Eastern Siberia. Alexander Kolotov, director of the environmental group "No to Dams" in the eastern city of Krasnoyarsk and others sued EuroSibEnergo and RusHydro for constructing the dam without environmental controls or measures to save cultural heritage lost in the flooded area.[35] Kolotov argues that basically East Siberia's surplus hydroelectricity export to China is good for China, but of no benefit to Russia. Despite the protest, it looks certain the supply of hydroelectricity to China will go ahead.

4. Conclusion

It is clear that there is a major difference between oil and gas in the way they affect China, Russia, Sino–Russian relations, and the rest of the world. First, Russian oil supplies from Eastern Siberia and the Russian Far East are significant but will not fundamentally change either Chinese dependence on Middle East oil supplies or global oil supply trends, unless new oil discoveries are so abundant that they can justify a second ESPO pipeline. During the first half of 2013, Russia took a major step by agreeing to increase the volume of its crude supply to China from 15 mt/yr to 30 mt/yr, even though the increased supply to China could affect the ultimate volume of ESPO crude to Asian buyers. Under any circumstances, however, this will not fundamentally change the global oil situation. The decision was a real blessing for China, but consequently Russia's ambitious target of making ESPO the benchmark price had been compromised. Until comprehensive exploration in East Siberia maximizes the export volume to other Asian buyers, China will be the biggest beneficiary of Russia's changed crude supply priority in 2013. It remains to be seen how this priority will be protected and honored by the Russian authorities.

Second, Russian gas reserves in Eastern Siberia and the Far East are so huge and stranded

(that is, without nearby markets) that they could transform the gas industry in China. Russia could export 50–60 bcm/yr to China by pipeline from fields which otherwise will continue to be stranded for many decades. Large-scale Chinese pipeline imports could expand with little delay because fields and pipeline routes have been extensively studied and China has the investment capital to finance such projects. This will not happen either on the same scale or at the same speed if both countries decide to rely on LNG.

The current outlook is that much of the oil potential will be fulfilled, but this will not make a huge difference to China or to the global oil market. During 2013, there were some signs of a negative outlook where the gas potential will largely not be fulfilled and therefore the Chinese gas market will be much smaller than it otherwise could be, as well as where large Russian gas reserves will remain stranded for many decades. However, such signs were not solid enough. If the current outlook changes and the potential is more completely realized, it could make a huge difference to the global gas market. Failure to achieve large-scale gas pipeline imports from Russia will force China to significantly expand LNG imports. This will increase the competition for LNG supplies not only amongst LNG importers in Northeast Asia (Japan, the ROK and Taiwan) but also amongst other buyers of LNG in regions as far away as Europe. It is worth noting that four shale gas-based LNG export projects have already been approved by the US Department of Energy, and two or three more approvals look very likely. The total volume of US LNG exports could have a major impact on global LNG trading, in particular for the supply to Asia. A failure of the Sino–Russian gas relationship will therefore deprive both countries of a potential win–win solution to their energy and development problems, and increase future global rivalries in the market for LNG.

Sino–Russian coal and electricity cooperation will be accelerated and strengthened, but the scale and volume of trade driven by coal and electricity will not be substantial enough to trigger Chinese domestic price reform. The trading itself is an indirect confirmation that Sino–Russian oil and gas cooperation during the last two decades has opened the door for acceleration of Sino–Russian coal and electricity cooperation. Again China's imperative of increasing its imports of Russia's quality coal as well as Russia's need to export its abundant hydropower in East Siberia to China's Heilongjiang Province have reconfirmed the huge potential for Sino–Russian energy relations in the coming years and decades.

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[1] Ph.D. candidate at SAIS, Johns Hopkins University.
[2] For the details of Sino–Russian oil and gas cooperation and updated coverage,see Keun-Wook Paik , "Sino–Russian Oil and Gas Cooperation: The Reality and Implications" (Oxford: Oxford University Press, 2012).
[3] http://rt.com/business/transneft-espo-oil-asia-807/ ; http://www.stroytransgaz.com/press- center/news/2012/12/26
[4] Keun-Wook Paik with Glada Lahn and Jens Hein, "A Window of Opportunity for Northeast Asian Security?", Chatham House EER BP, December 2012. http://www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/1212bp_paik.pdf ; Keun-Wook Paik, "The Role of Gas Imports from Russia in China's Energy Strategy", Asia Europe Journal, Vol. 11, No. 3, September 2013, pp. 323–338.
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The Foundation of Japan–Russia Energy Cooperation: The History of the Ups and Downs of the Sakhalin Project

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Abstract

The Japan–USSR collaborative Sakhalin continental shelf exploration and development project existed from the mid-1970s to the beginning of the 1990s, and was called the "Sakhalin Project". It was a project that became a forerunner for, as today, the waters around Sakhalin Island being divided into nine blocks and given the names Sakhalin I and Sakhalin II, etc.

As regards this project—moved forward by SODECO which became the agent on the Japanese side—oil was extracted from Exploratory Well No. 1 in autumn 1977, and around 1980 there was expectation for the start of production. While the formulation of development and production plans had been moved forward regarding the subsequently discovered commercial amounts of natural gas, amid the changes in the environment this project company ended its role at the beginning of the 1990s, handing the project on to a successor company.

This project had not only become the foundation for Japan–USSR (Russia) energy cooperation: there is no small number for the legacies left to both Japan and the USSR (Russia).

Keywords: Japan–USSR (Russia) economic cooperation, Zaikai project, SODECO, mutual and complementary relationship, the USSR's first genuine offshore development project

Currently a number of oil and natural gas development projects are in operation in the waters surrounding Sakhalin Island in the Russian Federation. Their forerunner was the Sakhalin Project,[1] and there are a number of subsequent projects based on the outcomes of the work which that project implemented and the information obtained via the facilities and technology acquired with that project. This collaborative project with the Soviet Union was agreed in January 1975, and from the extraction of oil from Exploratory Well No. 1, around 1980, along with quenching the Far East region which was thirsty for energy, a future was anticipated as a supplier of production to Japan as well; yet subsequently amid various changes in circumstances and environment, it ended its pioneering role in the early 1990s.

This paper considers the background against which Japan and the Soviet Union got as far as promoting large-scale collaborative projects[2] for the development of Siberia, including this project, and the history of this project being established up to the subsequent shift and succession to the project by a different company.

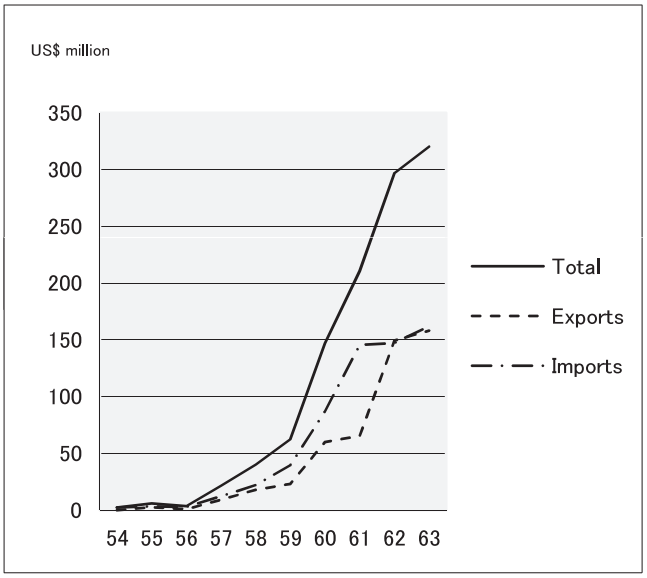
Furthermore, this paper, taking into account the number of pages, keeps to recording the important actual relationships, with a focus on the genealogy of the project, yet it is considered necessary to leave behind a more detailed record of the history of this project which came to construct the basis for the offshore development of the Soviet Union and Russia, along with being the foundation of Japan–Soviet and Japan–Russia cooperation.

1. Overview of Post-War Japan–USSR Economic Exchange

1.1. Trade Relations

Japan–USSR trade in the post-war period is divided institutionally into three periods. These periods are: 1) the period during which matters were undertaken intergovernmentally under the supervision of the General Headquarters (GHQ) for the occupation; 2) the period during which there was no intergovernmental agreement (the no-agreement private-trade period); and 3) the period during which matters were carried out in accordance with intergovernmental agreements.

Figure 1: Trends in Japan-USSR Trade (1954-63)



Source: Author

GHQ-supervised trade began in 1946 and was abolished at the end of 1949, and from 1950 private trade via the Foreign Exchange Act[3] continued until 1957, and after the 1956 Soviet–Japanese Joint Declaration shifted to trade under intergovernmental agreement.[4]

The commodities for export and import and the quantities and monetary amounts were stated in the intergovernmental Trade Payment Agreement, and it had great effect as guidelines in which the governments of both countries set their directions, without any binding force, and the trade volume continued growing steadily each year. Moreover, the trade volume after the restoration of diplomatic relations increased more than ten-fold over the subsequent two years (Figure 1).

The characteristic features of Japan–Soviet economic relations from 1960 included that: 1) the export of Japan's shipping vessels and plant increased markedly with the realizing of the deferred payment the Russian side requested at the time of the 1960 Trade Payment Agreement negotiations; 2) interest on both sides was heightened with large-scale trade fairs being held reciprocally in 1960 and 1961; 3) the foundations for top-level exchange were constructed with the visits of big shots in the political and business worlds; and 4) an arena for consultation

on cooperation was created with the agreement on holding the Japan–USSR / USSR–Japan Economic Committee Joint Conference in 1965 (hereinafter the "(Japan–USSR) Economic Joint Conference"). These became major factors promoting expansion of trade between Japan and the Soviet Union.

The Economic Joint Conference played a major role as an arena for the business world on the Japanese side and senior officials from ministries and agencies on the Soviet side to consult on projects for cooperation, and the first collaborative projects for the development of Siberia, such as the Sakhalin Project came into existence amidst this.

1.2. The Establishment of the Japan–USSR Economic Joint Conference[5]

After such things as the visit to Japan of the First Deputy Premier Anastas Mikoyan in August 1961 and the visit to the Soviet Union of the Kawai mission[6] in August 1962, calls grew louder on both sides for the necessity of Japan–USSR economic exchange.

First Deputy Premier Anastas Mikoyan came to Japan again in May 1964, proposed the establishment of a joint business conference venue to be a consultative body for business leaders from both countries, and a proposal of the same intent was made also from Mikhail Nesterov, President of the Soviet Chamber of Commerce and Industry, who came to Japan in November of the same year.

Against this background of proposals from the Soviet side, it was seen that in order to get Japan–USSR economic relations properly on track, the recognition deepened of the necessity of establishing a direct conduit with the mainstream business world, and not depending on some pro-Soviet bodies.

The result of the investigations on the Japanese side, where it was taken that they should use the joint committee[7] formula, and be a unified window for economic consultation with the Soviet Union, was that in June 1965 Shigeo Nagano, President of Fuji Iron and Steel Co., Ltd., seizing the opportunity to visit the Soviet Union, made a proposal, and the Soviet side also accepted this, and a Memorandum of Understanding relating to the establishment of the Japan–USSR Economic Joint Conference was signed.

The Japan–USSR Business Cooperation Committee, as an organization representing the Japanese business world (*"zaikai"*), thereafter came to preside over economic exchange with the Soviet Union, and along with being conducive to making economic relations closer between the two countries, started up a number of large-scale collaborative projects.

The fact spread that for Japan the Soviet Union was a market with huge potential, and taking this period as its impetus, on the Japanese side the business world mainstream came to the fore, in the place of dummy companies.

2. The Energy Situation in the Far Eastern Region[8]

I shall give an outline of the energy situation in the Far Eastern region in order to prove the necessity at that time of the realization of the Sakhalin Project within the Soviet Union.

While the Far Eastern region is relatively well-endowed with energy resources, the development and utilization thereof has not advanced (even now, after the passage of decades since that time, a similar point is being made). Consequently, the majority of regional energy demand has depended on imports from other regions of the country. However, energy

transportation was a major factor inhibiting regional economic activity. It is explained by the fact that energy-related products accounted for 40% of regional freight transportation, and three quarters of the price of the crude oil delivered to the Khabarovsk refinery was for the transportation cost.

Regarding the state of affairs for the Far Eastern region's fossil fuel supply and demand, the self-sufficiency ratio was just under 68% even in the mid 1980s. Coal has accounted for more than half in terms of demand, and for fossil fuels even coal, for which production within the region has progressed the most, has been unable to satisfy demand, with coal having to be imported from other regions of the country (coking coal not taken into consideration). With oil only being produced in small amount in the northern part of Sakhalin Island, the self-sufficiency ratio for the region as a whole was less than 15%. A small amount of natural gas in Yakutia has been produced which has satisfied local demand.

Table 1 shows the changes in oil and natural gas production from 1970 to 1990 in Sakhalin Oblast. For oil, production was close to 2.7 million tonnes at the end of the 1970s, but as new reserves were not discovered production declined greatly.

