[After Trump Series 2] Prospects for U.S.-South Korea Cooperation in an Era of U.S.-China Strategic Competition

Prospects for Korea-US Cooperation on Energy and Environment: From an Oil-Natural Gas Alliance to Global Green New Deal

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Introduction

In June 2020, President-elect Joe Biden pledged that the US would be carbon neutral by 2050. In the UN General Assembly in September, President Xi Jinping promised that net carbon emission would be zero in China by 2060. On October 26, Prime Minister Yoshihide Suga said that Japan would achieve carbon neutrality by 2050. Two days later, President Moon Jae-in announced that Korea would go carbon neutral by 2050. The EU, which had already declared the European Green Deal in 2019, is seeking cooperation with the US.[1] As a result, a hope has emerged for a Global Green New Deal.

Although Korea, China and Japan committed themselves to become a net zero emitter by 2050 and 2060 almost simultaneously, there is little optimism about region-wide energy cooperation. Fundamentally, energy is a key component of national security as well as economy. All of them are the world's most fossil-fuel reliant economies. It should be also noted that none of them are self-sufficient in energy resources.

In this regard, the US can play a key role in East Asia. The country becomes an energy exporter in 2020. China as well as Korea and Japan have rapidly increased US oil and natural gas. The three economies share three policy objectives: a diversification in imports and a reduction in the trade surplus with the US, and the coal-to-gas switching. They want to reduce their dependence on Middle

[1] Boyle, Kathleen. 2019. *Energy Darwinism III: The Electrifying Path to Net Zero Carbon*, Citi GPS: Global Perspectives & Solutions.

East oil and gas. The purchase of US oil and gas decreases their trade imbalances that have been the major cause of trade conflicts. Also, natural gas can facilitate energy transition because it emits much less carbon than coal.

How can Korea and the US work together in the energy sector? Though a military ally and FTA partner of the US, Korea has little experience in energy cooperation with the US. For this reason, I will examine the Sino-US energy relations as a reference case. The decades-long exchange between the countries has significant policy implications for Korea. First, Bilateral cooperation between the US and China has fluctuated widely between a low-carbon option and high-carbon one. Until the mid-2010s, the aim of cooperation had centered on clean energy to prevent climate change. The Obama administration treated energy policy as a key agenda at the summit meetings and the Strategic Economic Dialogues. The Democratic Party has already proposed a pledge to reduce net carbon emissions to zero by 2050.[2] Since the advent of the Trump administration, energy cooperation has undergone fundamental changes. The US, which has emerged as the largest oil and natural gas producer after the shale gas revolution, is actively promoting the export of surplus resources. As a result, for the Trump administration, energy cooperation means China's purchase of US oil and natural gas. The Republican Party opposes the regulation of the development and use of fossil fuels.[3]

Second, China and the US are the world's two largest energy consumers and carbon dioxide (CO_2) emitters. US-China energy cooperation will have a profound impact on East Asia. If the US and China opt for a high-carbon option, Korea and Japan will increase imports of oil and LNG from the US. Conversely, if the US and China turn to a low-carbon option, the two countries will be exposed to pressure on a Green New Deal to reduce carbon emissions.

A valuable lesson can be drawn from the experience of Sino-US relations. Because Democrats and Republicans have opposing views on climate change and energy, policies can change depending on which party takes power. Thus, Korea should take both options into consideration – low-carbon and high-carbon. Under a Democratic administration, the increase of clean/ renewable energy technologies will be the focus of cooperation. In contrast, under a Republican administration, oil and natural gas will play a key role in bilateral cooperation.

