Environmental Issues in China, Korea and Japan's Relations

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A THESIS

Submitted to

School of International Policy and Global Management

Korea Development Institute

In partial fulfillment of the requirements
For the Master degree of

International Relations and Political Economy

2000

ABSTRACT

Much of Northeast Asia is emerging from the years of political isolation and inaccessibility. But this region is now on the verge of an era of accelerated trade, development and integration into the world economy.

The environmental issue is an area, which has played more and more significant role in the relations of the three Northeast Asia countries. Decades of rapid, largely unregulated economic growth in Korea, Japan and China has come at a heavy price to the natural and human environment. The World Bank statistic shows that nine out of ten top polluted cities are in China. Air pollution in Beijing and Shanghai often is at levels considered unsafe by the World Health Organization. Air pollution in Seoul, Tokyo is also problematic because of auto emissions. Growing energy consumption in the region is likely to make air pollution worse in the future. Energy security concerns are behind strong government interest in nuclear energy in China, Korea and Japan.

The ecological stakes in China are particularly high. This moment in history is

formtive fro government institutions, journalists, scientists and the nascent NGO movement that will decisively affect China's environment.

Korea has also been a victim for pollution. Korean government has estimated that at least 80 percent of pollutants in the Yellow Sea and the South Sea are from pollution carried into the seas by Korea’s four largest rivers.

Environmental sustainability in this region will also depend on Japan's adoption of sustainable policies for its own internal development and consumption as well as for its foreign trade, investment and aid activities. With a commitment of resources to a board programs of scientific and technical exchange, along with partnerships among NGOs, there is an opportunity to catalyze a shift to a more environmentally enlightened administration in Japan.

The importance of North Asian Environmental Cooperation is growing, and governmental interests and efforts in this region are very vivid. But the political and environmental gap between the countries of this region needs to be overcome to get the real fruit of cooperation. There also needs to have more cooperation between NGOs compared to other imperative to try to understand each other.

Introduction

Since late 20th Century, China, Korea and Japan have experienced a rocky history with both conflicts and cooperation. Decades of colonial rule of Korea by Japan and the devastating Second World War, the Korea War and decades of the Cold War have left the three nations with much to remember. However since the end of the Cold War, the normalization of South Korea and China's diplomatic relations, the three nations have seen much cooperative approaches.

The environmental issue is an area, which has played more and more significant role in the relations of the three Northeast Asia countries. Decades of rapid, largely unregulated economic growth in Korea, Japan and China has come at a heavy price to the natural and human environment. The World Bank statistic shows that nine out of ten top polluted cities are in China. Air pollution in Beijing and Shanghai often is at levels considered unsafe by the World Health Organization. Air pollution in Seoul, Tokyo is also problematic because of auto emissions. Growing energy consumption in the region is likely to make air pollution worse in the future. Energy security concerns are behind strong government interest in nuclear energy in China, Korea and Japan.

China is the largest source of pollution in the region. China alone accounts for a fifth of the world's population. China's environmental problems are manifest and extreme. Water shortages and pollution are commonplace. More than half of China's towns have water

supplies contaminated by industrial and municipal wastes. Pesticides, fertilizers, reclamation and erosion have all contributed to the deterioration of ecosystems. Furthermore, the air in many Chinese cities is dangerous to breathe. The use of coal for fuel has contributed heavily to the problems of acid rain and soil contamination in both China and neighboring Japan. These problems are compounded as the China's economy grows and the number of automobiles increases. The lack of alternative fuels and other concerns, such as solid waste disposal, also continue to plague the environment of Mainland China.

Korea has also been a victim for pollution. Korean government has estimated that at least 80 percent of pollutants in the Yellow Sea and the South Sea are from pollution carried into the seas by Korea's four largest rivers.