Table 1: The Oil and Natural Gas Production of Sakhalin Oblast (1970–1990)

	1970	1975	1980	1985	1990
Oil (million tonnes)	2,473	2,244	2,519	2,588	1,918
Natural Gas (million m^3)	1,044	821	800	1,832	1,636

Sources:Sakhalin Oblast statistics, Soviet Union and Russia Statistical Yearbooks
Tozai Boeki Tsushinsha "21st Century Russia and Energy Strategy", etc.

The Far Eastern region is facing a critical shortage of energy, and in addition to furthering its economic development, the development of energy resources within the region, particularly the Sakhalin offshore development in which commercial volumes of oil and natural gas were discovered in cooperation with Japan, has been made imperative, and at the first meeting of the Interregional Association of Economic Interaction "Far East and Transbaikalia"[9] which was launched at the end of October 1990, they sent urgent documentation to the central government requesting state investment.

3. The Sakhalin Project

As mentioned above, aiming at making Japan−USSR economic relations closer, on the Japan side the mainstream business world began to tackle matters in earnest, several large-scale collaborative Siberian development projects were examined at the Japan−USSR Economic Joint Conference, and in 1968 the first one, the "First Forestry Development Project (KS Project)", was agreed.

The Sakhalin Project also came into being amid the heightening of such momentum.

Moreover on the Japan side, in addition to inducing economic revitalization, there was the strong desire of the private and public sectors as one securing natural resources present in abundance in the Soviet Union, whereas for the Soviet Union there was the great aim of acquiring Japan's capital strength and the world's leading technology and know-how which Japan had assimilated, raising the country to be a third economic pole behind North America

and Europe. That is, against the backdrop of several Siberian collaborative development projects between Japan and the Soviet Union being realized, it was not difficult to imagine that there was the larger picture of a real complementarity being established for both parties.

3.1. Proposals relating to the Oil and Gas Development of the Soviet Union: The Prehistory of the Sakhalin Project[10]

✧ Sakhalin Onshore Gas Field Development and Import Plan

It was in 1965 that Sakhalin's oil and natural gas resources were raised as an object for cooperation between the two sides. The proposal which the Trade Representative in Japan made to Marubeni-Iida in October of the same year was the first, and with Marubeni-Iida and Teikoku Oil and the Ministry of Foreign Trade of the USSR furthering negotiations from the beginning of the following year, the Japanese side showed active interest at the First Japan−USSR Economic Joint Conference (March 1966 in Tokyo).

In the plan, they would produce 4 billion cubic meters of natural gas annually in the Okha District in the northern part of Sakhalin Island, of which: 1) they would transport 2 billion cubic meters by pipeline to Kholmsk, and export it to Japan as LNG (liquefied natural gas) over 20 years;[11] 2) they would supply 200,000 tonnes of LPG annually to Japan; and 3) they would assign the remaining 2 billion cubic meters for domestic consumption, sending it to Komsomolsk-na-Amure. The equipment, materials and consumer goods necessary for the project are bought from Japan under the condition of long-term deferred payment, and payment is assigned using the proceeds from gas exports.

The negotiations were continued for five times from January 1966 to May 1967, and the problem points had boiled down to a fair degree, but key points such as the price of gas, the time for the start of supply to Japan, the guaranteeing of transactions, and credit conditions, did not lead to a final agreement, and negotiations were planned for December 1967. Mainly via the intention of Teikoku Oil, however, negotiations where postponed, and it wasn't taken as a topic for discussion at the Second Japan−USSR Economic Joint Conference held in Moscow in June 1967. At a later date, from it becoming clear that there was the idea that Japan together with the Shell Petroleum Company negotiate on Brunei-produced natural gas imports, the Soviet side hardened its attitude, and this matter was forced into effective suspension.

✧ Cooperation Plans after a Change of Wardrobe

Regarding the above-mentioned projects there is also the opinion that the Japan−USSR Business Cooperation Committee has no place in taking responsibility for talking business on an individual company basis, but in January 1968 the leaders of the Japan−USSR Business Cooperation Committee explained to Deputy Chairman of the Council of Ministers[12] Nikolai Baibakov, who was on a visit to Japan, that for the Japanese side it wasn't the case that they abandoned them for the reason of having lost interest in the development and import of Sakhalin natural gas, but that there was no change to the subsequent direction of continuing negotiations.

When the negotiations for the above-mentioned projects came to a halt, from the fact that a change occurred in Japan's gas demand outlook, the introduction of natural gas via pipeline to Hokkaido in place of LNG imports was conceived, and with the explanation to the Soviet side in the middle of 1968, at the Third Japan−USSR Economic Joint Conference held in Tokyo in December of the same year the Soviet side proposed the concept of supplying natural gas from

north Sakhalin and South Yakutia to Japan.

- Stage 1: Laying (1971 goal for completion) of the overland pipeline of 1,000km extent, and annual transportation capacity of 10 billion cubic meters, between Okha (at the northern tip of Sakhalin Island) and Cape Crillon (at the southern tip), to supply 2.0−2.4 billion cubic meters of natural gas to Japan annually.
- Stage 2: Laying of a pipeline of 2,000km extent linking Yakutia and Sakhalin (northern route) or a pipeline of 3,600km extent linking Yakutia, Khabarovsk and Sakhalin (southern route), with an annual transportation capacity of 20−25 billion cubic meters, to connect up to the pipeline constructed in stage 1, and to supply 10 billion cubic meters of natural gas to Japan annually.

  In order to investigate this concept, a specialist committee was set up by the committees of both sides.

✧ Sakhalin Onshore Natural Gas Development Plan Setbacks

Regarding the natural gas reserves onshore on Sakhalin which the Soviet side explained to the Japanese side, $A+B+C_1$ (close to the proven reserves on the western side) is 60−70 billion cubic meters, and $A+B+C_1+C_2$ (the estimated reserves added to the above) is 160−170 billion cubic meters, and is seen as sufficient for supplying Japan.

However, from Nikolai Patolichev, Minister of Foreign Trade of the USSR, a shocking statement was made in September 1971: "Uncertainty has arisen as to whether the gas reserves onshore on Sakhalin are sufficient to further cooperative projects. Until this is confirmed we cannot go ahead with the plans easily. We want concrete proposals regarding energy resource collaborative exploration on the Sakhalin continental shelf which the Japanese side has unofficially been sounding out.[13]

Later, a letter arrived from the chair of the Natural Gas Specialist Committee on the Soviet side confirming that the above-mentioned statement of the trade minister was the official position of the Soviet side.

Here the Sakhalin onshore natural gas development plan was shelved and came to an end, with the real intent of the Soviet side regarding it unclarified.

Regarding the concept for the introduction of natural gas from Yakutia, it was agreed to continue investigating it at the Fifth Economic Joint Conference[14] (Tokyo) in February 1972, and although later it developed into a trilateral Japan−USA−USSR cooperation project, ultimately it collapsed without leading to the provision of development. Taking advantage of the same meeting, the concept for the energy resource exploration of the continental shelf peripheral to Sakhalin Island, which this paper takes as its topic, began to grow.

3.2. The Establishment of the Sakhalin Project[15]

At the Fifth Economic Joint Conference, the Soviet side stated that they were prepared to negotiate on the oil and natural gas exploration development plan for the Sakhalin Island continental shelf.

✧ The USSR Continental Shelf Resource Exploration Plan

At the 24th Congress of the Communist Party of the Soviet Union which took place in March−April 1971 the "1971−1975 Plan for the Development of the National Economy of the

USSR" (the Ninth Five-Year Plan) was adopted. The Sakhalin Project was not ignored with this five-year plan.

In the Ninth Five-Year Plan, with an objective of developing the promising offshore oil and natural gas fields, the developing of geological exploration work in a coastal and offshore zone was planned, but it was a first that offshore resource development in the Soviet Union was being planned.[16] Based on the decision of the 24th Congress of the Communist Party plans were formulated for oil and natural gas exploration offshore and on the continental shelves of the Soviet Union as a whole, and as a part of that a provisional exploration plan for the period from 1972 to 1985 was created for the Sakhalin continental shelf also.

According to that plan: in the first stage up to 1975, it was expected they would evaluate the possible reserves with greater certainty, determine the most promising waters for exploration, and conduct large-scale geophysical prospecting in order to discover promising formations; in the period 1972−1977 the construction of support bases for geophysical prospecting and offshore drilling work and the construction of an information-processing center were planned; and in the subsequent second stage it was expected that the geophysical surveying would continue, and exploratory drilling by offshore drilling rigs would begin.

Furthermore, in the explanation of the Soviet side, if Japan participated the plan could be finished five years early.

✧ Proposals from the Soviet side and Geophysical Survey Overview

The bare bones of the Soviet proposals relating to Sakhalin offshore oil and natural gas development clarified at the Fifth Economic Joint Conference were: 1) to plan the discovery of 100−150 million tonnes of oil and natural gas resources in the island's waters in the period 1972−1985; 2) the Japanese side to provide US$150−200 million in bank loans; and 3) the Soviet side, with this credit, to undertake the purchase from Japan of the necessary equipment for exploration work, such as offshore drilling rigs, geophysical exploration vessels, computers for geological information-processing, and drilling pipes.

In the geophysical prospecting which the Soviet Union conducted, the original promising area for Sakhalin continental shelf oil and natural gas exceeded 100,000 km^2, the forecast reserves were appraised at 5 billion tonnes, of which 3 billion tonnes was in water shallower than 100 meters, for 9 formations out of the 38 whose existence had already been confirmed the conditions were possible for exploratory drilling, and in 3 formations thereof ejection of oil or natural gas had been seen.

✧ The Progress of Japan−Soviet Discussions

At the Fifth Economic Joint Conference they set up working groups on both sides, and they examined the problem of the Japanese side participating with the conditions of the Soviet-side proposals.

On the Japan side they set up the Sakhalin Continental Shelf Exploration Committee (Committee Chairperson Hiroshi Anzai) and the actual working organization of that specialist committee (Committee Chairperson Hiroki Imazato) in April 1972, and set to preliminary investigations.

The main issues up until the General Agreement relating to this matter was concluded are as below.

- September 1972: A delegation of technical experts from Japan made an on-the-spot visit, and

along with inspecting the localities with a group of Soviet technical experts, they accepted the provision of materials on geological information and the outcomes of geophysical prospecting.

- November 1972 (Tokyo): Start of Japan−USSR formal negotiations (first)
- March 1973: Discussion of promotion measures with the relevant people on the Soviet side while visiting Japan
- August 1973 (Tokyo): Report on the current situation at the First Japan−USSR Economic Joint Executive Meeting[17]
- October 1973: Official visit to the USSR of Prime Minister Kakuei Tanaka
- February 1974 (Moscow): Second Japan−USSR negotiations
- March 1974 (Moscow and Leningrad [Saint Petersburg]): Second Japan−USSR Economic Joint Executive Meeting (talks also with Chairman of the Council of Ministers Alexei Kosygin)
- April 1974 (Tokyo): Agreement in rough outline on the General Agreement at the Third Japan−USSR negotiations
- July 1974 (Moscow): Fourth Japan−USSR negotiations
- October 1974: Launch by parties involved on the Japanese side of the Sakhalin Oil and Gas Development Co., Ltd. (SODECO)
- October 1974 (Moscow): Fifth Japan−USSR negotiations
- November−December 1974 (Moscow): Sixth Japan−USSR negotiations
- January 1975 (Tokyo): Signing of General Agreement (Seventh Japan−USSR negotiations)
- October 1975: Signing of Loan Agreement[18]
- May 1976: The governments of both countries signed official notes of exchange (designation as a national project)

4. The Succession of the Projects from Success, then Hibernation, and to New SODECO

As mentioned above, a period of three years was actually required from the Soviet proposal of February 1972 until reaching agreement. Considering the progress after the launching of the projects, however, three years was not a lot of time.

Below, I shall mention the main events, from the success of exploratory well No. 1, going through the incomplete development plan creation work, and up to the ending of that role with the transferring of the rights to new SODECO.

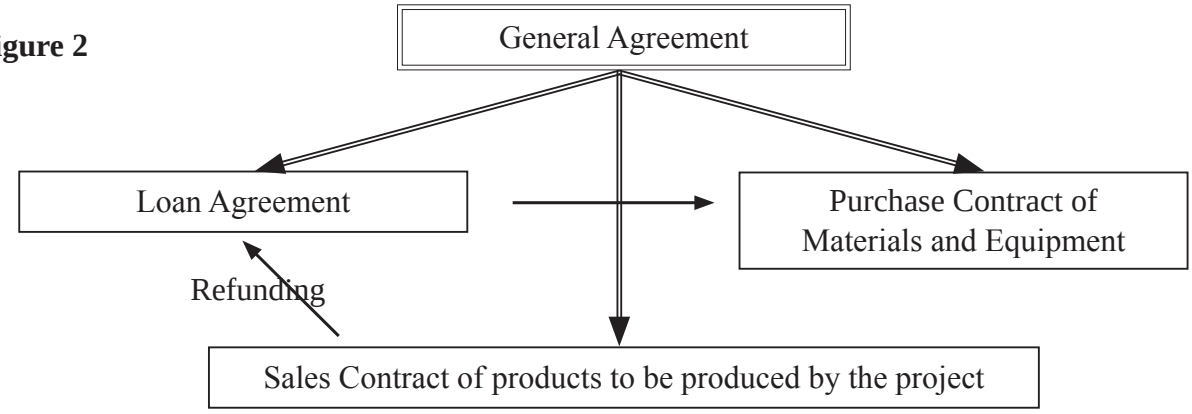
✧ The Conclusion of the General Agreement (GA)

In the Soviet Union at the time, the “Production Sharing (PS) Contract”, which was generally adopted in resource development worldwide, was not recognized, and the systems for introducing foreign capital did not exist either. Consequently, in the implementation of large-scale proposals with the West the “Compensation Deal (CD)” formula was applied.