As a matter of fact, Korea is well-positioned to cope with policy shifts in the US. On the one

[2] For the case for low-carbon energy policy, see Sarah Ladislaw and Nikos Tsafos, *Race to the Top: The Case for a New U.S. International Energy Policy*, Center for Strategic and International Studies (2020)

[3] The rationale for this argument is relied on the assumption that energy transition will take at least several decades. Yergin, Daniel. 2020. *The New Map: Energy, Climate, and the Clash of Nations*. New York: Penguin Press.

hand, the world's third-largest liquefied natural gas (LNG) importer has already been the largest importer of US LNG since 2018. By importing oil and natural gas from the US, the country can diversify its energy supply chains as well as reduce its trade surpluses. It will increase its imports as long as LNG is cheaper than coal. In this case, an oil-natural gas alliance will be added to the existing military and trade ones. On the other, Korea became the first East Asian country that introduced a Green New Deal in July 2020.[4] The country can be a formidable partner of a Global Green New Deal. In this regard, its imports of US national gas will last only until coal-to-gas switching is completed.

The Development of Clean Energy Cooperation under the Obama Administration

Energy cooperation between the US and China began when diplomatic relations were established in the late 1970s. During the late twentieth century, the scope of bilateral cooperation was limited. Amid the Oil crises of the 1970s and 1980s, both countries set their energy policy goals to procure energy sources. Besides, there was little discussion on international cooperation because awareness about global warming was low.[5]

In 1979, President Jimmy Carter and Deputy Prime Minister Deng Xiaoping signed the Scientific and Technology Cooperative Agreement including environment and energy protocols. Under the agreement, the Department of Energy (DOE) and the State Development Planning Commission (SDPC) exchanged memorandums of understanding on 19 cooperative tasks. In addition, the National Oceanic and Atmospheric Administration (NOAA) of the US and the China Meteorological Administration signed the Atmosphere and Science and Technology Protocol. In 1983, DOE and the National Science and Technology Commission (SSTC) agreed on the Protocol on Nuclear Physics and Magnetic Fusion. In 1985, DOE and the Ministry of the Coal Industry (then the Ministry of Science and Technology) signed the Protocol on Cooperation in the Field of Fossil Energy Research and Development. In 1987, DOE and the Chinese Academy of Sciences added Annex III to the Fossil Energy Protocol Cooperation in the Field of Atmospheric Trace Gases. In 1995, a series of bilateral agreements on climate change and renewable technologies were signed between DOE and China's seven ministries. In the same year, DOE and the State Planning Commission (SPC) formed the US-China Petroleum and Gas Industry Forum. In 1997, Vice President Al Gore and Premier Li Peng established the US-China Forum on Environmental Development. In 1998, DOE and SPC signed the Agreement of Intent on Cooperation Concerning Peaceful Uses of Nuclear Technology. In 2004, DOE and the

[4] Ministry of Economy and Finance. 2020. *The Korean New Deal: National Strategy for a Great Transformation*.
[5] Dreyer, June Teufel. 2007. Sino-American Energy cooperation, *Journal of Contemporary China*, Vol. 16.

National Development and Reform Commission (NDRC) launched the US-China Energy Policy Dialogue. In 2006, the US and China joined the Asia-Pacific Partnership on Clean Development and Climate with South Korea, Japan, India, and Australia (later Canada). In the same year, energy issues were elevated to the agenda for high-level talks. In the first US-China Strategic Economic Dialogue, Treasury Secretary Henry Paulson and Vice Premier Wu Yi agreed to discuss energy and environmental topics.[6]

The Obama administration made a major contribution to raising the level of energy cooperation between the US and China. The Ten Year Energy and Environment Cooperation Framework (能源环境10年合作框架), agreed at the US-China Strategic and Economic Conference in June 2008, selected clean efficiency and safe electricity production and transmission, clean water, clean air, clean and efficient transportation, forest and wetland ecosystem protection as joint projects. This plan has important implications in three aspects. First, special attention was paid to energy issues in summit meetings and the Strategic Economic Dialogues in which the top leaders participated. Second, long-term agendas were discussed with short-term ones. Finally, the focus of the cooperative agenda shifted from energy security to clean energy development.[7]