Although rapid industrialization over the past eighty years has devastated Korea's ecosystems, significant pockets of bio-diversity remain and need urgent protection. One of the most important conservation priorities is preserving wetlands of international importance, which stretch along the western coast. These areas are threatened by land reclamation and industrial pollution. [1]

As the world's second largest economy, Japan has an enormous impact on the global environmental through trade, aid and investment. It is an environmental "super power" whose tremendous influence, particularly in the Northeast Asia, can not be

[1] . Josh Newell, The North Pacific Frontier, Pacific Environment and Resources Center, September 1998. P. 95

ignored.

While Japan has an international reputation for success in some environmental areas, such as in combating air and water pollution and developing energy efficiencies, Japan has been slow to internalize the findings of modern ecological sciences into its activities. Thus, Japan also has an image as a despoiler of species and resources in numerous areas affecting the global environment.

- Japan ia the largest importer of timber. Such imports promote logging, which is usually the primary driver of forest conversion;
- Japan is the second largest consumer of marine fisheries products after China, and this consumption places great pressure on stocks of endangered various fish species;
- Japan continue to conduct whaling under its "scientific whaling" program and is reported to be a consumer of poached whale meat as well as dolphin meat labeled as whale;
- Japan is a major market for endangered species products utilized in traditional Chinese medicine, including bear gall, tiger bone and others.[2]

Outside of Japan, money invested in pollution control in Korea and China is still limited. As of 1995, Korea spends only 0.5% of its gross domestic product (GDP) on pollution control.

[2] Richard Forrest, The Japan Chapter, The North Pacific Frontier, Pacific Environment and Resources Center, P. 49

Pollution control investments in China amounted to 0.70-0.85% of GDP.[3] In recent years, however, there have been some signs of change in how environmental degradation is addressed. The pace of change is still slow, but there are numerous indications that the environment is becoming a politically more salient issue area for the region. At the domestic level, with in all the countries of the region, new environmental laws are being implemented and tremendous diversity among them in their environmental management capacities. Many of the new laws have been influenced by regulation existing in countries outside of the region.

For this region, liberalization and economic integration are especially significant because China, Korea and Japan are among the most powerful players in the international natural resources industries. Many of the ecological problems threatening the countries of the Northeast Asia could be avoided if international institutions would forecast the environmental impact of their initiative and policies and made.

[3] Elizabeth Economy, "China and East Asia", *Consequences of Environmental Change*, University Center, MI.

Common Environmental Problems:

Forest conservation and timber trade

One of the more startling statistics regarding China's environmental problems is the forest coverage rate. China currently has approximately 330 billon acres of timber, which represents a forest coverage rate of fourteen percent, or less than half of the international average. Many experts have blamed the excessive logging of trees in the past as one of the major reasons for the devastating flooding in southern and northeastern China in the summer of 1998. The Chinese government has imposed ban on irrational lumbering in many forest areas, particularly those on the upper reaches of major rivers in a bid to curb soil erosion. China's output of timber in the first 11 months of 1999 plummeted 20.4 percent on an annual basis, according to the National Bureau of Statistics. Latest figures show that the output of timber from January to November totaled 20.14 million cubic meters with an output of 2.14 million cubic meters in November 1999. [4]

[4] Eben Clark, New Crriminal Forestry Law in China, *Land and Resources Management*, Colorado Journal of International Environment Law & Policy, Page 111.

Korea, whose own forests were devastated during World War II and the Korean War, imports about 90% of its timber products, including about 8 million cubic meters of raw logs each year. The government-run Korean Overseas Forest Development Corporation works closely with large Korean companies to secure overseas timber resources. The Korean government has a long-term plan to develop a total of 300,000 hectares of overseas forestry operations in order to secure an annual supply of 6,000,000 cubic meters of saw logs for use in Korea. [5]

Japan so far is the world largest importer of timber and other related forest products. Though its own natural forests have been largely well preserved, its huge demand to the timber has devastated much of its neighbors' forests.

Japan Tropical Forest Action Network (JATAN) struggled ten years to curb the Japanese wasteful consumption patterns of plywood made by tropical hardwoods of South East Asia.