This method, as shown in Figure 2, is a contract where three kinds of repayment by means of loans, material and equipment supply, and (the sale of) production interlock, and the Sakhalin Project also conformed to this.

In large-scale projects with other countries, it was customary that the implementation was guaranteed by intergovernmental agreement.

Figure 2



Source : Author

✧ Credit Redeemable when Successful

A special characteristic of the funding of the Sakhalin Project is that in the case where sufficient volume of resources have been found in development via exploration and it goes as far as production and supply, it is repaid, but in the case where the project is unsuccessful, "risk money" for which the duty of repayment is exempted (credit redeemable when successful) is to be provided. This was the first instance vis-à-vis the Soviet Union, but is one form of participation within resource development overseas.

The Soviet side would purchase the equipment and materials necessary for exploration work in the main from Japan with Japanese finance, and, by means of the crude oil and natural gas produced, besides repaying the amount of interest added to the principal, would pay compensation toward the risks.

With the total of the extended credit to be paid on success at US$185 million,[19] the limit for the risk compensation aimed toward this has been taken as US$291.8 million. The contracts where the repayment of principal and interest and the risk compensation payment for loans are guaranteed are seen as advantageous for Japan.

✧ The Project Target Blocks (Figure 3) and the Results of Japan−USSR Collaborative Work[20]

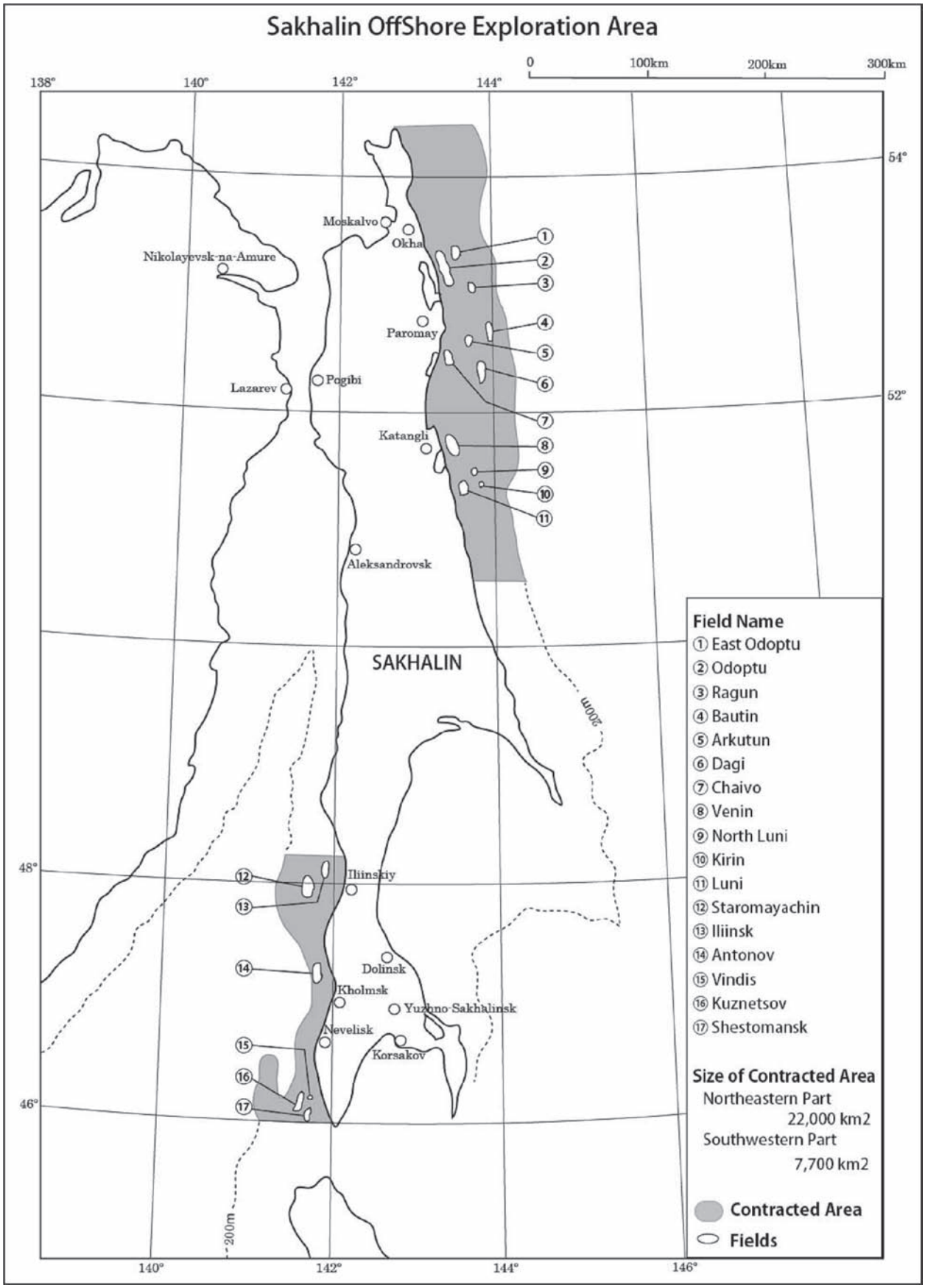
There were two exploration areas agreed to in the Sakhalin Project, in the northeastern section of Sakhalin Island (22,000km^2) and in the southwestern section (7,700km^2), with a water depth of less than 200m.

In the northeastern section 11 formations were discovered via preliminary exploration, and also 6 in the southwestern section.

The General Agreement was concluded at the beginning of 1975, and work commenced in the following year of 1976.

The seabed geological survey (stratigraphic boring and acoustic survey) and offshore geophysical survey was executed in the waters of the northeastern and southwestern sections from May 1976. The exploratory drilling work was executed from 1977 to 1983, a total of 25 wells were drilled, in 3 southwestern formations and 4 northeastern formations.

There are seven formations which were confirmed in the geophysical prospecting: Odoptu, Piltun-Astokh, Arkutun, Dagi, Chayvo, Venin and Lun. Among them Odoptu, Chayvo, Dagi and Lun are the ones which have been test drilled and evaluated as highly promising.



Source : SODECO

Test drilling was a success for the former two. Although test drilling was planned for Arkutun, the assessment of Odoptu was prioritized, and test drilling was passed over. These three formations and Dagi have been inherited by the Sakhalin I Project.

The Soviet Union succeeded in test drilling independently for Lun, and together with Piltun-Astokh it has become a subject formation for the Sakhalin II Project.

✧ Success with Test Well No. 1

In the case of the Odoptu deposit, test drilling for project No. 1 was commenced in August 1977, and oil extraction was successful in October and got off on the right foot. It was mentioned above, but for the energy-strapped Soviet Far East, around 1980, expectation increased for the beginning of the supply of oil from Sakhalin. The original volume of reserves for this deposit were taken as 175 million tonnes for oil, 3 million tonnes for condensate, and 87 billion cubic meters for natural gas.

The volumes of reserves discovered in test drilling for the Chayvo deposit alone were equivalent to 170 million tonnes (crude oil equivalent), and achieved the major result of surpassing the recoverable reserves of 100 million tonnes which the General Agreement initially expected.[21]

The exploration period ended in 1983, in accordance with the stipulations of the General Agreement,[22] and entered into examination of the development of the two deposits of Chayvo and Odoptu from 1984.

✧ The Formation of Development Plans and Changes in the Business Environment

The volume of reserves of the Chayvo deposit was acknowledged as being a developable volume in August 1982, in addition to receiving recognition[23] by the State Commission on Mineral Reserves in June 1986 regarding the Odoptu deposit.

The development of the former was planned from the fact that the volume of its reserves of natural gas was large. The three proposals for methanol, pipelines and LNG were examined, but because of the fact that in the case of methanol Japanese firms had investigated the construction of large-scale plants in Saudi Arabia from the mid 1970s, and also the fact that in the case of pipelines Hokkaido's demand for gas has fallen far below what was envisioned, a proposal was agreed in principal in January 1981 to supply Japan with 3 million tonnes of LNG annually over 20 years.

However, it isn't that LNG plans are to be realized as shown below, but that the Sakhalin Project puts a close to that history.

SODECO, aiming toward the realization of LNG business, along with furthering commercialization survey work, has called on electricity and urban gas companies for cooperation in LNG dealings. The second oil shock, however, brought a fall in economic growth in Japan, and primary energy demand declined, coupled with energy conservation, and the forecasts for LNG demand were also revised downwards.

Even so, the winning over of gas consumers, together with the government, began to be seen, and at the end of 1985 the momentum was achieved for the electricity generating side to agree to hold discussions, but at that juncture a major event occurred in the Soviet Union. It was the arrest of the person responsible for the project on the Soviet side. It may have been a part of the policy of perestroika of Mikhail Gorbachev, General Secretary from March of that year, but the effect was great of losing the driving role earnestly tackling the realization of the Sakhalin

Project.

The drop in the oil price lowered the profitability of projects markedly. At the end of 1985 Saudi Arabia turned to an increase in oil production, and the oil price fell to close to half its value in a matter of half a year.[24] The appreciation of the yen also progressed with the Plaza Accord.[25]

In this way the environment surrounding the Sakhalin Project changed dramatically, and the new responsible person on the Soviet side came to acknowledge in June 1986 that the LNG project was not economic. Here the project became frozen.

Furthermore, within the Japanese government, there were those that held that "Red Gas" wasn't necessary. Compared with the fact that Soviet produced gas was a contributory factor encouraging the first East−West reconciliation, by supplying Austria in 1968 and West Germany in 1973 by pipeline, the world view of Japan was an anachronism. In addition, there was also a trend toward evaluating the developing of natural gas a failure in its own right, even though the development of oil was the initial aim.

Regarding the Odoptu deposit, while the potential for a development proposal integrated with Chayvo, and for a further comprehensive development also including other deposits, has been examined, neither has got as far as realization.

In this way, the Sakhalin Project, which was launched after being pressed by the demands of the times—the inevitability of the vitalization of Japan−USSR economic exchange and the diversification of the securing of energy resources—has been swept along by the changes of the times, and the curtain has been lowered on it.

✧ The Significance of the Sakhalin Project

Thus the Sakhalin Project had not moved to development and production, and ended its role, passing the project on to new SODECO. However, the part played was actually great, and both the Japanese and Soviet sides were left with a great many tangibles and intangibles, and that contribution has been appraised highly.

Japan has taught the Soviet Union know-how, introducing genuine offshore development technology, and nurturing human resources. Besides the related equipment which the Soviet Union purchased with Japanese finance running to a great number, including world-class offshore drilling rig, seabed geological survey vessel, big computers for data analysis, and on-board equipment for geophysical exploration vessels, it also encouraged the acquisition of wide-ranging and the latest exploration techniques, including seabed geological surveying, geophysical exploration, and well logging. Japan's leading technology is reported also in sea-ice surveying for the construction of ice-resistant production platforms.

The formations which the Soviet Union discovered were surveyed in detail by sophisticated geophysical exploration, and contributed to the subsequent Sakhalin offshore development. Among the deposits for which the geological formation was made clear via geophysical exploration and exploratory drilling, the Sakhalin I and Sakhalin II Projects were ones which incorporated them in their development targets. This led to the Sakhalin III−V Projects in which the promise of the waters of the northeastern section of Sakhalin was recognized.

They acquired the planning, operation, and management, etc., of the project in the western part via collaborative work with Japan.

In the Soviet Union they furthered offshore development off Baku, putting out a bridge from the land and installing an onshore-use drilling rig, but via the execution of the Sakhalin Project, they learnt modern and real offshore resource development, and laid the foundation for

the country's offshore development. It is also known that the Soviet Union undertook exploration for oil and natural gas off Vietnam using the equipment it purchased from Japan.

Meanwhile, what has the Sakhalin Project left Japan with? Amongst other matters, the knock-on effects for the Sakhalin II Project, the lessening of the degree of Japan's dependence on the Middle East for crude oil imports, and the softening of the allergy to resource development cooperation with Russia can be raised. Currently, the "red" has disappeared from Russia's oil and natural gas, and along with imports increasing, several instances of prospecting development cooperation have evolved, and been investigated in addition.