At the Beijing summit between President Barak Obama and President Hu Jintao in November 2009, seven major tasks for clean energy cooperation – the US-China Clean Energy Research Center, Electric Vehicle Initiative, Energy Efficiency Action Plan, Renewable Energy Partnership, 21st Century Coal, Shale Gas Resource Initiative, and Energy Cooperation Program – were agreed.[8] Since then, US-China cooperation for the development of clean energy has been advanced not only between the governments but also between academia and enterprises.[9] In November 2014, the US and China agreed to expand joint research and development of clean energy, promote major carbon capture, use and storage, strengthen fluorocarbon cooperation, launch a low-carbon city plan favorable to climate change, promote trade in environment-friendly products, and demonstrate clean energy on the

[6] Asia Society and Pew Center on Global Climate Change. 2009. *Roadmap for U.S.-China Cooperation on Energy and Climate Change*. pp. 50-4.

[7] Lieberthal, Kenneth G. 2009. *U.S.-China Clean Energy Cooperation: The Road Ahead*, Policy Brief 09-05, Brookings Institution.

[8] U.S. Department of Energy. 2011. *U.S.-China Clean Energy Cooperation: A Progress Report by the U.S. Department of Energy*.

[9] U.S.-China Economic and Security Review Commission. 2014. Chapter 1, Section 4. U.S.-China Clean Energy Cooperation, *2014 Annual Report to Congress*; Moch, Jonathan. 2013. *U.S.-China Collaboration: Can They "Inspire the World?"* World Resources Institute; Zhang, Wei, Jun Yang, Pengfei Sheng, Xuesong Li, Xingwu Wang. 2014. Potential Cooperation in Renewable Energy between China and the United States of America, *Energy Policy*. Vol. 75.

ground.[10] The US-China energy cooperation gave rise to the success of the Paris Agreement. In particular, the Obama administration's second-term policy, which declared a unilateral reduction in carbon emissions, gave the US the moral authority necessary to persuade other countries. [11]

The bilateral cooperation has not been free from controversies. The US complains that the outcome of cooperation had been more favorable to China than to the US. Between 2008 and 2015, the US government invested about $97 million in bilateral cooperation. Nonetheless, China has belittled the issue of intellectual property rights in technologies developed through joint projects. [12] China's push for industrial policies to foster eco-friendly industries has been negative effects on US companies' competitiveness. In particular, solar panel manufacturers in China have grown rapidly with government subsidies. [13]

Shift to the Fossil Fuel Energy Cooperation under the Trump Administration

Unlike the Obama administration, the Trump administration does not deal with energy policies in tandem with environmental policies. The goal of energy policy is energy dominance (or energy independence / self-sufficiency). Although insisting "energy production and environmental stewardship are not mutually exclusive," [14] President Trump made the country officially withdraw from the Paris Agreement in 2019. Since the outbreak of the trade war, President Trump has pushed ahead with decoupling – or even a new Cold War – through maximum pressure on China. Thus, almost all cooperation with China promoted by the Obama administration has ceased.

Nonetheless, the Trump administration does not disregard cooperation with China. The US is currently the world's top oil and natural gas producer. In 2019, the country became the first net exporter of energy in 67 years. China is currently the world's largest oil importer and will become the world's largest importer of natural gas by 2025. For this reason, the administration has shifted the policy goal from the joint development of clean energy to exports of US oil and natural gas to China. This can be the best case for win-win cooperation promoted by the Chinese government.

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[10] White House. 2014. *FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation*.

[11] Lewis, Joanna. 2017. The U.S.-China Climate and Energy Relationship, in Daniel Remler and Ye Yu (eds.), *Parallel Perspectives on the Global Economic Order: A U.S.-China Essay Collection.* Center for Strategic and International Studies.

[12] United States Government Accountability Office. 2016. *U.S.-China Cooperation: Bilateral Clean Energy Programs Show Some Results but Should Enhance Their Performance Monitoring*.

[13] Hart, Melanie. 2012. *Shining a Light on U.S.-China Clean Energy Cooperation*, Center for American Progress.

[14] White House. 2020. *Fact Sheet: President Donald J. Trump Has Unleashed American Producers and Restored Our Energy Dominance*. July 29.

