
Legal and Policy Implications on the Post-Kyoto Protocol System: A Korean Lawyer's Viewpoint

Sung Ja Cho *

In 1997, the Kyoto Protocol was established as the first global treaty imposing legally-binding targets on the developed countries, imploring countries to curb greenhouse gases emissions from 2008 to 2012. In 2012, the Doha Amendment was agreed upon to extend KP for seven more years, from 2013 to 2020. However, it is not yet in force due to lack of ratification. The UN is trying to build a new international climate change system to succeed KP, which will encompass both the developing countries and the developed countries after 2020. The US, China, the EU and Japan are the four largest GHG emitters. Through the first period of KP, the international climate change system became an international political and economic network, creating new paradigms for energy resources, ways of life, carbon market, and economic development, et cetera. This article will show some of the underlying political and economic dynamics and responses of those four countries and Korea around the Post-KP negotiations.

Keywords

Kyoto Protocol, Post-Kyoto Protocol, Greenhouse Gas Emission, Carbon Trading Market, Global Warming, Korean Strategies

* Associate Professor of Law at Kangwon National University, Korea. B.A.(SNU), M.A.(Soongsil Univ.), J.D. (Temple); Attorney-at-Law (NY & NJ Bar). ORCID: <http://orcid.org/0000-0001-8443-2326> This article was supported by 2012 Research Grant from Kangwon National University. The author may be contacted at: sungjac@kangwon.ac.kr / Address: 306, School of Law, Kangwon National University, Chuncheon-city, Kangwon Province 200-701 Korea.

1. Introduction

In 1968, ecologist Garrett Hardin showed how the commons cannot survive,¹ analyzing the global population problem as a dilemma with “no technical solution.” Hardin said: “we are locked into a system of ‘fouling our own nest,’ so long as we behave only as independent, rational, free-enterprisers” because “the rational individual finds that his share of the cost of the wastes he discharges into the commons is less than the cost of purifying or of not releasing his wastes into the commons.”²

Within half a century, Hardin’s logic can be precisely applied to one of the *transnational* common good,³ i.e., the air. The World Bank’s report, “Turn Down the Heat: Why a 4°C Warmer World Must be Avoided” maintains that if the world fails to keep its earlier promise to reduce greenhouse gas (“GHG”) emissions by 2012, global temperature would rise more than 4°C by 2060 compared to pre-industrial times.⁴ When the global temperature increases by 4°C, the world would be marked by extreme heat-waves, a lack of global food stocks, loss of ecosystems and biodiversity, ocean acidification, and life-threatening sea level rise, etc.⁵ Although nations have agreed on the need to stop the climate change impacts, they still want to maintain its GHG emissions at the same time. The countries finally signed at the Kyoto Protocol (“KP”) in 1997 as the first global agreement imploring GHG emissions control; KP started with legally-binding targets to curb GHG emissions of 38 developed countries classified as Annex I nations from 2008 to 2012.⁶ Up until 2008, more than 190 nations had agreed to extend KP, requiring developed countries to reduce GHG emissions by at least 5percent below 1990 levels in the commitment

¹ G. Hardin, *The Tragedy of the Commons*, 162 *SCIENCE* 1243-1248 (1968), available at <http://www.sciencemag.org/content/162/3859/1243.full> (last visited on Oct. 7, 2014).

² *Id.* at 1245.

³ S. Ansari et al., *Constructing a Climate Change Logic: An Institutional Perspective on the “Tragedy of the Commons,”* 24 *ORG. SCI.*, 1014-1040 (2013). [Emphasis added]

⁴ World Bank, *Climate Change Report Warns of Dramatically Warmer World This Century*, Nov. 18, 2012, available at <http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century> (last visited on Sept. 26, 2014). According to the report, maintaining the current level of greenhouse gas emissions would result in extreme heat-waves and a life-threatening sea level rise; adverse effects of global warming that were “tilted against many of the world’s poorest regions”; and undermining development efforts and goals. As such, the World Bank asks for increased support for adaptation, mitigation, inclusive green growth and climate-smart development.

⁵ *Id.*

⁶ UNFCCC, *UNITING ON CLIMATE: A GUIDE TO A CLIMATE CHANGE AND THE KYOTO PROTOCOL 28* (2007), available at http://unfccc.int/resource/docs/publications/unitingonclimate_eng.pdf (last visited on Oct. 23, 2014).

period of 2008 to 2012.⁷

With the impending expiry of KP, in December 2012, in Doha, Qatar, the Parties to the United Nations Framework Convention on Climate Change (“UNFCCC”)⁸ agreed on the Instrument of Acceptance of the Doha Amendment to the Kyoto Protocol (hereinafter Doha Amendment) for the second commitment period (2013-2020) of KP. The Doha Amendment illustrates KP’s emission reduction model by providing a quantified emission limitation and reduction commitments for Annex I (developed) countries. It is collectively striving to achieve a reduction in overall emission of GHG by at least 18 percent below 1990 levels from 2013 to 2020.⁹ As of September 24, 2014, however, only 17 countries had ratified the Doha Amendment, while 127 more countries’ ratifications are required to bring it into force.¹⁰ They are still debating between the needs of national economic profits and sustainable development.

The primary objective of this paper is to show legal and policy implications around the post-KP negotiations. This article consists of five parts, including Introduction and Conclusion. Part two will analyze the underlying interests around the post-KP negotiations. Part three will review the four main players’ positions of the post-KP system US, China, EU, and Japan. Part four will briefly suggest the Korean strategies for this negotiation.