It was October 2005 when the Sakhalin I Project, which succeeded to the Sakhalin Project contracted in 1975, began crude oil production.

Compared to the three years needed for negotiations, the subsequent thirty years was a mind-boggling period. In that period, the generous attitude of the stockholders and other related parties who continued supporting SODECO, in particular over the long period up to new SODECO being established, deserves recognition. That history and the "we dug the well" role, pioneering Japan−USSR and Japan−Russia energy cooperation, have merit that will be talked about and passed on for yet longer.

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1 The name at that time of "Sakhalin Project" was a proper noun denoting a collaborative project which Japan and the Soviet Union would implement in the waters off Sakhalin. The naming of the project which succeeded this by adding a number, the "Sakhalin I Project", began at the time of the demarcation of the waters surrounding Sakhalin Island into nine blocks.

2 The nine projects which Japan and the Soviet Union jointly implemented in the East Siberian and Far Eastern regions of the Soviet Union from the end of the 1960s to around 1990 were collectively termed the "Siberian Development Projects".

3 Denotes the "Foreign Exchange and Foreign Trade Act" enacted on 1 December 1949. At the time external transactions were prohibited in principle.

4 The Soviet–Japanese Joint Declaration (restoration of diplomatic ties) was concluded on 19 October 1956 and the Treaty of Commerce and the Trade Payment Agreement were signed on 6 December of the same year. The Trade Payment Agreement was extended seven times (ended in 1985).

5 At this time it is described based on the Nippon Keidanren Japan–Russia Business Cooperation Committee's "A Quarter Century in the Course of Japan–USSR Economic Cooperation: 'History of the Japan–USSR Business Cooperation Committee' (1965–1992)" (published in March 1993).

6 With Yoshinari Kawai as the delegation head, this was a large-scale economic mission made up of senior figures in industry. Visited various places in Siberia, and had talks with Premier Nikita Khrushchev. (Chairman of the Council of Ministers. At the time jointly held the post of First Secretary of the Communist Party Central Committee.) At that time a large number of separate industrial missions also visited the Soviet Union.

7 At the time in the form of the bilateral economic exchange working between Japan and Australia.

8 From Sugimoto, Tadashi, "The Energy Situation in the Soviet Union and the Prospects for the Development of the Far East" (March 1991).

9 One of the interregional cooperation organizations established in various parts of the country at the beginning of the 1990s. Has as its members the governors and chairpersons of regional assemblies.

10 From Note 5 above and Tozai Boeki Tsushinsha "East–West Trade Handbook" (issues for 1972–1989).

11 In the initial plan Niigata was to be the place for the unloading of LNG.

12 At these talks, Deputy Chairman Baibakov made a proposal for the supply to Japan of natural gas from Yakutia.

13 At the time of the Fourth Economic Joint Conference (Moscow, February 1970) Chairman of the Council of Ministers Alexei Kosygin revealed the opinion of Soviet geological experts that "Sakhalin's natural gas reserves are not great".

14 At this conference, the proposal of laying a pipeline from the Tyumen oilfields to Nakhodka and supplying crude oil to Japan was taken up.

[15] Sakhalin Oil and Gas Development Co., Ltd. "The Path for Sakhalin Oil: Exploration" (1984) and Note 10, etc.
[16] Japan Association for Trade with the Soviet Union & Socialist Countries of Europe "The Ninth Five-Year Plan of the USSR (1971–1975)" (June 1971), p. 61.
[17] This was set up in the middle of 1973 with the aim of a higher level of discussion by senior figures on both sides, because inevitable tendencies arose, such as the size of both sides' committees growing large and the number of projects they handled also increasing, and a falling off in the frequency of the staging of meetings, with the time for preparation being taken away.
[18] Three loan agreements for: credit redeemable when successful allocated to exploration expenditure (lease of equipment such as drilling rigs and working vessels and purchase of materials, etc.); credit for the purchase of permanent equipment for exploration use; and credit aimed at the procurement of funds required locally.
[19] In the initial contract, the exploration period was up to 1980 and the amount of funding was US$100 million, but subsequently, with two additional contracts, these were revised to 1983 and US$185 million, respectively.
[20] Hirabayashi, Kenji, "The Structure and Geology of the Sakhalin Shelf" (23 September 2013).
[21] Sakhalin Oil and Gas Development Co., Ltd. "The Path for Sakhalin Oil: Exploration" (1984) p. 54.
[22] As Note 19 above.
[23] The State Commission on Mineral Reserves (GKZ) is a state organ supervising all reserves of mineral resources, and recognition is taken as a prerequisite for the transition to development. Moreover, *"balansovyy zapas"* in Russian denotes the recognized volume of reserves which the GKZ has registered.
[24] Brent fob UK was at the US$29-a-barrel level in November 1985, US$22 in January 1986, and below US$10 in July of that same year.
[25] Before the September 1985 Plaza Accord US$1 was approximately 240 yen, at the end of that same year approximately 200 yen, and mid 1986 was approximately 160 yen.

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Impacts of Mongolian FTAs with the Countries in Northeast Asia: CGE Analysis with the GTAP 8 Data Base*

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Tomoyoshi Nakajima‡

Abstract

Having joined the WTO in 1997, Mongolia is a country with relatively liberal trade policies; but the country is not yet party to any regional or bilateral free trade agreements (FTAs). At the outset toward further robust economic development, Mongolia is keen to diversify its export markets. Recently, Mongolia began talks on concluding an EPA (Economic Partnership Agreement) with Japan.

An analysis using the CGE model and employing the Global Trade Analysis Project (GTAP) 8 Data Base revealed that the macroeconomic impacts of Mongolia's bilateral FTAs with the four Northeast Asian countries of Russia, the ROK, Japan and China—Mongolia's major trading partners—would be almost negligible. This result was consistent with the fact that currently Mongolia's import tariff rates are already relatively low and the partner countries exercise almost near zero-tariffs for Mongolia's major export commodities, of mining and livestock origin. Raw materials or low value-added products of mining or livestock origin account for more than 90% of the country's total exports.

However, some of Mongolia's manufacturing industries, such as textiles and apparel, leather and meat products can expect positive changes in their value-added along with increases of export sales. Also, these sectors would be the greatest potential sources of employment generation in Mongolia. Yet due to the relatively small shares of these products within Mongolia's exports, their impacts on the country's GDP were very small. Therefore, Mongolia needs to promote high value-added, export-oriented industries if the economy aims to benefit from free trade agreements with its trading partners.

Keywords: FTA, foreign trade policy, Mongolian economy, CGE analysis, GTAP Data Base

1. Recent Developments in Mongolia's Foreign Trade Policy

Mongolia maintains an open and relatively liberal foreign trade policy aimed at supporting the country's export-led growth strategy. As the World Bank noted: "Mongolia has one of the least restrictive trade regimes in Asia, and a relatively liberal foreign investment regime" (World Bank, 2009, p. 3). As a member Mongolia is maintaining more liberal trade regimes than its commitments made to the World Trade Organization (WTO). The Millennium Development Goals-based Comprehensive National Development Strategy of Mongolia up to 2021 stated the strategic objectives of Mongolia's foreign trade policy as that "[a] favorable foreign trade environment shall be created for implementing the strategy for economic development prevalent with export-oriented production and services" and identified two strategic objectives: (i) to increase export volume and diversity rationally, and (ii) to expand and improve the variety and quantity of imports in line with long-term economic development trends (Dolgorjav, et al, 2008, p. 170).

Mongolia's rich mineral resources and geographical proximity to China, the largest resource-hungry and dynamic economy, enabled the country's mining sector to pursue its export-led growth. Mongolia's economy has been on a continuous growth path since 1994, with the exception of 2009; the economy recorded a peak growth of 17.5% in 2011, whereas the mining

sector accounted for 24% of GDP and 89% of the exports, while employing less than 5% of the total employed. However, one-third of the country's population still lives in poverty, and inequality and urban–rural disparities have remained persistent over the past two decades. Thus it was important to direct trade policies toward addressing these issues (Ministry of Foreign Affairs of Mongolia and UNDP, 2008).

Mongolia's foreign trade prior to 1990 was characterized by a state monopoly on trade, a centrally-planned pricing system, and the export markets were limited to those of the former Council for Mutual Economic Assistance (CMEA [Comecon]) member countries under the dominance of the former Soviet Union (FSU). Since the beginning of the economic reforms in the early 1990s, trade liberalization was one of the immediate priorities for establishing the basis of a market economy and the government abolished the state monopoly and all quantitative restrictions on exports and imports, along with the export/import state-order system. Mongolia moved from a fixed exchange-rate system to a floating one in May 1993. According to the Law of Mongolia on Economic Entities passed in May 1991, all forms of economic entity, including sole proprietorships and individuals, were allowed to engage freely in independent foreign trade activities. Mongolia joined the International Convention on the Harmonized Commodity Description and Coding System (HS), developed by the World Customs Organization (WCO), on 30 September 1991 and introduced it on 1 January 1993. Currently, Mongolia is implementing the most recent version, HS2012, which entered into force on 1 January 2012 (WCO, 2013).

Customs controls, examination of goods, customs clearance procedures and enforcement of customs legislation by business entities, organizations and individuals are regulated by the Customs Law of Mongolia passed in 1996 and revised in 2008, whereas the customs tariff system, the principles for adopting customs duty rates, valuations, assessments and collection of customs duties are regulated by the Customs Tariff Law of Mongolia passed and revised in the same years. In addition to customs tariffs, value-added tax (VAT) and excise taxes are applied on imported goods. VAT of 10% was introduced in July 1998 under the Value-added Tax Law, which was revised in 2007, and imposition of VAT and its payment to and refunding from the state budget are regulated by this law. All merchandise exports are exempted from both customs and VAT duties, except a few items such as unprocessed camel wool, unprocessed goat and young goat skins, timber, wooden planks and blocks.

Mongolia joined the WTO on 29 January 1997 and most of Mongolia's tariff lines were bounded at 20%, whereas a 15% uniform ad valorem customs duty was exercised at that time. However, on 1 May 1997, the government unilaterally abolished the uniform customs duty and excise taxes on all imported goods, apart from those levied on a few items, such as alcohol, tobacco, petroleum products and motor vehicles, whereas revenues from customs taxes and duties constitute a substantial share of the state budget. Revenues from customs accounted for 34% of the state budget in 1990 and increased to 43% in 2012 (Mongolian Customs General Administration, 2013b).

Therefore, due to a growing need to increase budget revenues, the government increased VAT from 10% to 13% in September 1998. The following year, starting from 1 July 1999, a 5% uniform import tariff was reintroduced, and an excise tax on beer followed soon after. From November 2000, the customs tariff underwent a further hike from 5% to 7%, with VAT rising to 15%. However, the customs duty was reduced back to 5% and VAT to 10% in January 2003—with a few exceptions—and has remained unchanged to date (Enkhbayar Sh., 2010).

Pedigree animals, cattle, horses, pigs, sheep and goats (HS 01), automatic data-processing

machines, computer hardware, etc., and their parts and accessories (HS 8471, HS 8473.30), semiconductor devices, light-emitting diodes and parts (HS 8541), electronic integrated circuits, micro-assemblages and parts (HS 8542), medical, surgical, and veterinary instruments (HS 9018), except syringes (HS 9018.31), X-ray apparatus, tubes, panels, screens, etc., and parts (HS 9022) have zero-rate customs duties, whereas imported wheat flour and some domestically produced vegetables, such as potatoes, onions, cabbages, carrots and turnips, have seasonal tariff increases of 15%.

In addition to import duty and VAT, an excise tax is imposed on imported alcoholic beverages, cigarettes and tobacco, petroleum, diesel fuel and petroleum products and passenger cars, whereas hybrid cars are exempt from excise taxes so as to promote eco-friendly vehicles. In order to support a stable supply of petroleum and diesel fuel, for which Mongolia is wholly dependent on imports, usage-specific tariff rates were imposed and became effective on 24 November 2012, and the excise taxes on petroleum and diesel fuel have been annulled, except where used for the activities of mineral exploration and exploitation license holders. At the same time, the customs tax was reduced to 3% for the petroleum and diesel fuels used in the activities of mineral exploration and exploitation license holders, and set at fixed amounts for other users (Table 1).

In addition Mongolia implements temporary sector-specific trade policies in line with the country's development strategies. For example, imported and domestically traded new tractors, combines, machinery and equipment designed for use in agriculture, flour milling, irrigation and forestry machinery and equipment, and fertilizers and plant protection substances are exempt from both customs duties and VAT during the period from 29 May 2008 to 31 December 2016 (State Great Khural, 2008a, 2008b).