The energy export that the Trump administration is currently paying attention to is natural gas. As supply from the US and demand from China are expected to continue to increase, favorable conditions have been created for both countries to trade. And coal-to-gas switching can play a positive role in the energy transition from high-carbon resources to low-carbon resources because the amount of pollutants is less than half compared to oil and coal. [15]

Estimating the trend of demand and supply at a global level, the US and China can pursue mutual benefits through energy trade over the next 20 years. Demand is rising in China, while supply is growing in the US. Therefore, the two countries can have a marriage of convenience

Table 1: Production and Consumption of Natural Gas

		2025	2030	2035	2040	2045	2050	2018-2050 (CAGR, %)
US	Production	966	1038	1088	1097	1133	1178	1.1%
	Consumption	855	879	907	921	923	940	0.4%
	Production -Consumption	111	159	181	176	210	238	
China	Production	241	273	305	325	355	345	2.4%
	Consumption	490	601	651	677	685	675	2.8%
	Production - Consumption	-249	-328	-346	-352	-330	-330	

Source: BP, Gas Production, *Energy Outlook Downloads and Archive* (2020)

In China, industrialization and urbanization will continue to increase energy demand. The government seeks to raise the proportion of natural gas and nuclear power in the energy mix to reduce CO_2 and fine dust. The share of natural gas in primary energy consumption is less than 5%, which is very low compared with 30% in the US, 24% in the EU, 26% in OECD countries, and 24% globally. Between 2017 and 2040, the dependence on oil imports is expected to increase from 67% to 76% and the dependence on natural gas from 38% to 43%.

[15] Tsafos, Nikos. 2020. *How Will Natural Gas Fare in the Energy Transition?* Center for Strategic and International Studies.

The US, which has been a net energy importing country since 1953, is expected to become a net exporting one in 2020. US exports of primary energy will be led by natural gas rather than oil. Oil exports will decline to peak in the mid-2030s, but natural gas exports are expected to keep growing after 2050. LNG exports surged 61% year-on-year in 2018, making it the world's fourth-largest exporter, and will be the largest exporter in 2020 when facilities under construction are completed. According to the International Gas Union (IGU), Japan (25.4%), China (16.7%), Korea (13.6%), and India (7.1%) were among the biggest importers of LNG based on million tons (MT) in 2018. China will surpass Japan, becoming the largest importer by 2025. Despite the opposition from the US, the outlook for exports to the European markets is not bright as Germany is carrying out 'Nord Stream 2' project that imports Russian natural gas through pipelines.

Before the trade war, the US had a high expectation of LNG exports to China. China's imports of US LNG were based on a common interest in resolving the US oversupply, reducing China's trade surplus, and diversifying imports (limiting dependence on Qatar, Australia, and Russia). It was estimated that the US could reduce its trade deficits with Chia by about $17 billion through LNG trade, while China could reduce the cost of importing energy by about $1.8 billion. For this reason, long-term contracts were under negotiation. [16]

The 100-day action plan agreed in April 2017 paved the way for the US to export LNG to China.

> The United States welcomes China, as well as any of our trading partners, to receive imports of LNG from the United States. The United States treats China no less favorably than other non-FTA trade partners with regard to LNG export authorizations. Companies from China may proceed at any time to negotiate all types of contractual arrangement with U.S. LNG exporters, including long-term contracts, subject to the commercial considerations of the parties. As of April 25, 2017, the U.S. Department of Energy had authorized 19.2 billion cubic feet per day of natural gas exports to non-FTA countries. [17]

China's imports of US LNG surged after the agreement. In terms of trade volume in 2017-18, the US accounted for about 4 % of China's total LNG imports, and China's share slightly exceeded 10 %

[16] O' Sullivan, Stephen. 2019. *China: Growing Import Volumes of LNG Highlight China's Rising Energy Import Dependency*, Oxford Institute for Energy Studies.

[17] U.S. Department of Commerce. 2017. *Joint Press Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*. May 11.

of the total US LNG exports. Negotiations on joint development investments by American and Chinese companies have also made rapid progress. After President Trump agreed to jointly invest $43 billion in the Alaska LNG project with China in November 2017, US energy companies began to expand LNG export facilities. In February 2018, Cheniere Energy signed the first long-term supply contract with China National Petroleum Corporation (CNCP), the world's third-largest oil company and the largest oil company in China.