2. Underlying Interests around the Post-KP System

Regarding the climate change crisis, the Fifth Assessment Report (“AR5”) of Intergovernmental Panel on Climate Change (“IPCC”)¹¹ in 2013 provided two

⁷ Kyoto Protocol art. 3, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> (last visited on Sept. 26, 2014).

⁸ UNFCCC entered into force on 21 March 1994. The Kyoto Protocol is one project of UNFCCC to reduce GHG emissions. For details, see First steps to a safer future: Introducing The United Nations Framework Convention on Climate Change, available at http://unfccc.int/essential_background/convention/items/6036.php (last visited on Oct. 16, 2014).

⁹ D. Streimikiene, The 18th session of the Conference of the Parties to the United Nations Convention on Climate Change, available at http://www.google.co.kr/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=4&ved=0CDcQFjAD&url=http%3A%2F%2Fwww.mrni.eu%2Fen%2Fmokslo_darbai%2Fie%2Farchyvas%2Fdwn.php%3Fid%3D355940&ei=5wIIVKSmOInY8gWKooL4Bg&usq=AFQjCNHHjmap2XFFgI_q5tj85Drq4xbcEw&bvm=bv.76247554.d,dGc&cad=rjt (last visited on Sept. 26, 2014).

¹⁰ UN, UN Urges Rapid Doha Ratification, Press Release, Aug. 21, 2014, available at <http://newsroom.unfccc.int/unfccc-newsroom/un-urges-rapid-doha-ratification> (last visited on Sept. 26, 2014).

¹¹ The Intergovernmental Panel on Climate Change (“IPCC”) is the leading international body for the assessment of

conclusions. First, human influence on the climate system is clear.¹² Second, continued emissions of greenhouse gases will further increase global temperature, and would possibly change all components of the climate system.¹³ These represent the major opinions on climate change in the global scientific community.

However, there has been on-going controversy about the causation between global warming/climate change and CO₂ emissions. Some scholars would argue CO₂ emission and global warming are not scientifically related.¹⁴ They even maintain that we are in a period of global cooling rather than warming.¹⁵ In addition, others view the KP agreement even as a hegemony battle between the EU and the US.¹⁶

There is no conclusive scientific evidence proving the direct causation between CO₂ emission and climate change. If so, should all these KP talks be terminated? Or should it be considered as though nothing have happened? The answer would be negative. What if, then, no post-KP system is set up, or there is no universal climate change system like KP?

The critical flaw of the KP system was the absence of the world's top three GHG emitters: the US, China, and India.¹⁷ Also, countries such as Japan, Russia, Canada, Australia, and New Zealand, which committed to GHG reduction in the first round of KP (2008-2012), withdrew from the second round of KP (2013-2020). Japan even reversed its policy on GHG emissions and increased the level of emissions following the Fukushima nuclear disaster.¹⁸ Nevertheless, in June 2014, China, which insisted that the developed countries take responsibility on the climate change resulting from

climate change. For details, see IPCC, available at <http://www.ipcc.ch/organization/organization.shtml> (last visited on Oct. 16, 2014).

¹² IPCC, *Climate Change 2013: The Scientific Basis, Summary for Policymakers*, at 13, available at http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf (last visited on Sept. 26, 2014).

¹³ *Id.* at 19.

¹⁴ For scientists group against global warming arguments, see Global Warming Petition Project, available at <http://www.petitionproject.org> (last visited on Sept. 12, 2014).

¹⁵ US National Academy of Sciences, *Understanding Climate Change: A Program for Action*, available at <https://ia801806.us.archive.org/7/items/understandingcli00unit/understandingcli00unit.pdf>. See also P. Michaels, *Fighting Fire With Facts*, Cato Institute, Jan. 18, 1999, available at <http://www.cato.org/publications/commentary/fighting-fire-facts> (all last visited on Oct. 18, 2014). For details, see Kelly Na, *Reasonable Suspicion: Gloomy Future of the Kyoto Protocol*, 6 J. EAST ASIA & INT'L L. 553 (2013).

¹⁶ Na, *supra* note 15, at 555-556.

¹⁷ IEA, KEY WORLD ENERGY STATISTICS 48-56 (2013), available at <http://www.iea.org/publications/freepublications/publication/KeyWorld2013.pdf> (last visited on Oct. 18, 2014). This Statistics lists the top 3 countries in terms of the percentage of total annual emissions of CO₂, as 25.5% for China, 16.9% for the USA, and 5.6% for India.

¹⁸ The disaster was recorded as the largest nuclear incident since the Chernobyl disaster in April 1986, and the second after Chernobyl to measure Level 7 on the International Nuclear Event Scale (from World Nuclear Association). See World Nuclear Association, *Fukushima Accident*, available at <http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Fukushima-Accident> (last visited on Oct. 18, 2014).