Mongolia acceded to the Convention on Temporary Admission (or Istanbul Convention) of the World Customs Organization on 5 June 2003 and is implementing six of its attachments: (i) Annex A concerning temporary admission papers (ATA carnets and CPD carnets); (ii) Annex B.1 concerning goods for display or use at exhibitions, fairs, meetings or similar events; (iii) Annex B.2 concerning professional equipment; (iv) Annex B.3 concerning containers, pallets, packing, samples and other goods imported in connection with a commercial operation; (v) Annex B.5 concerning goods imported for educational, scientific or cultural purposes; and (vi) Annex C concerning means of transport. The government of Mongolia has designated the Mongolian National Chamber of Commerce and Industry (MNCCI) to issue and guarantee ATA carnets within the country. The ATA carnet is an international customs and temporary export–import document that is used to clear customs in 83 countries and territories without paying duties and import taxes on merchandise that will be re-exported within 6–12 months (WCO, 2012; Government of Mongolia, 2003).

Upon joining the WTO, Mongolia incorporated most of the provisions of the WTO agreements into its domestic laws, and where parts of the agreements are not incorporated, the WTO agreement can be applied directly. Therefore, private individuals can invoke the WTO agreement before a national court. So far, there have not been any cases involving Mongolia, either as a complainant or as a respondent under the WTO dispute settlement mechanism. The first Trade Policy Review of Mongolia by the Trade Policy Review Body of the WTO was conducted in March 2005. The report indicated that Mongolia has considerable room to raise its tariffs within the existing bounds under the WTO (WTO, 2005a).

Table 1 : Mongolia's Excise Taxes on Imported Items

Item and Description (unit)			Excise Tax per unit			
Passenger cars (unit)	Engine capacity (cc)		Years in Use			
			0–3	4–6	7–9	10 or more
	1,500 or less		$500	$1,000	$2,000	$6,000
	1,501–2,500		$1,500	$2,000	$3,000	$7,000
	2,501–3,500		$2,000	$2,500	$4,000	$8,000
	3,501–4,500		$4,500	$5,000	$6,500	$10,500
	4,501 and more		$7,000	$7,500	$9,000	$13,000
Alcoholic beverages (liters)		Alcoholic content				
	All types of vodka	Up to 40%	$5.00			
		40% and more	$6.00			
	All types of wine	Up to 35%	$1.50			
		35% or more	$6.00			
	All types of beer		$0.20			
Cigarettes (per 100 pieces)			$1.20			
Tobacco (per 1 kg)			$0.90			
			For use in the mineral exploration and exploitation license owners' activities (except coal miners solely supplying the domestic market)		For other uses	
Gasoline, octane number 90 or less (ton)			MNT 130,000 (*3%)		0.0 (*MNT 20,350)	
Gasoline, octane number more than 90 (ton)			0.0 (*3%)		0.0 (*MNT 25,700)	
Diesel fuel (ton)			MNT 109,000 (*3%)		0.0 (*MNT 2,140)	

Note: *Customs taxes.

Source: Mongolian Customs General Administration (2013a); Government of Mongolia (2012).

Aiming at increasing trade, attracting FDI and promoting export-oriented industries, the Mongolian government is working on creating free trade and economic zones, and industrial and technological parks. The General Law on Free Zones and the Law on the Legal Status of Altanbulag Free Trade Zone (FTZ), on the northern border, were approved in 2002, and the laws on the legal statuses of Zamyn-Uud Free Economic Zone (FEZ), on the southern border, and Tsagaannuur FTZ, on the western border, were approved in 2003. Also, a concept to develop industrial and technological parks was approved with Parliamentary Resolution No. 54 in 2003 (WTO, 2005b).

Mongolia currently trades with more than 120 countries and has bilateral trade, economic cooperation and investment promotion agreements with more than 30 countries, including Russia,[1] China,[2] the ROK[3] and Japan.[4] Mongolia is currently a beneficiary of the Canadian, Japanese, US and EU preferential schemes under the Generalized System of Preferences. In 2005, Mongolia became a beneficiary of the EU's GSP+ scheme that provides a special incentive arrangement for sustainable development and good governance. Accordingly, about 7,200 HS items became eligible for exemption from customs tariffs until the end of 2008, but this was extended to 2014 (EU, 2005; EU, 2012).

Furthermore, a number of provisions regarding foreign trade policies and regulations have been included in the Government Action Plan for 2012–2016 and measures for its implementation were described in the Plan for Implementation of the Action Plan for 2012–2016 (Table 2).

However, notwithstanding the government's strategy to have free trade agreements (FTAs) with its major trading partners since the early years of joining the WTO, Mongolia is not yet a party to any regional or bilateral free trade agreement. At the outset toward further robust economic development, the country is keen to further diversify its export markets. In 2007, Mongolia began talks on negotiating an Economic Partnership Agreement (EPA) with Japan and the Joint Study Group report was completed in March 2011. To date, three rounds of negotiations were held alternately in each country, with the latest one being held in April 2013 in Ulaanbaatar. If successful, this will be the first EPA for Mongolia.

Moreover, the rapidly growing Mongolian economy and the country's vast mineral resources are continuing to attract foreign investments, including those of Japan. Bilateral economic relations between Mongolia and Japan have been gearing up recently and moved to the form of a "Strategic Partnership" in 2010 from the previous "Comprehensive Partnership". During the Japanese Prime Minister Abe's visit to Mongolia in March 2013, a new initiative called the "ERCH [meaning "vitality" in Mongolian] Initiative: Japan-Mongolia Cooperative Initiative for Vibrant Economy" was launched. It aims to promote development of investment and the business environment between the two countries and cooperate for Mongolia's sustainable economic development (MOFA, 2013).

Subsequently a Memorandum of Understanding on Cooperation to promote trade and investments between the two countries was signed between Japan's Ministry of Economy, Trade and Industry (METI) and Mongolia's Ministry of Economic Development (MED) on 3 May 2013 in Ulaanbaatar. The long-awaited construction of a new airport in Mongolia started in June 2013, with Japan extending a soft loan amounting to JPY 28.8 billion for the financing thereof. Also, a general agreement on extending the first export credit line, equal to JPY 8 billion, was signed between the Japan Bank for International Cooperation (JBIC) and MED on 6 June 2013 aimed at supporting Japanese companies' exports to Mongolia. This is the first commercial term credit ever extended to Mongolia from Japan (Government of Mongolia, 2013, 10 and 12 June; JBIC, 2013).

Table 2 : Trade Related Measures in Mongolia's Government Action Plan for 2012–2016

Provisions in the Action Plan	Activities in the implementation plan	Authorities in charge
Renovate border points	Formulate and implement overall plans for developing border points at Zamyn-Uud, Altanbulag, Khangi, Bichigt, Burgastai, Bulgan, Khankh, and Zelter, and carry out step-by-step implementation of the plans at these and at Gashuunsukhait , Shiveekhuren and Borshoo.	Ministry of Construction and Urban Development (MCUD)
	Carry out structural reforms of the control and inspection bodies operating at the border points.	The Cabinet Office
	Renovate and build all the basic infrastructure at border points of national, regional and provincial importance.	Ministry of Economic Development (MED)
	Introduce an "E-one-window" and transport logistics system for trade facilitation by negotiating with neighboring countries within the framework of international laws and regulations.	
Implement a "One-window" policy on mineral exports	Create a legal environment relating to exports of mineral resources and implement a "One-window" policy.	Ministry of Mining (MoM)
Maintain sustainable economic development by gradually reducing exports of unprocessed minerals and encourage exports of value-added products in conformity with international standards	Research and develop measures towards making mining product standards in conformity with the international standards.	MoM
	Establish a legal basis for exempting from customs duties and VAT the machinery and equipment producing finished products of mining origin.	Ministry of Industry and Agriculture (MIA)
	Select a technology for extracting copper from the concentrate and carry out a plant feasibility study via international open bidding.	MIA
	Research and develop measures to build production plants of zinc and other metals in the Eastern region.	MIA
	Establish a legal framework to apply sliding duty rates, depending on the stage of added value, on exports of ores and concentrates.	MoM
Build infrastructure at Zamyn-Uud FEZ, Altanbulag FTZ and Tsagaannuur FTZ	Carry on projects on infrastructure improvements for Zamyn-Uud.	MCUD
	Develop and approve the Master Plans for Altanbulag, Zamyn-Uud and Tsagaannuur.	MCUD
	Build infrastructure at Altanbulag FTZ and Tsagaannuur FTZ stage-by-stage.	
Develop and implement a national program for supporting non-mining exports in cooperation with the private sector. Establish a "Non-mining Export Development Fund" from the export revenues of the mining sector.	Develop and implement a national program on promotion of non-mining exports	MED
	Establish an Innovation Fund from the export revenues of mining and provide financial support to the companies operating in non-mining production and exports that use advanced, high, green and renewable-energy technologies.	MED
	Introduce financial incentive mechanisms aiming at promoting the use of intellectual property rights at SMEs.	MED
	Build intangible and intellectual property valuation systems and apply them in business.	MED
Protect national industries by using customs and tariff mechanisms within the country's commitments to the WTO.	Maintain the average bounded tariff rates at 20%.	Ministry of Finance (MoF)
	Apply differential customs tariff rates by product classifications, regions and producers.	MoF
	Increase import tariffs on wheat, flour, and vegetables up to the levels bounded by the WTO rules.	MIA

Source: Compiled from State Great Khural (Parliament) of Mongolia, 2012a, b.

2. Mongolia's Trade with the Countries of Northeast Asia

2.1. Overall Trade Flow

Foreign trade has a large presence in Mongolia's economy, especially after the country's transition toward a market economy and opening-up to world markets. The share of Mongolia's merchandize trade turnover increased to 107.9% of nominal GDP in 2012 from 53.4% in 1990, while those of exports and imports increased to 42.5% and 65.4% in 2012 from 22.2% and 31.1% in 1990, respectively. At the same time, the country's foreign trade balance has been suffering from chronic deficits, except for a small number of years. The trade deficit escalated to 22.8% of GDP in 2012 due to the increased imports associated with the massive foreign investments into Mongolia's mining sector. However, this situation is expected to substantially improve in the coming years with the start of production and export of newly added capacity in the country's mining sector (Table 3).

Table 3 : Mongolia's Foreign Trade and GDP (selected years)

Description		1990	1995	2000	2005	2010	2012
GDP, nominal, US$ million (evaluated at annual average exchange rate)		2,970	1,455	1,136	2,523	6,206	10,308
Real GDP growth, %		−2.5	6.4	1.1	7.3	6.4	12.4
Trade in goods	US$ million						
	Total turnover	1,585	889	1,150	2,241	6,109	11,123
	Exports	661	473	536	1,064	2,909	4,385
	Imports	924	415	615	1,177	3,200	6,738
	Trade balance	−263	58	−79	−113	−292	−2,354
	Ratio to GDP, %						
	Total turnover	53.4	61.1	101.3	88.8	98.4	107.9
	Exports	22.2	32.5	47.2	42.2	46.9	42.5
	Imports	31.1	28.5	54.1	46.7	51.6	65.4
	Trade balance	−8.9	4.0	−6.9	−4.5	−4.7	−22.8

Note: Estimated from Mongolian Statistical Yearbook, various issues.

Figure 1 : Map of Northeast Asia

Source: ERINA

Mongolia currently exports to approximately 60 countries and imports from more than 130 countries; however, trade turnover with the countries in Northeast Asia[5] accounts for almost 80% of the total. In 2011, exports to four Northeast Asian countries (excluding the DPRK) accounted for 95% of the total, while imports from these countries accounted for 68% of the total. However, Mongolia's share of its trading partners' foreign trade volume remains very limited—far less than 1%. Therefore, Mongolia's ambition to have FTAs with its trading partners would be of "non-trade content" for the trading partners (Batnasan N., et al, 2012, p. 4; Table 4).

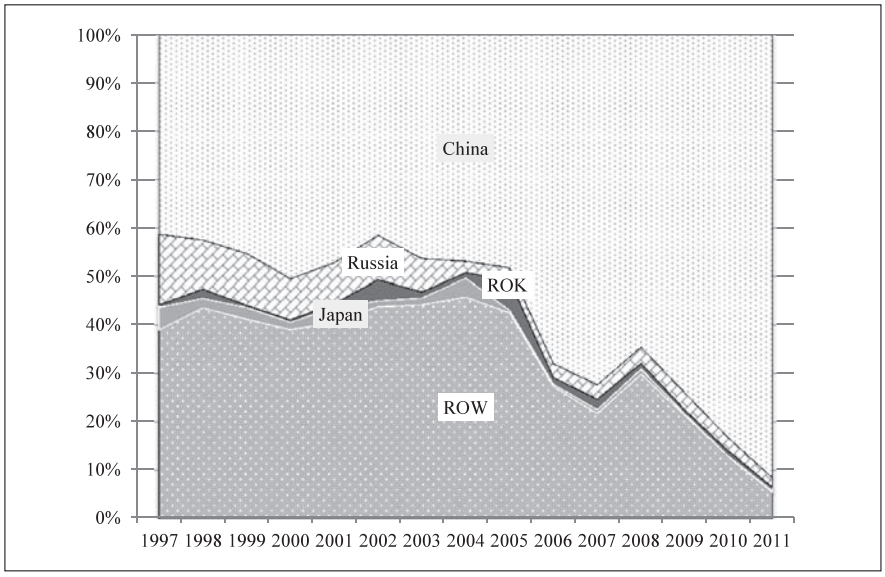
Mongolia is a landlocked country and has a limited international transportation network. Therefore, the country's two sole neighbors—China and Russia—have the largest presence in Mongolia's foreign trade activities. In 2011, China was the only destination for 92% of Mongolia's total exports and the origin of 30% of total imports, while the figures for Russia were 2% and 25%, respectively (Table 4, Figures 1, 2 and 3).