The Japanese government should propose calculation methods that reflect timber imports contributions to CO_2 emissions in the importing, as opposed to the exporting nation. This would be consistent with the way in which petroleum use emissions are counted as emissions from the consuming, rather than the exporting nation. Conservationists also proposed that Japan should acknowledge that the minimum imports of timber in the year 2010 are Japan's contribution to forest depletion in other countries, and not the CO_2 emission responsibility of timber exporting countries. On the other hand, it has been suggested that Japan should implement substantial

[5] Korea Overseas Information Service, 1994

measures to increase rates of timber self-sufficiency in Japan, aiming to reduce timber imports to well below the current level by the year 2008.[6] And Japan should make efforts to convince other nations that implementation of trade regulations such as import quota or trade tariffs are necessary to improve the domestic forestry for sustainable basis, which will also promote environmental conservation.

Acid Rain

Acid rain or acid deposition is the routine atmospheric transport and deposition of particulate matter emitted mostly in the course of energy production. China, Korea and Japan all emit considerable amounts of sulfur dioxide (SO2) and nitrogen oxides (Nox), the precursors of acid rain. China is by far the largest emitter. Transboundry acid rain in Northeast Asia is inextricably linked to the pace of China's economic growth. Coal accounts for 75 percent of China's energy needs, and most of the coal consumed in China is low in quality and high in sulfur content. China lacks much in the way of pollution control equipment. According to one study conducted in 1994, in most cities of china, only forty-five percent of discharged gas is treated. China now is the world second largest producer of SO2 emission after the United States. [7]

While no clear scientific agreement exist about the impact acid rain is having on the region, many scientists contend that countries in this region, and most notably Korea and Japan, are suffering from acid rain that originates in China. Due to prominent seasonal winds, the

[6] Climate Change and Japan, 1998
[7] Esook Yoon & Hong Pyolee, Environmental Cooperation in Northeast Asia: Issues and prospects, *Ecological*

emissions from China are blown across the Yellow Sea and the East Sea to Korea and Japan.

The Japanese government launched a number of studies in the 1980s to investigate suspicion that Japan was being affected by acid rain from "the continent". Japan's Environmental Agency sponsored two large –scale studies to determine the source, extent, and effect of acid deposition throughout Japan. The result shows that the source for acid rain deposition is beyond Japanese archipelago. Other MITI-supported studies projected That China would need to build 227 additional coal-fired power plants averaging 500 megawatts in size by the year 2000 to meet rising energy demand.

A 1992 report by the Japanese Central Institute of Electric Power Industry estimated that China generated 50 percent of the anthropogenic sources of sulfur ion emission that contributed to acid rain in Japan; Korea produced 15 percent and Japan the remaining 35 percent. When other emissions sources are considered, such as volcanic activities in Japan, the percentage levels changes somewhat. 46 percent of acid precursors in Japan are from domestic sources, 42 percent from China, and 12 percent from Korea.[8]

In 1987, the Korean National Institute of Environmental Research conducted four studies on the acidity of rain fall on Baekryung Island located in the Yellow Sea and compared this to air currents coming from China. Baekyung Island made a good testing site because it does not

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Security in Northeast Asia, Yonsei University Press, 1998, P. 69

[8] Tack-Whan Han, The Study on the Environmental Cooperation between Korea and China, KIEP, 1994, P.134

have any significant emission sources.[9] These studies showed that the island is directly exposed to polluted air from China. China was estimated to account for at least 33 percent of all acid deposition in Korea. Recent research conducted by the Korean National Institute of Environmental Research also confirms the continental source of acid rain in Korea. The research concludes that China is responsible for 23 percent of the so_2 emission and 20 percent of Nox emissions in Korea. The general conclusion of these studies is that China is a primary source of acid rain in Korea and Japan.[10]