CO₂ emissions,¹⁹ showed its intent of joining the KP system by ratifying the Doha Amendment.²⁰

The US' key excuse for not joining KP was China's absence.²¹ As China is responding positively towards KP now, the US has no choice but to join the KP talks. In *Climate Change Justice*, Posner and Sunstein opined that if the US ratifies KP, it would be compelled to purchase carbon credits²² from China that is the largest supplier, because the US would never meet the US's target for the quantitative CO₂ emission requirements under KP.²³ Such purchase would result, they saw, in enormous wealth transfer from the US to China, which might have been as much as 80 percent of the total expense of KP.²⁴ In contrast, Aarthi Anand called this argument the 'China Myth.'²⁵ Anand showed that most of China's carbon credits²⁶ did not belong to China, but had been sold to the EU countries and corporations.²⁷ According to Anand's data utilizing UNFCCC sources, the biggest four countries in terms of the ownership of carbon credits are the UK (33% - 139,491,942.6 credits); Switzerland (16% - 65,699,332.45 credits); Japan (14% - 58,675,184.35 credits); and the

¹⁹ See *China urges developed countries to raise emission reduction targets*, XINHUANET, June 6, 2014, available at http://news.xinhuanet.com/english/china/2014-06/06/c_133389335.htm (last visited on Oct. 8, 2014).

²⁰ *Id.*

²¹ In US domestic politics, the main obstacle to entering KP was the Byrd-Hagel Resolution. However, it was because of China that the US Senate passed the Resolution. The Byrd-Hagel Resolution was passed in the US Senate by a 95-0 vote on July 25, 1997, before the Kyoto Protocol was finalized, although it had been fully negotiated with the deep involvement of then Vice-President Al Gore, and a penultimate draft was finished. This Resolution stated the sense of the Senate that the United States should not be a signatory to any protocol that did not include binding targets and timetables for developing nations as well as industrialized nations, as it "would result in serious harm to the economy of the United States" See S. Res. 98, 105th Cong. (1997) (enacted).

²² The Executive Board of UNFCCC issues 'certificates,' 'credits' or 'carbon credits' for every ton of GHG emission reduced, though they are issued through scrutiny of the Executive Board and multiple bodies. The dominant form of carbon credit certificates are Certified Emission Reductions ("CERs"). In principle, the Board provides one credit for every ton of carbon dioxide reduced. The Kyoto Protocol covers a basket of six GHGs – the three most important being carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O); and hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆). While countries are encouraged to reduce emissions of all these greenhouse gases, for the purpose of standardizing the measurements, the emissions of these other gases are converted into the equivalent "global warming potential" of CO₂. E.g., methane (CH₄) has 21 times the global warming potential of carbon dioxide (which is measured over a 100 year timescale). Therefore the emission of 1 ton of methane is considered to be equivalent to the emission of 21 tons of carbon dioxide. See A. Anand, *The Importance of Being Factual: The U.S., China, and the Future of the Kyoto Protocol*, 24 DUKE ENVTL. L. & POL'Y F. 18-19 (2013).

²³ E. Posner & C. Sunstein, *Climate Change Justice*, 96 GEO. L. J. 1611 (2008), available at http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2757&context=journal_articles (last visited on Oct. 8, 2014).

²⁴ *Id.*

²⁵ Anand, *supra* note 22, at 1-88.

²⁶ *Id.*, at 4-10. For details on China's carbon credit projects, see Xiaoyi Jiang & Fahui Hao, *Legal Issues for Implementing the Clean Development Mechanism in China*, 4 J. EAST ASIA & INT'L L. 37 (2011).

²⁷ *Id.* at 37-40.

Netherlands (11% - 43,555,873.6 credits).²⁸ Most of them were purchased from China or acquired by Chinese projects.

The global carbon market has now been occupied by the EU and EU-based corporations. It means that the EU has the most substantial financial interest in the KP system. For the EU, the carbon credits markets would be a critical ground to keep KP or its successor afloat. According to the World Bank's annual report on carbon markets, carbon credit trading was valued at USD 176 billion in 2011.²⁹ It is estimated that if the US were to adopt a carbon market, it would grow to a USD 2-3 trillion market.³⁰ Worldwide emissions trading in 2011 included 10.3 billion tons of carbon dioxide equivalent, with permits in the EU Emissions Trading Scheme ("EU ETS") accounting for more than three quarters of the total emissions.³¹ The EU ETS is by far the largest regional carbon trading scheme; values were estimated at USD 148 billion in 2011, with average EU prices for each carbon credit for that year at USD 18.80.³²

Another big player in the KP system is the UN. The UN has built the KP system and utilized the carbon markets under its guidance.³³ Thus, the UN's credibility and authority, as the control tower of the world, lie in the success of KP. For the EU and the UN, the post-KP system is something that 'must' be set up properly.

Today, KP is no longer just a climate change regime. It became an interconnector which bridges many countries in the world through carbon credits and energy resources. Thus, no single country is strong enough to survive alone, because the post-KP era would push it with many political and economic weapons, like carbon tax, border carbon adjustments, etc. No exceptions would be made for the big 4 CO₂ emitters. They would need to get on the board to secure more advantageous positions, or form alliances with other countries to protect common interests.

²⁸ *Id.* at 44.

²⁹ WORLD BANK, STATE AND TRENDS OF THE CARBON MARKET 17 (2012), available at http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_2012_Web_Optimized_19035_Cvr&Txt_LR.pdf (last visited on Sept. 13, 2014).

³⁰ INTERPOL, ENVIRONMENT CRIME PROGRAM: GUIDE TO CARBON TRADING PROGRAM 6 (June 2013), available at <http://www.interpol.int/Media/Files/Crime-areas/Environmental-crime/Guide-to-Carbon-Trading-Crime-2013> (last visited on Oct. 16, 2014).

³¹ *Id.*

³² *Id.*

³³ *Supra* note 22.