Table 4 : Mongolia's Trade with Its Trading Partners, 2011

Trading partner	Partners' share of Mongolia's Foreign trade, %			Mongolia's share of Partners' Foreign Trade, %	
	Trade Turnover	Exports	Imports	Exports	Imports
China	56.6	92.2	30.7	0.14	0.21
Russia	15.1	2.0	24.6	0.31	0.03
Japan	4.4	0.2	7.4	0.04	0.002
ROK	3.5	0.8	5.4	0.06	0.01
Total	79.6	95.2	68.1		

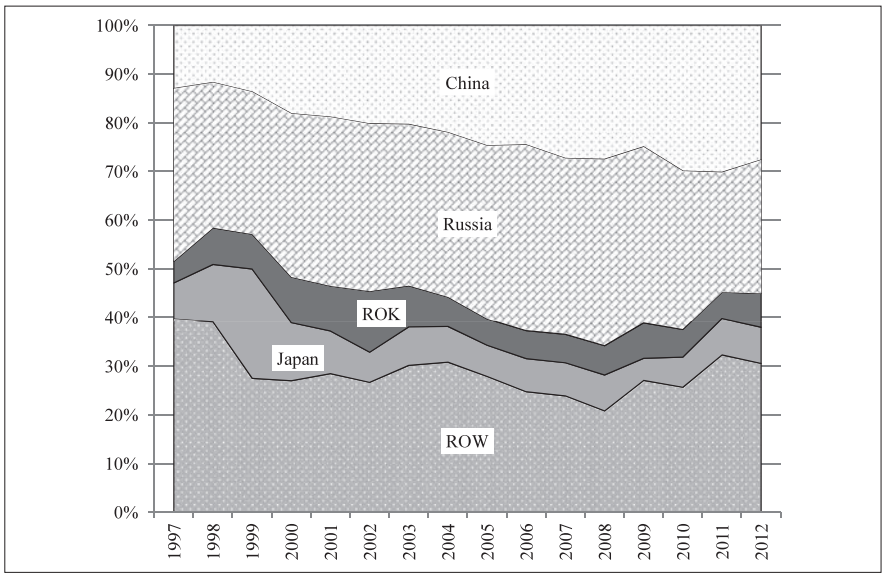
Source: Adapted from Batnasan N., et al, 2012, p. 4.

Figure 2 : Destination of Mongolia's Exports (Percentage of Total)



Source: Mongolian Statistical Yearbook, various issues

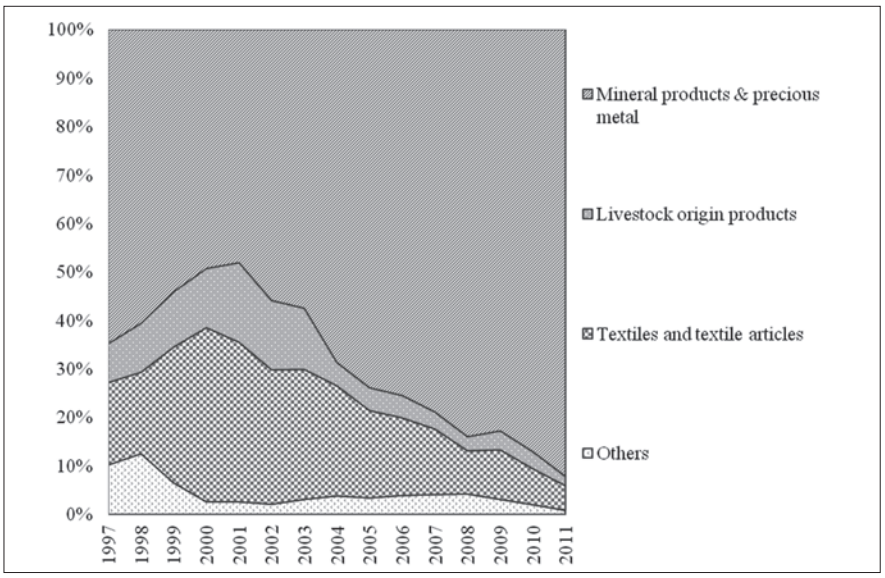
Figure 3 : Origin of Mongolia's Imports (Percentage of Total)



Source: Mongolian Statistical Yearbook, various issues

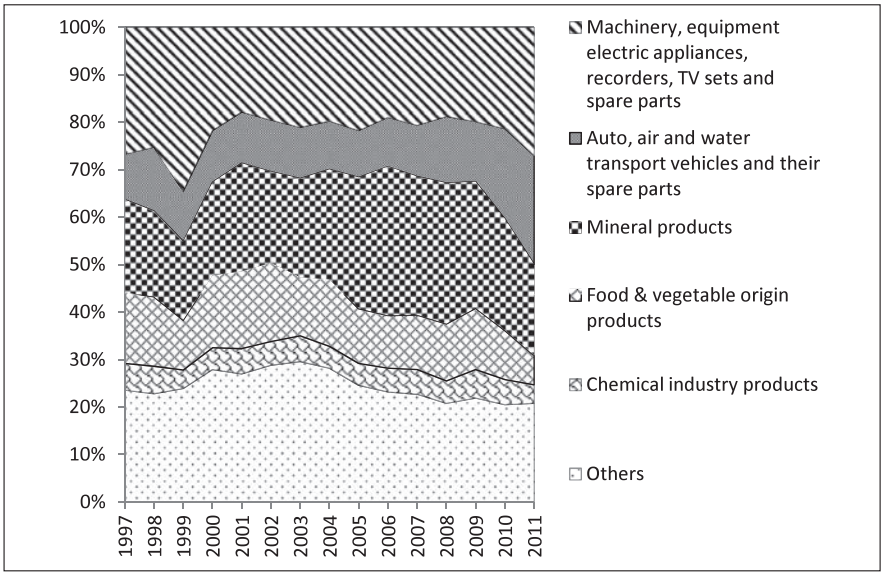
Although the Mongolian government has been persistently promoting an export-led growth policy for more than two decades, exports remain dominated by raw and low-value added products of mining and livestock origin, whereas imports consist of various manufactured goods, food, machinery and equipment and other industrial products. The share of mining-origin exports increased to 92% of the total in 2011 from 48% in 2001, whereas those of textiles and textile articles decreased to 5% in 2011 from 33% in 2001. Mongolia's exports of textile and textile articles had been on the rise after the country's accession to the WTO owing to Mongolia's excess quota; but it was reversed when all the restrictions under the WTO Agreement on Textiles and Clothing (ATC) terminated in 2005.[6] At the same time, the structure of Mongolia's imports did not change much over the entire period (Figures 4 and 5).

Figure 4 : Structure of Mongolia's Exports (Percentage of Total)



Source: Mongolian Statistical Yearbook, various issues

Figure 5 : Structure of Mongolia's Imports (Percentage of Total)



Source: Mongolian Statistical Yearbook, various issues

2.2. Mongolia–China Trade

China is the largest trading partner of Mongolia. The first trade-related agreements between the two countries date back to 1951. Currently, there are more than 100 agreements in place relating to bilateral relations and cooperation in various fields. The main mechanism that regulates bilateral trade and economic relations is the "Committee on Trade, Economy, Science and Technical Cooperation between the Government of Mongolia and the Government of the People's Republic of China", which meets biennially. However, Mongolia is among the few developing countries in Asia that is not entitled to any tariff discount or preferential treatment in

the Chinese market (Ministry of Foreign Affairs of Mongolia and UNDP, 2008).

In terms of structure, Mongolia's trade with China is basically connected to the country's overall trade structure as described earlier. Coal has emerged as the top export commodity to China since the mid-2000s, accounting for 51.7% of the total in 2011, while the shares of other minerals and crude oil accounted for 37.3% and 5.7%, respectively. Imports of machinery and equipment from China had the largest share of the total, accounting for 22.2% in 2011, followed by those for metals and other manufactured products (Table 5).

Table 5 : Mongolia's Trade with China: Volume and Structure, selected years

(%)

Sector	Exports			Imports		
	1997	2007	2011	1997	2007	2011
Total volume*, US$ million	234	1,407	4,440	61	563	1,862
Grains, Crops	0.0	0.2	0.1	38	4.9	1.5
Animal Products	0.8	0.2	0.1	0.0	0.2	0.0
Wool	11.3	8.8	3.5	0.0	0.6	0.1
Meat	0.1	0.0	0.0	0.1	0.2	0.0
Forestry	8.9	0.0	0.0	0.0	0.0	0.1
Coal	0.0	8.2	51.7	0.0	0.0	0.0
Oil & Gas	0.0	3.8	5.7	1.9	3.6	1.7
Other Minerals	59.7	73.0	37.3	1.0	4.3	3.2
Processed Food	0.2	0.0	0.0	10.9	3.5	2.0
Textiles & Apparel	0.6	0.1	0.0	10.2	5.6	1.1
Leather Products	10.8	2.6	1.0	0.0	0.1	0.1
Wood & Paper Products	0.0	0.1	0.0	2.6	4.2	2.8
Metals	6.8	1.6	0.2	6.5	18.6	18.8
Automobiles	0.5	0.5	0.0	3.1	6.5	22.2
Machinery & Equipment	0.0	0.7	0.2	8.2	27.5	31.0
Other Manufactured Products	0.4	0.1	0.1	16.6	20.3	15.4
Electricity	0.0	0.0	0.0	0.7	0.0	0.0

Notes: 1. * Data source: Mongolian Statistical Yearbook, various issues;
2. Percentage shares were estimated from Batnasan, N., et al, 2008 (personal communication).

2.3. Mongolia–Russia Trade

Mongolia's trade with Russia dates back to 1923, when the first agreement on trade between the two countries was concluded in December of that year (Galsandorj, D. and Bud, Kh., 2001) and currently Russia is the second largest trading partner of Mongolia. Exports of other minerals (mainly fluorspar and copper concentrates) are dominant in Mongolia's exports to Russia, followed by those of processed food (mainly mixed juice, alcoholic beverages and meat). Exports of these items accounted, respectively, for 68.7%, 22.9%, and 0.3% of the total in 2011.

Mongolia imports from Russia almost all of its petroleum and petroleum products and these items account for up to two thirds of the country's imports from Russia. Other main import commodities from Russia are metals, machinery and equipment, automobiles, processed food and other manufactured products (Table 6).

Table 6 : Mongolia's Trade with Russia: Volume and Structure, selected years

(%)

Sector	Exports			Imports		
	1997	2007	2011	1997	2007	2011
Total volume*, US$ million	83	58	96	166	745	1,625
Grains, Crops	0.4	0.0	0.3	1.1	4.2	1.6
Animal Products	0.1	0.2	0.0	0.2	0.6	0.5
Wool	0.2	0.5	0.8	0.0	0.0	0.0
Meat	12.8	27.9	0.3	0.1	0.0	0.0
Forestry	0.1	0.0	0.0	1.6	0.0	0.0
Coal	0.0	1.4	0.4	2.0	0.0	0.0
Oil & Gas	0.1	0.5	2.8	43.1	70.7	67
Other Minerals	82.8	53.7	68.7	0.3	0.1	0.2
Processed Food	0.1	0.2	22.9	1.7	4.7	5.2
Textiles & Apparel	0.3	1.6	1.4	1.2	0.1	0.1
Leather Products	1.5	0.2	0.0	0.0	0.0	0.0
Wood & Paper Products	0.1	0.0	0.0	0.7	0.4	0.3
Metals	0.2	1.1	0.1	9.6	3.8	6.4
Automobiles	0.3	7.1	0.6	5.3	2.5	5.6
Machinery & Equipment	0.4	4.8	0.8	17.9	7.0	6.0
Other Manufactured Products	0.7	0.6	0.4	7.9	4.9	5.9
Electricity	0.0	0.1	0.5	7.3	0.8	1.0

Notes: 1. * Data source: Mongolian Statistical Yearbook, various issues;
2. Percentage shares were estimated from Batnasan, N., et al, 2008 (personal communication).

2.4. Mongolia–Japan Trade

Mongolia's trade with Japan began in 1960 after a protocol on development of trade was signed between the Chamber of Commerce of Mongolia and Japan's Association on Trade Promotion in 1959. From 1 April 1974, the Government of Japan began to provide preferential treatment on goods exported from Mongolia, and trade turnover between the two countries increased to US$32 million for the period 1981–1985 from US$4 million for the period 1966–1970 (Galsandorj, D. and Bud, Kh., 2001).