Due to its rapid economic development, China is unlikely able to reduce its emissions. China is currently preoccupied with the task of rapid economic growth. Faced with an energy shortage, China in fact has increased its reliance on coal relative to other energy sources, notably oil, since 1989. From 1981 to 1998, the country's energy consumption increased by 5.2 percent annually. Even if the pace is kept at 2.8 percent annually, energy would require an estimated 2.2 billion tons of standard coal in 2015 and 4.34 billion tons in 2040. As a result, environmental pollution will likely grow worse. Within several years, the acid rain problem in the region is bound to become as serious as it was in Europe and North America in the 1980s and 1990s.[11]

Concern over the acid rain also explains the large number of projects in the Japan's Green Aid Plan that seek to control SO2 emissions. These include pre-combustion technologies such as coal washing system; technologies within the combustion process. In China 24 energy-saving

[9] Miranda A. Schreurs & Dennis Pirages, Ecological Security in Northeast Asia, Yonsei University Press, P. 71
[10] Ibid.

technologies and clean-coal technology projects were started between 1993 and 1998. Most have involved grants of $8-$10 million, although some projects have been much larger. Two of the largest, totaling approximately $35 million each, have focused on developing less costly FGD technology at existing coal-fired power plants in Shandong and Shanxi Provinces.[12]

Japan's New Energy and Industrial Technology Development Organization (NEDO) also initiated a research cooperation project between China's Qinghua University an Japan's Keio University in October, 1999, aiming at coordinate the two countries' environmental efforts.

Marine Pollution

Marine pollution is another environmental issue that calls for attention among Korea, China and Japan. Northeast Asia contains two huge semi-enclosed seas, the Yellow Sea bordered by China and Korea and encompassing 362,000 square mile, and the East Sea bordered by Japan and Korea and encompassing 445,000 square miles. Both constitute single ecosystems. The seas perform the dual functions of decomposing pollutants flowing into them and supplying food. However these two functions can only be fulfilled if pollution levels do not exceed the seas' cleaning capacities. Otherwise, the ability of the seas to produce food will be jeopardized. The coastal areas surrounding both the Yellow Sea and the East Sea are densely populated and heavily industrialized. Ocean vessel traffic in the region has become increasingly heavy due to export-oriented economic growth and industrial development and

[11] Energy Information Administration, "Coal" International Energy Outlook, 1994, DOE/EIA -0484
[12] Anna Brettell & Yasuko Kawashima, Sino-Japanese Relations on Acid Rain, Ecological Yonsei University

the improving economic relations that have occurred as a result of political reproaching. Rapid growing commercial trade among China, Korea and Japan has significantly increased marine transportation, especially in the Yellow Sea. Routine discharge of oil from ship and oil spills is serious problems.

The Yellow Sea is shallow and slow in circulation. Its average depth is 45 meters, with a maximum depth of 100 meters. The current moves in a counter-clockwise rotation. The sea is open to the south, yet strong currents flowing northward from the Taiwan Straits partly trap the water within the Yellow Sea basin. The relative shallowness, and the sluggish and confined pattern of the currents, renders the sea particularly vulnerable to marine pollution. A World Watch report designated the Yellow Sea as one of the seven "dying " seas of the world and ranked it as being in the second worst condition after the Black Sea. Many of the most severely polluted rives in both China and Korea flow into it. Furthermore, as Korea and China developed industrial complexes along the coasts of these two seas, the coastal waters increasingly have become contaminated by industrial wastewater and domestic sewage.