3. Steering Players of the Post-Kyoto Protocol System: Critical Evaluation

A. The United States

Although ex-Vice President Al Gore was heavily involved in designing KP and ‘symbolically signed’ KP on November 12, 1997,³⁴ the US never ratified it mainly due to the Senate’s rejection.³⁵ Despite wide and bottom-up public support for the fight against climate change, the political hurdles have not changed much.³⁶ Following the direction set by the Clinton administration, Democratic President Obama has been enthusiastic about enforcing this GHG emission reduction. Most Republicans and some coal-state Democrats in Congress, however, are still afraid of the GHG emission reduction measures mainly due to its possibility to bring an economic downturn to their states. They have expressed doubts about human-induced global warming.³⁷ As a result, the Waxman-Markey Bill³⁸ and Boxer-Lieberman-Warner Climate Security Act³⁹ all failed to pursue climate change actions in the US Congress.

Recently, President Obama chose to bypass Congress in his Climate Action Plan.⁴⁰ Under his Executive Power, on June 2, 2014, the United States Environmental Protection Agency (“US EPA”)⁴¹ announced the Clean Power Plan, under which, by 2030, the country would reduce GHG emissions from coal power plants by 30 percent

³⁴ Al Gore, *Moving Beyond Kyoto*, N.Y. TIMES, July 1, 2007, available at http://www.nytimes.com/2007/07/01/opinion/01gore.html?pagewanted=all&_r=0 (last visited on Sept. 27, 2014).

³⁵ *Supra* note 21.

³⁶ Many states, cities, corporations, universities, and churches voluntarily pursued relatively ambitious emission-reduction targets. See ANSARI ET AL., *supra* note 3, at 1025. For details, see Mayors Climate Protection Center, *The List of Participating Mayors*, available at <http://usmayors.org/climateprotection/list.asp> (last visited on Aug. 22, 2014).

³⁷ C. Davenport, *Obama Pursuing Climate Accord in Lieu of Treaty*, N.Y. TIMES, Aug. 26, 2014, available at http://www.nytimes.com/2014/08/27/us/politics/obama-pursuing-climate-accord-in-lieu-of-treaty.html?_r=0# (last visited on Sept. 27, 2014).

³⁸ This bill provides a national target for GHG emission reduction of 3% in 2013, 20% in 2020, 42% in 2030, and 83% in 2050, based on 2005 levels, and amends the Clean Air Act accordingly, thereby aiming to create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy, available at http://www.rff.org/Documents/Features/111th%20_Legislation_Table_Graph.pdf (last visited on Oct. 18, 2014).

³⁹ S. 3036, 110th Cong. (2008): Lieberman-Warner Climate Security Act of 2008 (This bill was introduced by US Senate Committee on Environment & Public Works as “Boxer-Lieberman-Warner Substitute to S. 2191,” aiming to introduce the Cap-and-Trade system and to reduce the GHG emission to the 2005 level by 15% in 2020, by 33% in 2030, and by 63% in 2050 on May 21, 2008, in a previous session of Congress, but was not enacted).

⁴⁰ Davenport, *supra* note 37.

⁴¹ United States Environmental Protection Agency (“EPA”) was established on December 2, 1970 to consolidate in one agency a variety of federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection.

from 2005 levels.⁴² Through this regulation, President bypassed the Congress, but he already faced legal challenges including a lawsuit filed on behalf of a dozen states.⁴³

From a realistic viewpoint of international political economy the US should enter the post-KP system because, if alienated, the US would not be able to maintain her status as the world's superpower with high morality. To join the post-KP system, however, Obama needs the Congress's support. In turn, Congress will ask for some assurances that its participation in KP or a post-KP system would benefit the US, or at least not seriously hurt its economy. Consequently, Obama will try to elicit more domestic supports by way of efficient investment which would enhance growth and reduce climate risk.⁴⁴ Obama would possibly push China to take more action⁴⁵ utilizing trade-related measures such as border carbon adjustment measures.

B. China

China has been the world's largest carbon emitter since 2007.⁴⁶ She emitted 9.9 billion tons of CO₂ in 2012, which is 29 percent of the world's total CO₂ emission. It is greater than the carbon emission of the US (16%) and the EU (11%) combined.⁴⁷ Because China was classified as developing country under KP, she had no obligation to reduce GHG emissions. In fact, China has been the biggest beneficiary under the KP system, earning an enormous economic profit by selling carbon credits. According to UNFCCC, as of July 9, 2012, under the Clean Development Mechanism ("CDM"), China earned 2,161 CDM projects, 50.26 percent of projects worldwide.⁴⁸

However, China has been under pressure from the developed countries to reduce GHG emissions, along with India, the second largest carbon gas emitter.⁴⁹ As

⁴² EPA, EPA proposes first guidelines to cut carbon pollution from existing power plants / ..., June 2, 2014, available at <http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceac8525735900400c27/5bb6d20668b9a18485257ceb00490c98!OpenDocument> (last visited on Oct. 16, 2014).

⁴³ Davenport, *supra* note 37.

⁴⁴ E. Porter, *The Benefits of Easing Climate Change*, N.Y. TIMES, Sept. 23, 2007, available at <http://www.nytimes.com/2014/09/24/business/economy/the-hidden-benefits-of-mitigating-climate-change.html#> (last visited on Sept. 27, 2014).