Since the early 1990s, Japan has emerged as Mongolia's fourth largest trading partner owing to growing imports of automobiles, machinery and equipment and other manufactured products from Japan. The value of automobile imports increased from US$6.4 million in 1997 to US$346 million in 2011, accounting for 70% of total imports from Japan. In addition, imports of machinery and equipment and other manufactured products increased to US$89.5 million and US$29 million in 2011 from US$23 million and US$3 million, respectively. However, Mongolia's exports to Japan still remain limited in terms of volume and variety. Mongolia's exports to Japan accounted for only US$11 million in 2011. Although, cashmere and textile apparel predominate within exports, other occasional items, such as coal, and other minerals and metals, could also be predominant in exports (Table 7).

Table 7 : Mongolia's Trade with Japan: Volume and Structure, selected years

(%)

Sector	Exports			Imports		
	1997	2007	2011	1997	2007	2011
Total volume*, US$ million	26	42	11	35	120	493
Grains, Crops	0.0	0.0	0.1	0.3	0.0	0.0
Animal Products	0.0	0.0	0.0	0.0	0.0	0.0
Wool	20.9	24.9	4.6	0.0	0.2	0.0
Meat	0.0	0.7	0.6	0.0	0.0	0.0
Forestry	0.0	0.0	0.0	0.0	0.0	0.0
Coal	0.0	0.0	62.7	0.0	0.0	0.0
Oil & Gas	0.0	0.0	0.0	1.3	0.5	0.1
Other Minerals	42.9	47.7	1.0	0.0	0.0	0.0
Processed Food	0.0	1.2	0.2	0.9	0.5	2.0
Textiles & Apparel	6.1	8.4	19.3	1.3	0.7	0.3
Leather Products	0.2	0.2	0.0	0.0	0.0	0.0
Wood & Paper Products	0.0	0.0	0.2	0.6	0.4	0.3
Metals	21.2	16.0	0.9	3.1	1.1	3.1
Automobiles	0.9	0.0	1.4	18.6	66.6	70.0
Machinery & Equipment	7.3	0.6	7.9	65.9	23.3	18.1
Other Manufactured Products	0.3	0.2	1.1	8.0	6.8	5.9
Electricity	0.0	0.0	0.0	0.0	0.0	0.0

Notes: 1.* Data source: Mongolian Statistical Yearbook, various issues;
2. Percentage shares were estimated from Batnasan, N., et al, 2008 (personal communication).

2.5. Mongolia– ROK Trade

An agreement on trade was signed between the two governments on 28 March 1991 and the ROK has emerged as the other largest trading partner of Mongolia since the early 1990s. Mongolia's trade turnover with the ROK amounted to US$480 million in 2011, being the fifth largest.

Similar to Japan, Mongolia's exports to the ROK were characterized by exports of a few irregular items of mining and livestock origin. Exports of molybdenum ore and concentrates accounted for 70% of the total, while those of non-monetary gold were 16% of the total in 2011. However, Mongolia's imports from the ROK consist of automobiles, machinery and equipment and a variety of other manufactured goods. In 2011, automobiles accounted for 40% of total imports from the ROK, while the shares of machinery and equipment and other manufactured products were 25.3% and 10.2% of the total, respectively (Table 8).

As pointed out in Nakajima, (2012), "… from the end of the 1990s, the ROK turned around its policy to actively take the initiative, designating FTAs as an important part of trade policy". However, talks on an FTA with Mongolia have not been initiated yet.

Table 8 : Mongolia's Trade with the ROK: Volume and Structure, selected years

(%)

Sector	Exports			Imports		
	1997	2007	2011	1997	2007	2011
Total volume*, US$ million	3	42	38	21	120	357
Grains, Crops	0.0	0.1	0.1	0.2	0.2	0.3
Animal Products	54.7	0.3	0.4	0.6	0.2	0.1
Wool	14.8	1.2	2.2	0.9	0.2	0.0
Meat	0.1	0.1	0.0	0.0	0.1	0.1
Forestry	1.9	0.3	0.1	0.0	0.0	0.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0
Oil & Gas	0.0	0.3	4.2	2.6	7.2	6.4
Other Minerals	0.0	72.2	69.5	0.1	0.1	0.1
Processed Food	18.9	0.4	0.3	5.3	16.1	8.7
Textiles & Apparel	1.5	1.0	2.8	49.4	3.9	2.1
Leather Products	1.5	0.0	2.9	2.5	0.1	0.0
Wood & Paper Products	0.0	0.2	0.2	6.7	2.7	2.0
Metals	1.0	0.7	0.0	0.7	8.5	4.3
Automobiles	0.4	0.3	0.2	9.3	23.4	40.4
Machinery & Equipment	0.2	1.9	0.7	6.6	23.5	25.3
Other Manufactured Products	5.2	20.8	16.3	15.0	14.0	10.2
Electricity	0.0	0.0	0.0	0.0	0.0	0.0

Notes: 1. * Data source: Mongolian Statistical Yearbook, various issues;
2. Percentage shares were estimated from Batnasan, N., et al, 2008 (personal communication).

3. Analysis of the Economic Effects of Mongolia's FTAs

3.1. The Model

In analyzing the expected economic effects of Mongolia's FTAs with the countries in Northeast Asia we employed the Global Trade Analysis Project (GTAP) Data Base (Version 8) and the standard GTAP Model. Inclusion of Mongolian data in this global database for the first time enabled us to use this model in the analysis.

The GTAP Model is a multi-region and multi-sector Computable General Equilibrium (CGE) model[7] with perfect competition and constant returns to scale. Bilateral trade is handled via the Armington assumption. It combines detailed bilateral trade, transport and protection data characterizing economic linkages among regions, together with individual country input–output databases, which account for inter-sectoral linkages.

The GTAP Data Base 8 has dual reference years (2004 and 2007), but we used 2007 as the reference year. The data has 129 regions and 57 commodities, where Mongolia was one of the newly added regions in the Data Base. The GTAP Input–Output Table (IOT) for Mongolia is based on the Mongolian IOT for 2005 which includes 55 sectors (Narayanan, et al, eds., 2012; Begg, et al, 2012). In consideration of the target countries and Mongolia's industrial and trade structures, the regions were aggregated into 14 from the 129, and the sectors into 18 from the 57 in the model (Appendix Table I and Appendix Table II).

The composition of the GDP of the countries in question is provided in Table 9. GDP shares of foreign trade activities are the highest for Mongolia among the selected countries, with exports and imports each exceeding 60% of GDP. At the same time, Mongolia's uniform import tax rate is relatively low at 5%, while those of other countries range between zero for raw materials in all partner countries to 27% for processed food in the ROK (Tables 10 and 11).

Table 9 : Composition of GDP

(%)

Item	Trading Partner				
	Mongolia	China	Japan	ROK	Russia
Private Consumption	50.5	37.5	57.1	53.8	51.4
Government Consumption	13.2	40.7	23.1	28.2	22.1
Investment	37.5	14.1	18.0	14.5	18.2
Exports	60.9	36.0	18.1	42.3	29.6
Imports	-62.1	-28.3	-16.2	-38.9	-21.4
Total	100	100	100	100	100

Source: GTAP 8 Data Base.

Table 10 : Import Tariff Rates of Mongolia in the Model

(%)

Sector	Trading partner			
	China	Japan	ROK	Russia
Grains, Crops	6.8	4.5	5.4	5.0
Animal Products	-	-	5.0	-
Wool	-	-	-	5.0
Meat	4.9	-	5.0	4.9
Forestry	5.0	-	5.0	5.0
Coal	5.0	-	5.0	-
Oil & Gas	5.0	5.0	5.0	5.0
Other Minerals	5.0	5.0	5.0	5.0
Processed Food	5.3	6.3	9.8	6.9
Textiles & Apparel	5.0	5.0	5.0	5.0
Leather Products	5.0	5.0	5.0	5.0
Wood & Paper Products	5.0	5.0	5.0	5.0
Metals	5.0	5.0	5.0	5.0
Automobiles	5.0	5.0	5.0	5.0
Machinery & Equipment	4.8	4.9	4.5	4.9
Other Manufactured Products	5.0	5.0	5.0	5.0
Electricity	5.0	-	-	5.0

Source: GTAP 8 Data Base.

Table 11 : Import Tariff Rates of Other Regions vis-à-vis Mongolia in the Model

(%)

Sector	Trading Partner			
	China	Japan	ROK	Russia
Grains, Crops	12.4	6.0	1.7	0.0
Animal Products	6.7	0.0	0.0	0.0
Wool	9.1	0.0	0.0	10.3
Meat	7.7	1.6	20.6	14.0
Forestry	0.0	0.0	0.0	4.0
Coal	4.5	0.0	0.0	5.0
Oil & Gas	0.0	0.0	0.0	0.0
Other Minerals	0.0	0.0	0.1	13.4
Processed Food	11.1	12.6	26.5	7.0
Textiles & Apparel	10.7	7.0	9.2	16.0
Leather Products	8.8	7.2	8.3	6.7
Wood & Paper Products	0.6	0.1	4.6	9.7
Metals	1.2	1.5	5.2	9.2
Automobiles	0.0	0.0	8.0	10.2
Machinery & Equipment	7.9	0.0	4.7	7.8
Other Manufactured Products	8.0	0.0	2.9	5.9
Electricity	0.0	0.0	0.0	0.0

Source: GTAP 8 Data Base.

3.2. The Macroeconomic Effects of the FTAs

The simulation results demonstrated that Mongolia's FTAs with the countries in Northeast Asia—the country's major trading partners—would have very limited macroeconomic effects on Mongolia. The country's real GDP increases by just 0.02% when Mongolia has an FTA with Russia, while it decreases by 0.02% in both cases when FTAs are in place with Japan and the ROK. In addition, Mongolia's FTA with China has almost no effect on Mongolia's real GDP (Table 12).

In terms of the equivalent variation (EV), which is an indicator for measuring the effect on public welfare, Mongolia's FTAs with China and Russia bring positive changes to EV, while those with Japan and the ROK saw negative changes similar to the changes in real GDP. That means Mongolia's consumers would be better off from price decreases resulting from Mongolia's FTAs with China and Russia. However, the consumers may be worse-off, although at a much lower scale, from the combined consumption realized after FTAs with Japan and the ROK, due to such things as higher prices than before (Table 13).

Improvements in the terms of trade were the major contributor to EV in the FTAs with all the countries, although they were of smaller scale via the FTAs with Japan and the ROK. Imported tradable commodities demanded by private households was the other most relatively large contributor to EV in the FTAs with Russia, China and the ROK (Table 14).

Table 12 : Mongolia's Real GDP Changes via the FTAs

Mongolia's Bilateral FTA Counterpart	Real GDP Change, %
China	0.0003
Japan	-0.0236
ROK	-0.0215
Russia	0.0198

Table 13 : Equivalent Variations (EVs) via the FTAs

(US$ Million)

Beneficiary	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Mongolia	16.6	-0.3	-0.2	14.5
China	10.5			
Japan		7.3		
ROK			13.2	
Russia				4.4

Table 14 : Contributions to Mongolia's EV

(US$ Million)

Item	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Terms of Trade	16.679	0.784	0.695	13.530
Exports of tradable commodities	0.403	0.000	0.062	0.122
Aggregate imports of tradable commodities at market prices	-2.539	-0.924	-1.018	-1.689
Domestic tradable commodity demanded by government household	0.002	-0.008	-0.008	0.007
Imported tradable commodity demanded by government household	0.021	0.001	0.002	0.010
Domestic tradable commodity demanded by private household	-0.533	-0.086	-0.269	-0.782
Imported tradable commodity demanded by private household	1.812	-0.025	0.298	2.619
Non-saving commodity output	0.339	0.009	-0.005	-0.302
Total	16.186	-0.249	-0.243	13.514

These results can be explained by a number of factors that characterize Mongolia's current economy. First, the amount of Mongolia's trade with China and Russia is large and greater effects can naturally be expected from FTAs with these countries. Hence the economic effects of Mongolia's FTAs with China and Russia were much greater than those with Japan and the ROK.

The other factor is the tariff rates of partner countries: where the existing tariffs are high, the economic effects upon their elimination become large. Although the tariff rates of the partner countries range up to 27%, the current tariffs are already zero or very low for most of Mongolia's

major export commodities. Even though China and Russia have relatively higher tariff rates on imports of livestock-origin products, such as wool, meat, and leather products, etc., the effects of their elimination were insignificant due to the small shares of such items within Mongolia's exports. On the other hand, the current uniform tariff rate of Mongolia is already relatively low. Therefore its elimination would not result in any significant change in Mongolia's current imports. Accordingly, at the aggregate level, the economic effects of the FTAs were very small or negligible. These results were similar to the findings of a study by Batnasan, N., et al (2012) on the opportunities and risks for Mongolia of establishing FTAs with its major trading partners. They stated that the FTAs would not have any solid effect on the country's GDP growth and the growth rate resulting from the FTAs would not exceed 1%; thus the proposed FTAs will be mostly of "non-trade" content.