The trade war turned the win-win game into a zero-sum one. On September 18, 2018, China imposed an additional 5% to 10% retaliatory tariff on 5,207 tax items worth $60 billion on imported goods from the US. A 10% tariff was levied on US LNG. Between March and December 2019, Chinese companies stopped importing US LNG. Exports did not recover to the level of 2018 until the Phase One trade agreement in January 2020[Figure 1 & 2].

The US required China to double its imports of a basket of 548 US products by 2021. Energy products including crude oil, ethane, propane, butane, naphtha, methanol, LNG, coal, and petcoke are estimated to account for 50 billion dollars. After signing the deal, China removed a 25% tariff on US LNG, and Chinese companies resumed purchasing the fuel. In 2017, China imported 0.2 bcf/d (0.40 billion dollars) US LNG. To keep the promise, the country should import 1.5 bcf/d (2.95 billion dollars) in 2020. [18] From January to August 2020, China's purchases of US energy products were projected to only 27 percent (US exports) or 21 percent (Chinese imports) of their year-to-date targets. [19] LNG is a remarkable exception. By the end of July, the total amount of China's imports is 344 million dollars (83% of the 2017 level).

If the trade war deteriorates again, China's imports of US LNG will shrink. First, if China raises the tariff rate from 10% to 25% in response to additional retaliatory tariffs from the US, the price competitiveness of US LNG in the Chinese market will inevitably decline further. The US position (6.7% of the world market share as of 2018) will be further dented as the global natural gas market is a consumer market. China could easily increase its imports from the world's largest producers such as Qatar (24.9%), Australia (21.7%), and Malaysia (7.7%). China has two more options to import natural gas from Russia via the Arctic route and through the pipeline. In April 2019, China Petroleum and China Oceanic Oil Corporation (CNOOC) agreed to purchase 10% of each stake in the 'Arctic LNG2' project promoted by Novatek of Russia. China could build an East Asian LNG trading hub

[18] Ladislaw, Sarah. 2020. *Energy and the US-China Phase One Trade Deal: Don't Believe the Hype at Least Not All of It*, Center for Strategic and International Studies.

[19] Bown, Chad P. 2020. *US-China Phase One Tracker: China's Purchases of US goods: As of August 2020*, Peterson Institute for International Economics.

together with Japan and Korea if Russia's weight expands. This would further limit US influence. [20]

The decline in energy demand following the Corona-19 crisis is also negatively affecting US-China energy cooperation. At the global level, lockdowns and social distancing seriously reduced economic activity and transportation, resulting in a sharp drop in energy consumption. As demand fell and energy reserves reached saturation, oil and natural gas prices plunged. On April 20, 2020, the price of West Texas Intermediate for May delivery was traded at minus $37.63 for the first time in history. The sharp drop in demand and prices had a direct impact on China's energy imports. Since the first phase agreement is based on price, not quantity, China must increase volume if prices go down. However, there was a limit to further increase in supply, as demand temporarily plunged in China as well. As a result, China has not achieved about 50% of its target amount by the end of August. With the crisis well managed to normalize economic activity quickly, the possibility remains that China will increase imports by the end of this year.

Return to a Clean Energy Cooperation?

China is the world's largest producer of CO_2, accounting for 29.34% of global emissions in 2017. The US was the second-largest CO_2 emitting country (13.77%). The two countries produced nearly one-third of CO_2 in the world. In this respect, the Sino-US energy cooperation would be able to make an unprecedented contribution to the global environment. Since the trade war took place in 2018, the US and China have exchanged blame for global warming not to shoulder the burden of CO_2 emission reduction.