⁴⁵ White House, Remarks by the President at U.N. Climate Change Summit, available at <http://www.whitehouse.gov/the-press-office/2014/09/23/remarks-president-un-climate-change-summit> (last visited on Sept. 29, 2014).

⁴⁶ According to IEA, about half of the growth of the global energy-related CO₂ emissions until 2030 will come from China. See IEA, CO₂ Emission Statistics, available at <http://www.iea.org/statistics/topics/CO2emissions/> (last visited on Sept. 13, 2014).

⁴⁷ European Commission Joint Research Center, *Trends in Global CO₂ Emissions: 2013 Report*, at 10, available at http://edgar.jrc.ec.europa.eu/news_docs/pbl-2013-trends-in-global-co2-emissions-2013-report-1148.pdf (last visited on Sept. 27, 2014).

⁴⁸ Anand, *supra* note 22, at 30.

⁴⁹ Porter, *supra* note 44.

Beijing's smog has been getting more serious every winter,⁵⁰ the Chinese government decided not to bear the costs of environmental degradation.⁵¹ China is maintaining a low-carbon economy in order to follow a sustainable development path.⁵²

As a diplomatic gesture of its international climate change commitment, China accepted the Doha Amendment letter in June 2, 2014.⁵³ She announced the goal which would reduce 40 to 45 percent of CO₂ intensity below 2005 levels by 2020.⁵⁴ On the other hand, China plans to build 50 coal gasification plants, which would produce estimated 1.1 billion tons of CO₂ per year; it would significantly influence the climate change.⁵⁵ Further, Yellow Sand and Fine Dust Cloud from China's coal heating have been spreading throughout East Asia, raising the level of fine dust. Nonetheless, China has not been trying hard to stop it; she has no intent to sacrifice its economic development for climate change scheme. Thus, in designing the post-KP system, more pressure should be imposed on China as the No. 1 CO₂ emitter as well as No. 1 trading country.⁵⁶

C. The European Union

In 2002, all 15 then-members of the EU deposited their ratification paper works to KP

- ⁵⁰ On January 12, 2013, the air quality index ("AQI") of Beijing showed a reading of 755, and a PM 2.5 level of 886 micrograms per cubic meter, while the WHO regard any air with more than 25 micrograms of PM 2.5 per cubic meter as being of unacceptable quality. This reading was based on the revised index of the US EPA, which normally maxes out at 500. That day, Beijing's own municipal monitoring center acknowledged readings in excess of 700 micrograms. *See Beijing's air pollution – Blackest Day*, *ECONOMIST*, Jan. 14, 2013, available at <http://www.economist.com/blogs/analects/2013/01/beijings-air-pollution> (last visited on Sept. 27, 2014).
- ⁵¹ Kong Defan & Huang Jin, *Fighting climate change is China's own will*, *PEOPLE'S DAILY*, Feb. 17, 2014, available at <http://english.people.com.cn/90883/8538451.html> (last visited on Sept. 13, 2014).
- ⁵² Sun Zhao & Yao Chun, *China's carbon emission down by 5%: Premier Li*, *PEOPLE'S DAILY*, Aug. 27, 2014, available at <http://english.people.com.cn/n/2014/0827/c90883-8774814.html>. For details, see Information Office of the State Council of the People's Republic of China, *China's Policies and Actions for Addressing Climate Change* (2013), at 4, available at <http://en.ndrc.gov.cn/newsrelease/201311/P020131108611533042884.pdf> (all last visited on Sept. 13, 2014). The above Chinese Governmental Report said that by the end of 2012, the output of China's energy saving and environmental protection industry exceeded 2.7 trillion yuan (USD 440 billion).
- ⁵³ UNFCCC, *Status of the Doha Amendment*, available at http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php (last visited on Oct. 20, 2014).
- ⁵⁴ Sun Zhao & Yao Chun, *China deposits acceptance document of Doha Amendment to Kyoto Protocol with UN*, *PEOPLE'S DAILY*, June 3, 2014, available at <http://english.peopledaily.com.cn/n/2014/0603/c90883-8735954.html> (last visited on Sept. 13, 2014). China plans to build the plants, aimed in part at reducing pollution from coal-fired power plants in China's largest cities, in other regions, mostly in the northwest.
- ⁵⁵ E. Wong, *China's Energy Plans will Worsen Climate Change, Greenpeace says*, *N.Y. TIMES*, July 23, 2014, available at <http://www.nytimes.com/2014/07/24/world/asia/greenpeace-says-chinas-energy-plans-exacerbate-climate-change.html#> (last visited on Sept. 27, 2014).
- ⁵⁶ Zhong Xiang Zhang, *The U.S. Proposed Carbon Tariffs, WTO Scrutiny, and China's Responses*, 7 *INT'L ECON. & ECONOMIC POL'Y* 203-225 (2010).

at the UN, under which the EU committed to reduce their collective GHG emissions to 8 percent below 1990 levels by the period of 2008 to 2012.⁵⁷

The EU has been faithfully observing KP for several political and economic reasons. First, the threat of climate change is perceived by all of the EU's political parties, regardless of their ideologies and interests.⁵⁸ Second, since the 1970s, for almost 35 years, the majority of the EU member States have been net energy importers; over 50 percent of the energy supply has come from external suppliers.⁵⁹ Thus, it is necessary for the EU to develop new methods to reduce energy dependency, in line with KP. Third, developing new energy or imposing a tax on energy consumption has been a strong economic motivation for the EU and its members.⁶⁰ Thus, the EU have held sufficient economic interest in clean energy developments such as wind, solar, or renewable energy.⁶¹