3.3. The FTAs' Effects by Sector

For assessing the FTA effects on the Mongolian economy in more detail, we have looked into some of the simulation results by industrial sector.

The percentage changes of the value-added by sector upon executing the FTAs are provided in Table 15. Despite the small or negligible aggregate effects, as described earlier, there were several positive changes observed for some sectors, such as leather products, textile and apparel, and meat and animal products, especially in the cases of Mongolia–China and Mongolia–Russia FTAs.

The largest growth of value-added was for leather products with a Mongolia–China FTA. It increased 21.6%, while textiles and apparel went up 9.4%. In addition, the value-added of animal products, and grains and crops increased by 3.5% and 2.2%, respectively. At the same time, export sales of leather products and textile and apparel would grow 24.5% and 13.1%, respectively. The meat sector value-added would expect to see a 3.9% rise with a Mongolia–Russia FTA, with export sales growing 50.2%. These results were consistent with the fact that China and Russia have relatively higher import tariffs for these products (Tables 15 and 16).

Although the value-added of the processed food dropped in all of the FTAs, except in the case of a Mongolia–Japan FTA, export sales for this sector increased for all of the FTAs, ranging from 1.4% (in the Mongolia–Russia FTA) to 13.6% (in the Mongolia–ROK FTA). Therefore this sector could be one of the most promising non-mining export-oriented sectors for Mongolia upon introduction of the FTAs. Declines in the value-added and labor for this sector can be explained by the fact that Mongolia still imports the greater part of its processed food (Tables 15 and 16).

Another interesting result was observed for the coal sector. The value-added of coal increased by 1.4% in the case of a Mongolia–China FTA, while its export sales went up 4.3%. This would generate significant export earnings for Mongolia as coal is Mongolia's top export commodity to China, and it makes up almost half of Mongolia's total exports (Table 16).

Moreover, these sectors would be potential sources of employment generation in Mongolia. For example, in the case of a Mongolia–China FTA, the numbers of both skilled and unskilled workers in the leather products sector increased by 21.9% and 21.5%, respectively, while those for the coal sector went up 2.5% for both skilled and unskilled. In addition, the other key manufacturing industries of Mongolia, such as, textiles and apparel, and meat, had positive changes for both skilled and unskilled workers in most of the FTAs, while those for animal products, and grains and crops went up from 2.4% to 3.9% in the case of a Mongolia–China FTA (Tables 17 and 18).

Table 15 : Changes in Mongolia's Value-Added by Sector

(%)

Sector	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Grains, Crops	2.2	-0.1	-0.2	-1.8
Animal Products	3.5	-0.1	-0.2	-2.1
Wool	-0.5	-0.1	-0.3	-5.0
Meat	0.1	0.1	0.2	3.9
Forestry	-1.4	0.0	-0.1	-1.6
Coal	1.4	0.0	0.0	-0.4
Oil & Gas	-1.2	0.0	0.0	-1.1
Other Minerals	-0.6	0.0	0.0	-0.2
Processed Food	-2.0	0.3	-0.5	-3.5
Textiles & Apparel	9.4	0.2	0.2	-3.0
Leather Products	21.6	-0.9	-1.4	-10.6
Wood & Paper Products	-5.5	-0.2	-0.7	-1.8
Metals	-2.0	0.0	0.1	-1.7
Automobiles	-4.0	-4.8	-1.9	2.1
Machinery & Equipment	-8.5	-1.7	-0.4	5.3
Other Manufactured Products	-5.6	-0.3	-0.8	-1.9
Electricity	-0.4	-0.1	-0.1	-0.1
Services	0.1	0.0	0.0	0.0

Table 16 : Changes in Mongolia's Export Sales by Sector

(%)

Sector	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Grains, Crops	49.6	0.0	-0.3	-2.6
Animal Products	-1.1	-0.4	-0.4	-4.6
Wool	-5.0	-0.4	-0.8	-10.0
Meat	-6.0	-1.0	1.4	50.2
Forestry	-3.9	-0.2	-0.2	0.2
Coal	4.3	0.1	0.1	-0.7
Oil & Gas	0.3	0.0	0.3	6.5
Other Minerals	-0.6	0.0	0.0	-0.2
Processed Food	3.3	7.1	13.6	1.4
Textiles & Apparel	13.1	0.3	0.4	-3.1
Leather Products	24.5	-1.0	-0.8	-11.0
Wood & Paper Products	-2.6	-0.2	1.1	-1.4
Metals	0.1	0.0	0.3	-1.2
Automobiles	-4.1	-0.1	1.4	24.3
Machinery & Equipment	-5.5	-0.2	1.3	16.0
Other Manufactured Products	0.8	-0.1	0.3	0.5
Electricity	-6.2	-0.2	-0.3	-4.1
Services	-1.9	-0.2	-0.1	-1.5

Table 17 : Changes in Mongolia's Skilled Labor by Sector

(%)

Sector	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Grains, Crops	2.5	-0.1	-0.2	-1.7
Animal Products	3.9	-0.1	-0.2	-2.0
Wool	-0.4	-0.1	-0.3	-5.0
Meat	0.3	0.1	0.2	5.0
Forestry	-1.7	0.0	-0.2	-1.9
Coal	2.5	0.0	0.0	-0.7
Oil & Gas	-1.9	0.0	0.0	-1.7
Other Minerals	-0.6	0.0	0.0	-0.2
Processed Food	-2.0	0.3	-0.5	-3.5
Textiles & Apparel	9.4	0.2	0.2	-3.0
Leather Products	21.9	-0.9	-1.3	-10.1
Wood & Paper Products	-5.5	-0.2	-0.7	-1.8
Metals	-2.1	0.0	0.1	-1.7
Automobiles	-4.0	-4.8	-1.9	2.1
Machinery & Equipment	-8.2	-1.7	-0.4	6.0
Other Manufactured Products	-5.6	-0.3	-0.8	-1.9
Electricity	-0.4	-0.1	-0.1	0.0
Services	0.1	0.0	0.0	0.0

Table 18 : Changes in Mongolia's Unskilled Labor by Sector

(%)

Sector	Mongolia's Bilateral FTA Counterpart			
	China	Japan	ROK	Russia
Grains, Crops	2.4	-0.1	-0.2	-1.8
Animal Products	3.8	-0.1	-0.2	-2.1
Wool	-0.5	-0.1	-0.3	-5.1
Meat	0.2	0.1	0.2	4.6
Forestry	-1.7	0.0	-0.2	-2.0
Coal	2.5	0.0	0.0	-0.8
Oil & Gas	-2.0	0.0	0.0	-1.8
Other Minerals	-0.7	0.0	0.0	-0.3
Processed Food	-2.3	0.3	-0.5	-4.1
Textiles & Apparel	9.0	0.2	0.2	-3.6
Leather Products	21.5	-0.9	-1.4	-10.8
Wood & Paper Products	-5.8	-0.2	-0.7	-2.4
Metals	-2.4	0.0	0.1	-2.4
Automobiles	-4.3	-4.8	-1.9	1.4
Machinery & Equipment	-8.6	-1.7	-0.4	5.2
Other Manufactured Products	-6.0	-0.3	-0.8	-2.6
Electricity	-0.7	-0.1	-0.1	-0.7
Services	-0.3	0.0	0.0	-0.7

4. Conclusion

As a WTO member, Mongolia has a relatively liberal trade policy; but the country is not yet a party to any regional or bilateral FTA. Aiming at diversifying its export markets, Mongolia is considering creating more free-trade regimes with its trading partners, such as the ongoing talks on an EPA with Japan.

This analysis using the CGE model and employing the GTAP 8 Data Base revealed that the macroeconomic impacts of Mongolia's bilateral FTAs with the four Northeast Asian countries of Russia, the ROK, Japan and China—Mongolia's top trading partners—would be almost negligible. In fact, Mongolia's import tariff rates are already relatively low and partner countries exercise almost near zero-tariffs for Mongolia's major export commodities of mining and livestock origin, while raw materials or low value-added products of mining or livestock origin dominate exports.

Nevertheless, some positive changes were observed in the value-added of Mongolia's key manufacturing industries, such as textiles and apparel, and leather and meat products, along with increases in their export sales. These sectors would also expect to see increases of both skilled and unskilled workers; thus they are potential sources of employment generation in the country. But due to the relatively small shares of these sectors' exports, their impact on the country's GDP was very small. Therefore, Mongolia needs to promote and develop high-value-added, export-oriented industries in order to benefit from free trade agreements with its trading partners.

Developing and promoting export-oriented high-value-added industries, in fact, were on the country's economic development agenda for years. However, after more than two decades of economic transition the actual results are far from being profound and Mongolia's exports are still dominated by raw materials and low-value-added commodities of mining and livestock origin while being virtually dependent on a single market. Despite the recent high growth rate of the economy, almost one third of the country's population still lives in poverty. Thus, investigating this situation and understanding the underlying causes of such a development trap, along with exploring further opportunities, would be a wide-ranging area of focus for research into Mongolia's economic development.

Appendix Table I: Classification of Regions in the Model

The Model (14 regions)	GTAP 8 (129 regions)
Mongolia	Mongolia
China	China
Japan	Japan
ROK	Republic of Korea
Russia	Russian Federation
Oceania	Australia, New Zealand, Rest of Oceania
USA	United States of America
East Asia	Hong Kong, Taiwan, Rest of East Asia
Southeast Asia	Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, Vietnam, Rest of Southeast Asia
South Asia	Bangladesh, India, Nepal, Pakistan, Sri Lanka, Rest of South Asia
North America	Canada, Mexico, Rest of North America
Latin America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Rest of South America, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador, Rest of Central America, Caribbean
EU 25	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom
ROW	Switzerland, Norway, Rest of EFTA, Albania, Bulgaria, Belarus, Croatia, Romania, Ukraine, Rest of Eastern Europe, Rest of Europe, Kazakhstan, Kyrgyzstan, Armenia, Azerbaijan, Georgia, Rest of FSU, Bahrain, Iran, Israel, Kuwait, Oman, Qatar, Saudi Arabia, Turkey, UAE, Rest of Western Asia, Egypt, Morocco, Tunisia, Rest of North Africa, Cameroon, Cote d'Ivoire, Ghana, Nigeria, Senegal, Rest of Western Africa, Central Africa, South Central Africa, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe, Rest of Eastern Africa, Botswana, Namibia, South Africa, Rest of Southern African Customs Union, Rest of the World

Appendix Table II: Classification of Sectors in the Model

The Model (18 Sectors)	GTAP Data Base 8 (57 Sectors)
Grains, Crops	Paddy rice, Wheat, Cereal grains nec, Vegetables, fruit, nuts, Oil seeds, Sugar cane, sugar beet, Plant-based fibers, Processed rice, Crops nec.
Animal Products	Raw milk, Fishing
Wool	Wool, silk-worm cocoons
Meat	Cattle, sheep, goats, horses, animal products nec, Meat: cattle, sheep, goats, horse, meat products nec.
Forestry	Forestry
Coal	Coal
Oil & Gas	Oil, Gas, Petroleum, coal products
Other Minerals	Minerals nec
Processed Food	Vegetable oils and fats, Dairy products, Sugar, Food products nec, Beverages and tobacco products,
Textiles & Apparel	Textiles, Apparel
Leather Products	Leather products
Wood & Paper Products	Wood products, Paper products, publishing
Metals	Ferrous metals, Metals nec, Metal products
Automobiles	Motor vehicles and parts
Machinery & Equipment	Transport equipment nec, Electronic equipment, Machinery and equipment nec
Other Manufactured Products	Chemical, rubber, plastic products, Mineral products, Manufactures nec
Electricity	Electricity
Services	Gas manufacture, distribution, Water, Construction, Trade, Transport nec, Sea transport, Air transport, Communication, Financial services nec, Insurance, Business services nec, Recreation and other services, Public administration, Defense, Education, Health, Dwellings

Endnotes

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[1] Russia acceded to the WTO on 22 August 2012.
[2] China acceded to the WTO on 11 December 2001.
[3] ROK has been a WTO member since 1 January 1995.
[4] Japan has been a WTO member since 1 January 1995.
[5] According to ERINA, the region consists of the People's Republic of China (China), the Democratic People's Republic of Korea (DPRK), Japan, Mongolia, the Republic of Korea (ROK) and the Russian Federation (Russia).
[6] "The Agreement on Textiles and Clothing (ATC) and all restrictions thereunder terminated on January 1, 2005. The expiry of the ten-year transition period of ATC implementation means that trade in textile and clothing products is no longer subject to quotas under a special regime outside normal WTO/GATT rules but is now governed by the general rules and disciplines embodied in the multilateral trading system" (WTO, 2013).
[7] For more details on the GTAP model and database, refer to Hertel, T. (ed.), 1997.

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GUIDELINES FOR CONTRIBUTIONS (abstract)

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