Table 2: Net CO_2 Emissions (Mt): Business-as-usual and Net Zero scenario

		2025	2030	2035	2040	2045	2050	2018-2050 (CAGR: %)
Business-as-usual	US	4643	4295	4025	3765	3526	3317	-1.3%
	China	9499	8912	8380	7630	6871	6112	-1.4%
Net Zero	US	4062	2979	1972	1094	520	122	-11.0%
	China	8747	7223	3776	1939	865	116	-12.8%

[20] Rasoulinezhad, Ehsan, Farhad Taghizadeh-Hesary, Naoyuki Yoshino, and Tapan Sarker. 2019. *Russian Federation–East Asia Liquefied Natural Gas Trade Patterns and Regional Energy Security*. ADBI Working Paper No. 965.

Source: BP, Energy Outlook Downloads and Archive (2020)

As wildfires in the west and hurricanes in the southeast increase in frequency, the public opinion prevails that the government should be more active in responding to climate change. According to Pew Research Center poll results, 67 percent of adults believe the government's efforts to reduce the effects of global climate change are insufficient. There are differences in politics, generation, region, and gender. About 90 percent of Democrats and 39 percent of Republicans support the government's active role. Young generation, the West, women tend to be more interested in climate change than older generation the East, and men. [21]

Regardless of the withdrawal from the Paris accord, voluntary efforts to meet the requirements have been made at the state, county, and city levels. In 2019, for example, US non-federal leaders including 25 governors of states and territories and 430 mayors of cities pledged to take action on climate change. [22] These efforts have contributed to a reduction in carbon emissions during the Trump administration's tenure. Although President Trump made efforts to revitalize the coal industry, coal power generation declined by 22% in 2016-19. Solar and wind power generation increased by 40 percent during the same period. [23]

The Green New Deal proposed by Representative Alexandria Ocasio-Cortez and Senator Ed Markey in 2019 epitomizes grass-root support for net-zero global emissions by 2050. Their legislation attempts failed in Congress because most Republican lawmakers opposed the proposal. Nonetheless, its core idea is reflected in the Democratic Presidential Platform. [24]

> At this moment of profound crisis, we have the opportunity to build a more resilient, sustainable economy – one that will put the United States on an irreversible path to achieve net-zero emissions, economy-wide, by no later than 2050… Biden will make a $2 trillion accelerated

[21] Tyson, Alec and Brian Kennedy. 2020. *Two-Thirds of Americans Think Government Should Do More on Climate*, Pew Research Center. June 23.

[22] America's Pledge Initiative on Climate Change, *Accelerating America's Pledge: Going All-In to Build a Prosperous, Low-Carbon Economy for the United States* (New York: Bloomberg Philanthropies with University of Maryland Center for Global Sustainability, Rocky Mountain Institute, and World Resources Institute, 2019)

[23] Lee, Jinjoo. 2020. Renewable Energy Can Live with Trump or Biden, *Wall Street Journal.* September 30.

[24] U.S. Congress. 2020. Recognizing the Duty of the Federal Government to Create a Green New Deal, Draft resolution, 116th Cong., 1st Sess. (https://assets.documentcloud.org/documents/5729033/Green-New-Deal-FINAL.pdf (2019); House Select Committee on the Climate Crisis, *Solving the Climate Crisis; The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America.*

> investment, with a plan to deploy those resources over his first term, setting us on an irreversible course to meet the ambitious climate progress that science demands. [25]

Long suffered from air pollution and heavy haze generated by the burning of low-quality coal in homes and factories, the Chinese government has pursued a long-term strategy to reduce fossil CO_2 emissions by investing in renewable energy, optimizing energy transition, and upgrading the power grid. The targets set under the National Plan on Climate Change 2014-2020 (国家应对气候变化规划) were achieved two years earlier than scheduled. [26] According to the Ministry of Ecology and Environment, six low-carbon provincial regions, 81 low-carbon cities, 52 low-carbon industrial parks, more than 400 low-carbon communities, and eight low-carbon city or town pilot projects have been implemented since 2010. [27]

At the UN General Assembly via a video link on September 22, President Xi Jinping announced that China would reduce its net carbon emissions to zero within 40 decades.