Also, launched in 2005, EU ETS covers 45 percent of the Union's GHG emissions as well as 11,000 energy-using installations and industrial plants in 31 countries.⁶² The EU ETS is the first major carbon market operating in 30 countries, which grew the biggest in the world.⁶³ The strategies for global emissions control to extend these rules beyond the EU have been postponed for a year, in the face of strong opposition from China, India and the US.⁶⁴

The EU ETS has a few significant implications: (1) it showed the EU's efforts to comply with the KP commitments; (2) it enabled the EU to take a leading role in the international climate negotiation, diplomacy and cooperation with third countries; and (3) by operating it successfully at least at the EU level, EU could increase the weight of its bargaining power in international negotiations.⁶⁵ Based on the stable operational experience of the EU ETS, the EU will try to expand the EU ETS to other ETS systems around the world in order to form the backbone of a global carbon market,⁶⁶ and to lead and host the post-KP system.

⁵⁷ European Commission, Climate Action - Kyoto emissions targets: Joint fulfillment, 'burden sharing' and base years, available at http://ec.europa.eu/clima/policies/g-gas/kyoto/index_en.htm (last visited on Sept. 27, 2014).

⁵⁸ Hui Cao, *EU Internal Climate Policy-Making and Its International Negotiations: A Two-Level Game Approach*, 7:3 The Chinese Academy of Social Sciences Working Paper Series on European Studies (2013), available at http://ies.cass.cn/en/UploadFiles_8765/201305/2013052009090173.pdf (last visited on Sept. 27, 2014).

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² European Commission, Climate Action - The EU Emissions Trading System ("EU ETS"), available at http://ec.europa.eu/clima/policies/ets/index_en.htm (last visited on Sept. 27, 2014).

⁶³ *Id.* Here, the thirty countries include Iceland, Liechtenstein and Norway in addition to 27 EU Member States.

⁶⁴ Interpol, *supra* note 30 at 8.

⁶⁵ Cao, *supra* note 58.

⁶⁶ Interpol, *supra* note 30.

D. Japan

In 1998, Japan enacted its Anti-Global Warming Law to provide the basic strategy for reducing GHG emission and implementing the KP agreement.⁶⁷ Japan's position against global warming has been 'technology' oriented. *E.g.*, Japan set up the "Proactive Diplomatic Strategy for Countering Global Warming"⁶⁸ in order to cooperate with other countries having low-carbon technologies. Through the Joint Crediting Mechanism under KP, Japan has cooperated with 238 research projects in 31 countries in Asia and Africa.⁶⁹ Also, the Ministry of the Environment initiated the Japan's Voluntary Emission Trading Scheme ("JVETS") in 2005, a part of which is a voluntary scheme of emission trading.⁷⁰

In 2009, Japan announced that she would reduce GHG emission by 25 percent from 1990 levels, under the premise that it would build more nuclear power plants to replace traditional fossil fuel power plants like coal, oil, and natural gas.⁷¹ While struggling to recover from the Fukushima Disaster, however, Japan refused to sign the second round of KP and finally withdrew its commitment in 2013.⁷² Instead, the Japanese Government announced a modest target of reducing GHG by 3.8 percent from 2005 levels.⁷³ It is projected, nevertheless, that Japan may reduce 6 percent of GHG based on 1990 levels, as promised in KP.⁷⁴

On the other hand, the government-owned Japanese Bank for International Cooperation ("JBIC") has led Japan's financial support for overseas coal plants and mines, which typically involves the exchange of Japanese technology, equipment and expertise.⁷⁵ JBIC has invested nearly two dozen coal facilities in Indonesia,

⁶⁷ Anti-Global Warming Law: 地球温暖化対策の推進に関する法律 [平成十年十月九日法律第百十七号] (1998), currently, 平成二六年五月三〇日法律第四二号 (2014).

⁶⁸ Ministry of Foreign Affairs of Japan, Proactive Diplomatic Strategy for Countering Global Warming, *available at* http://www.mofa.go.jp/press/release/press3e_000007.html (last visited on Sept. 27, 2014).

⁶⁹ Ministry of Foreign Affairs of Japan, Japan's Official Development Assistance White Paper, *available at* http://www.mofa.go.jp/policy/oda/white/2013/html/honbun/b2/s2_2_3_01.html (last visited on Sept. 27, 2014).

⁷⁰ Ministry of the Environment of Japan, Japan's Voluntary Emissions Trading Scheme, *available at* <http://www.env.go.jp/en/earth/ets/jvets1105.pdf> (last visited on Sept. 27, 2014).

⁷¹ M. Matsushita, *Law and Policy in Combating Greenhouse Gases in Japan* (tentative draft), Proceedings of International Seminar on Climate Change & Energy and International Trade Law organized by Yonsei University Institute for Legal Studies, Aug. 28, 2014, at 108.

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.* at 109.

⁷⁵ Japan Bank for International Cooperation, *Securing Stable Energy Supplies for Japan*, 10 JBIC TODAY, (Nov. 2011), *available at* http://www.jbic.go.jp/wp-content/uploads/today_en/2011/12/2645/td_2011nov.pdf (last visited on Sept. 27, 2014).