Pollution by oil is the great existing threat to the environment of the Yellow Sea. Oil spills from oil exploration and oil terminals and refineries located in the coastal areas have greatly increased the level of oil concentration in the Yellow Sea. According to China's state development plan, annual offshore oil production will increase to 50 million tons by the year 2000. Oil discharge is estimated 23,193 in the Yellow Sea. Oil spills in the Bohai Sea are

particularly serious. All of China's oil production is based in Bohai Bay, from where large amounts of oil that are discharged into the Bohai Bay are believed to have made their way to the Yellow Sea. Korea also reports that the volume of oil spoiled along its coastline nearly tripled between 1987 and 1991. The annual average number of marine oil pollution accidents happened in the Yellow Sea and the South Sea, which is linked to the Yellow Sea.[13]

Increasing marine transportation is also a source of oil pollution. Between 1991 and 1995, China exported about 10 million tones of crude oil to Japan; much of this oil moved through the Yellow Sea. The transportation of oil by vessels is expected to grow several folds in the next decade. By the year 2000, it is estimated that there will be over 10,000 tons of oil-spilled annually on the Chinese side of the Yellow Sea.[14]

Also ongoing construction of more power plants on Korea's west coast as a past of west coast development project means that resources poor Korea will have to import more oil and coal, and therefore, marine transportation will be increased and the number of oil spill from oil tanker and vessels is expected to increases.

As a result of oil spillage, both China and Korea have suffered serious ecological and economic damage, including commercial loss of fishers and aquaculture, destruction of flora and fauna, and red tides.

The East Sea is almost completely encircled by land. With a maximum depth o about 3,650

[13] Esook yoon and Hong Pyolee, Environmental Coopertation in Northeast Asia, Issues & Prospects, *Ecological Security in Northeast Asia*, Yonsei University Press, 1998

meters, it has a comparatively larger absorptive capacity for pollutants than the Yellow Sea. Still, some coastal areas facing the East Sea are sources of chemical pollution, including mercury, oil, and heavy metals. In the past, mercury was a problem near Niigata, Japan. Today marine oil spills are common in both Japan and Korea. Japan reported total of 583 marine oil spills in all coastal areas in 1990; Korea reported 248. On the basis of one measure of oil pollution – average levels of dissolved hydrocarbons – the open areas of the East Sea contain about 1.2-1.8 times more oil than the surface wasters of the northern Pacific Ocean. In coastal regions, the level of pollution is much higher, often reaching 2.5 timers the level of unpolluted ocean water. Another problem affecting ecological conditions in the East Sea is industrial waste dumping. Japan is presently the largest marine dumper in the world, dumping 4.5 million tons per year into the Pacific Ocean and the East Sea.

Finally, land based pollutants such as household and industrial waste, toxic chemicals, livestock waste, and suspended solids from land reclamation and other development sites are accountable for much of the pollution of the Yellow Sea and the East Sea. It behooves the regional governments to make efforts to reduce the level of domestic pollution through cleaning up rivers, strictly controlling plants discharging waste water, constructing sewage treatment plants, and promoting public awareness of environmental preservation. Also necessary are more stringent regulations on oil spills and waste dumping. Collective action may be not only desirable but also essential if a solution to these problems is to be found. Otherwise, strong tidal mixing and a high residual current could spread the effects of coastal

[14] Ibid

pollution rapidly and widely in both seas.

Fishery Issue and Disputes

China, Korea and Japan have concluded three separate bilateral fisheries agreements in recent years, which ushers in a new fisheries order in Northeast Asia. After ratifying United Nations Convention on the Law of the Sea in 1996, Korea and Japan proclaimed the exclusive economic zone (EEZ) in the same year. So did China in 1998.

To resolve the problems arising from overlapping EEZs and adjust existing fisheries order, the bilateral fisheries agreements provide a legal framework for a new fisheries regime. But the se agreements have not resolved complex legal issues relating to the boundary delimitation of EZZs, which involves much difficult negotiations over the issues of straight baselines and island disputes.