> China will scale up its Intended Nationally Determined Contributions by adopting more vigorous policies and measures. We aim to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060. We call on all countries to pursue innovative, coordinated, green and open development for all, seize the historic opportunities presented by the new round of scientific and technological revolution and industrial transformation, achieve a green recovery of the world economy in the post-COVID era and thus create a powerful force driving sustainable development. [28]

Although details of the official plan are yet to be revealed, state-run media reported that the government is drafting a 30-year road map. China's policy shift can have far-reaching implications for

[25] The Biden Plan to Build a Modern, Sustainable Infrastructure and an Equitable Clean Energy Future. Joe Biden for President (https://joebiden.com/clean-energy/)

[26] Xu, Muyu, David Stanway, and Tom Daly. 2018. China Could Meet Emissions Pledge Early; Carbon Market on Track: Officials, *Reuters* May 23. Sandalow, Cf. David. 2019. *Guide to Chinese Climate Policy*, Center on Global Energy Policy.

[27] Jie, Shan. 2020. China's Carbon Neutrality Goal to Advance Global Schedule by 5-10 Years. *Global Times*. September 27.

[28] Xi Jinping, *Statement at the General Debate of the 75th Session of The United Nations General Assembly* (September 22, 2020).

climate change. China's carbon neutrality per se will contribute to slowing global warming and climate change. In addition, its commitment will put huge peer pressure on other major emitters to follow suit. [29]

The gap between the US and China in eco-friendly technology and market share quickly narrowed, as China continued its low-carbon policy while the Trump administration was pushing for high-carbon policies. In 2009, the US wind and solar power capacity were twice and five times that of China, respectively. In 2019, China was doubled and tripled that of the US. In electric vehicles, China was only one-fifth of that of the US in 2103, but it has doubled in 2020. Therefore, it is expected that China will ask the US for a much more equal relationship in coming negotiations on climate change. [30]

The structure of US-China cooperation will change. Until now, cooperation has been led by the US politically and financially. [31] If China is the world's largest consumer and importer and the US is the world's largest producer and net exporter, the asymmetry between the two countries is likely to fade. In the low-carbon option, China's role is likely to be bigger than that of the US. China is emitting more than twice as much carbon as the US. In this regard, China's influence on global energy governance is projected to be greater than it is now.

Conclusion

The decades-long energy cooperation between the US and China gives two lessons. First, energy cooperation has been influenced by security and economic relations. When the US pursued an engagement policy with China, energy cooperation was among the key agendas of summit meetings and the Strategic Economic Dialogues. Second, disagreement on energy policy in the US matters. Democrats call for a Green New Deal, whereas Republicans deny climate change. This is why US energy policy has swung extensively.

To handle policy changes, a two-track approach is needed. On the one hand, Korea Gas Corp (KOGAS) signed an agreement with BP to buy 1.58 million tons of U.S. LNG for 15 years starting 2025. The country can maintain its position as the largest US LNG importer at least until the 2040s.