India, Vietnam, and the Philippines.⁷⁶ Furthermore, the Tokyo Electric Power Co. (“TEPCO”) received approval to construct two cutting-edge coal-fired power stations in Fukushima Prefecture, the location of the Fukushima Nuclear Disaster, with Mitsubishi.⁷⁷ This shows that Japan has relentlessly tried to secure CO₂ emitting coal resources in the international climate change system, while appearing to comply with KP.

4. Korean Strategies for the Post-Kyoto Protocol System: Legal Analysis

Under KP, Korea was classified as a ‘developing country,’ so that she might have no obligation to cut GHG emission.⁷⁸ As of 2011, Korea emitted GHG of 696.9 million tons, ranking 6th in the Annex I countries, following US, Russia, Japan, Germany, and Canada.⁷⁹

The first governmental action concerning this carbon emission was taken by the Lee Myung-bak administration in 2008. President Lee declared “Low Carbon, Green Growth” as the national vision for the next 60 years. In line with this initiative, in 2009 UNFCCC at Copenhagen, President Lee promised that Korea would reduce 30 percent of GHG emissions by 2020.⁸⁰ This cut was the highest level recommended for developing countries. President Lee’s green growth vision was embodied in the Framework Act on Low Carbon, Green Growth (“FALCGG”).⁸¹ It defined low-carbon emission growth as green development.⁸² FALCGG was posited as the higher basic

⁷⁶ M. Gallucci, *Japan Boosts Support For Coal-Fired Power Plants Built Overseas Despite Obama-Led Push to Scale Back Financing*, INTERNATIONAL BUSINESS TIMES, July 23, 2014, available at <http://www.ibtimes.com/japan-boosts-support-coal-fired-power-plants-built-overseas-despite-obama-led-push-scale-1636622> (last visited on Sept. 27, 2014).

⁷⁷ *See Tepco, Mitsubishi group to build coal-fired plants in Fukushima*, JAPAN TIMES, Nov. 23, 2013, available at <http://www.japantimes.co.jp/news/2013/11/23/national/tepc-mitsubishi-group-to-build-coal-fired-plants-in-fukushima> (last visited on Sept. 27, 2014).

⁷⁸ Hyun-Jin Son, *Response of the key countries to the Post-Kyoto Framework and the implications for Korea*, Korea Legislation Research Institute, Green Growth Research [녹색성장연구] 12-23-③ <available only in Korean> (June 29, 2012).

⁷⁹ ⁸ including the developing countries of China and India. *See Greenhouse Gas Inventory & Research Center of Korea, 2013 National Greenhouse Gas Inventory Report of Korea* [2013 국가온실가스 인벤토리 보고서] <available only in Korean>, available at <http://webbook.me.go.kr/DLi-File/091/019/003/5566970.pdf> (last visited on Oct. 8, 2014).

⁸⁰ Ministry of Environment, *COP 18 in Korea*, National COP 18 Hosting Committee, at 10. (This goal is the highest level among the reduction ranges (15~30%) for developing countries recommended by IPCC).

⁸¹ Act No. 10599 (entered into force on Apr. 27, 2012).

⁸² Sang-in Kang, Jin-gyu Oh & Hongseok Kim, *Korea’s Low-carbon Green Growth Strategy*, OECD Development Ctr., Working Paper Series No. 310 (2012), available at <http://www.oecd.org/dev/49953814.pdf> (last visited on Sept. 27,

law concerning the energy and sustainable development law.⁸³ In particular, Article 46⁸⁴ of FALCGG provided a legal basis for a cap-and-trade carbon emission trading program, which was further specified by the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits (“ATGGEP”).⁸⁵ ATGGEP aims to accomplish the national target for GHG emission reduction through the market system.⁸⁶ Here, the GHG emissions from large businesses would be capped at 1.64 billion tons by 2017. Businesses will start trading emission rights on the Korea Exchange from 2015.⁸⁷

Green growth is very important for Korea because her energy dependency stands at 96 percent, particularly in the area of fossil fuel (over 80%), which is higher than Japan (73%), the US (64%), and France (53%).⁸⁸ Thus, various approaches to achieve energy independence are very important in channeling more investments into the development of alternative energy sources like wind, solar, and tide.

Actually, ex-President Lee’s promised cut of 30 percent of GHG emissions by 2020 was more of a political gesture, rather than a reasonable prediction based on current Korean conditions. In 2010, Korea emitted 669 million tons of carbon dioxide, exceeding the previous estimation of 644 million tons by about 4 percent. In 2013, the emission level was 899 million tons, which was more than 10 percent greater than the 811 tons targeted for 2020. Thus, the target to cut GHG emissions 30 percent by 2020 is considered as almost impossible achievement.⁸⁹

2014).

⁸³ H.C. Kim, *Climate Change and WTO – Carbon Emission Right & National Boundary Structuring*, 34 KOREAN LAW SERIES 98 (The Seoul National University Law Research Institute ed., 2011).

⁸⁴ It (Introduction of Cap and Trade System) reads as follows: (1) The Government may operate a system for trading emissions of greenhouse gases by utilizing market functions in order to accomplish the State’s target of reduction of greenhouse gases; (2) The system under paragraph (1) shall include a system for setting a cap on emission of greenhouse gases and for trading emissions and other internationally recognized trading system; (3) The Government shall, when it implements the systems under paragraph (2), consider international negotiations related to climate change and may take necessary measures in relation to controlled entities under Article 42(5), if international competitiveness is likely to be degraded significantly; (4) The method of allocation of the allowable quantity of emission, the methods of registration and management, and the establishment and operation of an exchange for implementing the system under paragraph (2) shall be provided by another Act separately.

⁸⁵ Act No. 11419 (entered into force on May 14, 2012).

⁸⁶ The Act on the Allocation and Trading of Greenhouse-Gas Emission Permits, ch. I (General Principle), art. 1 (Purpose).

⁸⁷ Meeyoung Cho, *S.Korea increases emissions cap in proposed carbon trading scheme*, REUTERS, Sept. 11, 2014, available at <http://www.dailymail.co.uk/wires/reuters/article-2751758/S-Korea-increases-emissions-cap-proposed-carbon-trading-scheme.html#ixzz3DASZrEvA> (last visited on Sept. 13, 2014).

⁸⁸ ROK Ministry of Environment, *E-Environment News: 180 billion KRW saved from used plastic*, Feb. 19, 2014, available at <http://www.me.go.kr/home/web/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=284&orgCd=&boardMasterId=108&boardCategoryId=&boardId=182190> (last visited on Sept. 4, 2014).

⁸⁹ Tae-jin Park, *The world has changed*, JOONGANG ILBO DAILY, Jan. 4, 2014, available at <http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=2982988> (last visited on Oct. 23, 2014).

The purpose of this bold promise by President Lee was taken as a strategy in the international climate change negotiations. In fact, because of President Lee's promise, Korea was able to host two important international organizations for climate change, Global Green Growth Institute ("GGGI")⁹⁰ in 2010 and the Green Climate Fund ("GCF")⁹¹ in 2012, respectively. In the Climate Summit 2014, President Park promised to submit Korea's plan to support the Post-2020 climate change plan, and to pledge up to USD 100 million to GCF.⁹²

Korean actions on the international climate change talks have been pushed by two Presidents' promises and pledges. It is, however, unclear as to what extent substantive measures have been planned and taken to lead the post-2020 era. The carbon trading market will begin in Korea from 2015.⁹³ Considering the precedents of the EU, China, the US, Japan and other countries, the carbon emission trading market is inevitable step since it would be one of the key mechanisms to connecting the post-KP system. For this reason, building Korea's carbon market experience would be essential for the post-2020 age.

As the 7th carbon emitter in the world, Korea would receive more pressure from the post-KP negotiations. "Low Carbon, Green Growth" initiative includes all; Korea just requires more comprehensive plans and measures to increase energy independence and make an economic transition to a greener future. However, little substance can be seen at this point.

5. Conclusion

Even though the Doha Amendment has not received much attention and ratification,

⁹⁰ GGGI is a Seoul-based environmental organization seeking suitable models for green growth; it has branch offices in Abu Dhabi, Denmark and England. For details, see the official website of GGGI, available at <http://gggi.org> (last visited on Oct. 18, 2014).

⁹¹ GCF was established in the COP 16 of UNFCCC held in Cancun, Mexico, with the ambition that it would collect USD100 billion per year by 2020 to finance developing countries' efforts to fight climate change. See UNFCCC, *The Cancun Agreements - Financial, technology and capacity-building support*, available at <http://cancun.unfccc.int/financial-technology-and-capacity-building-support/new-long-term-funding-arrangements> (last visited on Oct. 20, 2014).

⁹² See President Park Geun-hye's Remarks at the Climate Summit, Sept. 23, 2014, available at http://english1.president.go.kr/activity/speeches.php?srh%5Btag%5D=Climate+Summit&srh%5Bview_mode%5D=detail&srh%5Bseq%5D=7433 (last visited on Sept. 28, 2014).

⁹³ ROK Office for Government Policy Coordination, *The Second Green Growth Five-Year Plan [제2차 녹색성장 5개년 계획안]* <available only in Korean>, June 5, 2014, available at http://www.pmo.go.kr/pmo/news/news01.jsp?mode=view&article_no=45836 (last visited on Oct. 8, 2014).

KP has been successful in many ways. Also, it is now influential enough to give birth to a successive system in Paris, France in 2015. KP has exposed the strengths and weaknesses of each country in facing the international climate change system. In the process, KP has enabled each country to find its own way of responding, as a group or singular entity. Some countries have built carbon trading markets successfully, while others have emphasized alternative energy resource developments. A variety of experiences in mobilizing resources to fight climate change will surely be useful in building the post-KP system.

Whether the outlook for KP is promising or not, the world cannot be as same as before. Certainly, a post-KP system will be born in 2015, although the levels of commitment would be different. *E.g.*, the carbon trading markets would be further expanded. The EU will take a preferable position with its successful experiences. The post-KP system would make the world more consolidated than before. It may be a double-edged sword, however. It is good, in a sense, for solidarity and cooperation, while, in the other sense, bad in increasing the possibility of the commons tragedy when things do not work out.

As a member of OECD, but non-Annex 1 listed country, Korea is required to take a carefully organized diplomatic plan in the post-KP climate change treaties that would impose new targets and timetables for GHG emission reduction. The carbon trading market which will begin in 2015 seems most critical to initiate a full-fledged low-carbon growth. A successful carbon market may naturally provide incentives for compliance and participation; it would, in turn, induce smooth transfer into the low-carbon growth paradigm. For persuasion, the governmental policies for the carbon market should be equitable and reasonable enough to derive consensus. For consensus, comprehensive support package should be accompanied to provide technologies and incentives for mitigation and adaptation, while accommodating economic development.