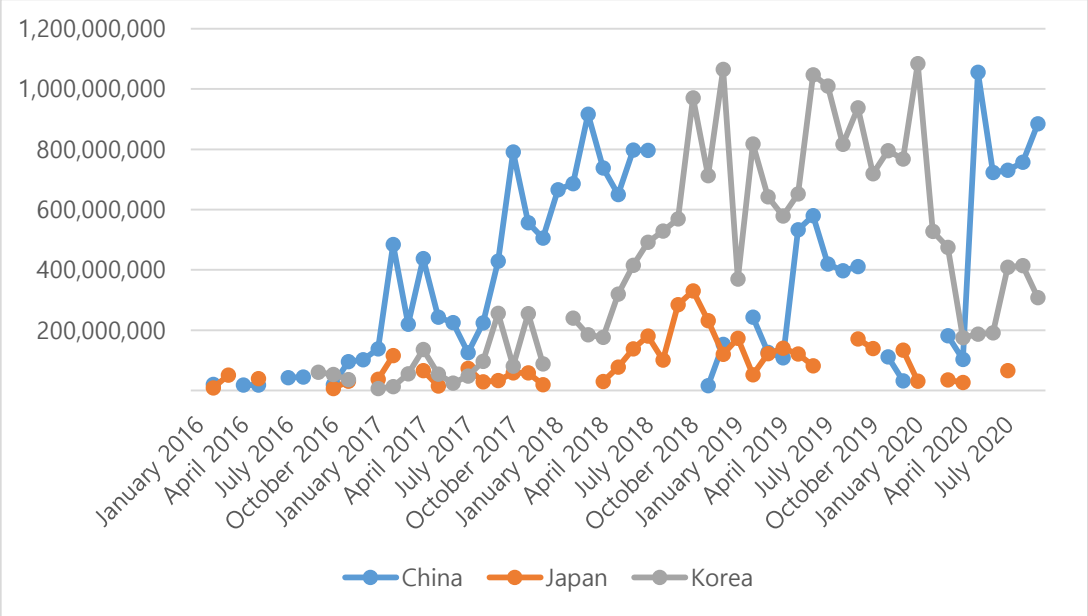
[29] Normile, Dennis. 2020. Can China, the World's Biggest Coal Consumer, Become Carbon Neutral by 2060?. *Science* (September 29, 2020); U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin* October. pp.10-12.

[30] Ladislaw, Sarah and Nikos Tsafos. 2020. Beijing Is Winning the Race to Build—and Sell—Clean Energy Technology, *Foreign Policy* October 2.

[31] Campbell, Richard J. 2014. *China and the United States: A Comparison of Green Energy Programs and Policies*, Congressional Research Service.

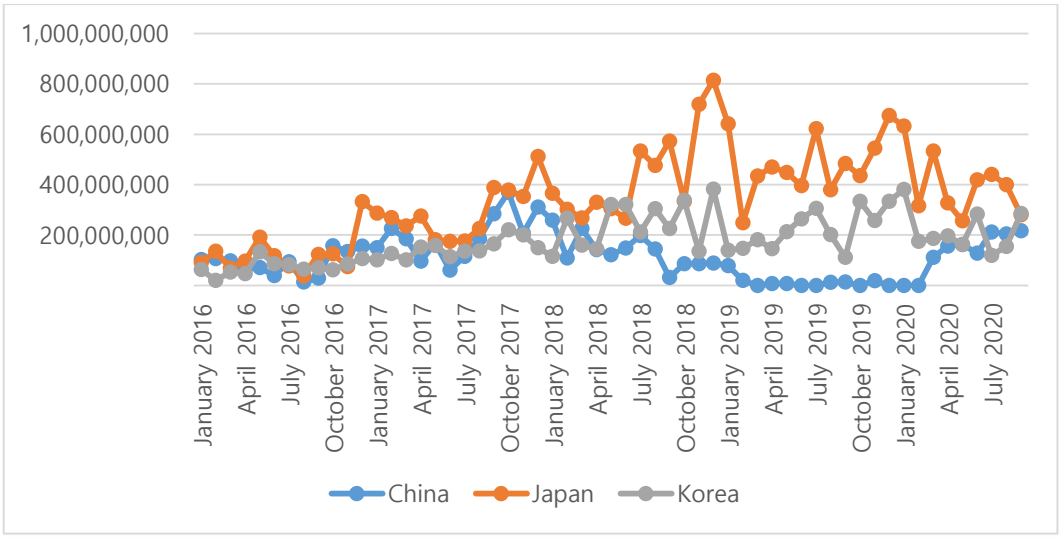
In this sense, an oil-natural gas alliance between Korea and the US has developed. On the other, Korea is the only country that has implemented the green new deal in East Asia. In this regard, Korea can be a key partner of a Global Green New Deal led by the US.

Figure 1: US Oil (HS code 2709) Export to China, Japan, and Korea (US $)



Source: US Census Bureau (https://usatrade.census.gov/data/)

Figure 2: US Gas (HS code 2711) Export to China, Japan, and Korea (US $)



Source: US Census Bureau (https://usatrade.census.gov/data/)

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