Korea and China began negotiations on a fisheries agreement in 1993 only after they normalized their relations in 1992. At the meetings during the successive years, they have discussed the problems of illegal fishing, the procedure of the fishery dispute settlement, the area to be covered by a fisheries agreement, and maritime emergency evacuation and rescue. It's reported that, over the previous years, fishing operations in the Yellow, South China were carried out in a state of lawlessness. In 1998, Korea and China held two informal and seven

formal meetings, which resulted in reaching a fisheries agreement. However, lack of the clearly defined boundary of EEZs is still a source for problems. The two states also took different positions on whether a fisheries agreement should cover their entire EEZ.[15]

Korea and Japan has a long-existing dispute over fishing ground and an islets Tok-do which Japanese names is as Takeshima. With a hope of tryin g to end years of disputes, Korea and Japan created an accord in 1998 that revise their 1965 fisheries agreement. Korea, which effectively rules over the islets in the East Sea, maintained a low-key approach to the Tok-do issue during the talks, while Japan tried to turn the area into a disputed territory. The two sides ended up agreeing not to specify who owns the islets, and settled for establishing a 12-mile demarcation line in the waters around them.[16]

China and Japan concluded the first fisheries agreement in 1975, which provided for a fisheries order between the two countries in the East China Sea. After the introduction of EEZ regime, they finally signed the new fisheries agreement in November 11, 1997. China and Japan have agreed to set up three different zones where different fisheries regimes are applied. But the problem is that the two states have not consulted with Korea whose EEZ also overlaps in the area. The China-Japan fisheries agreement raises a delicate diplomatic issue with Korea by encroaching upon Korea's EEZ. Therefore Korea finds it difficult to recognize the arrangements of the agreement in the area. When Korea establishes EEZ, using Mara-do in south of Cheju Island as base point, its EEZ overlaps the EEZs of Chin and Japan in the

[15] Chi Young Pak, Resettlement of the Fisheries Order in Northeast Asia resulting from the New Fisheries Agreements among Korea, Japan and China, *Korea Observer*, Vol. XXX No. 4, Winter 1999, P 606

area of about the size of Korea's South Cholla Province.[17]

Climate Change:

Climate change caused by human activity is an issue that will be with us for generations, affecting ecosystems, human health and economies. Researchers at Shiga University report possible evidence of global warming effects within Japan. The country's largest lake, Biwako, has risen in temperature by 1.5 degree C in the last 30 years. The researchers believe several recent, exceptionally warm winters, and brought about by global warming are to blame.

The Kyoto Conference (the Third Session of Conference of Parties (COP3) to the United Nations Framework Convention on Climate Change - UNFCCC) hosted by Japan, from the 1st to 11th of December 1997 was a landmark event. Thousands of politicians, government officials, and industry, media, and citizens' group representatives gathered for the biggest meeting in history to discuss climate change. It resulted in the Kyoto Protocol, which includes legally binding commitments for developed countries to reduce their greenhouse gas emissions, an average of about 5% by the target years of 2008 to 2012.

As host country of the Conference, and one of the world's largest economies, Japan has begun taking steps to follow up its commitment for a 6% reduction. Japanese government has taken some main initiatives after the Kyoto Conference, in particular the Environment Agency (EA),

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[16] Son Key-Young, Fisheries Pact with Japan Angers Korean Public, Korea Times, September 28, 1998
[17] Chi Young Pak, Resettlement of the Fisheries Order in Northeast Asia resulting from the New Fisheries Agreements among Korea, Japan and China, *Korea Observer*, Vol. XXX No. 4, Winter 1999

to arrest global warming. Japan also took swift action by deciding to set up the Task Force to Arrest Global Warming. The Task Force, headed by Prime Minister Hashimoto, is comprised of ministers and state agency heads. With special assistance provided by the Environment Agency, the Ministry of Foreign Affairs and the Ministry of International Trade and Industry, it works for smooth coordination and implementation by government agencies and ministries of the Kyoto Protocol that was agreed to by over 160 countries at the Kyoto Conference.

China, as the world' s most populous countries and largest coal producer and consumer, currently contributes 13.5 percent of global CO2 emissions, which ranks China as the world' s second largest emitter of carbon dioxide only behind the U.S., according to the World Energy Council. According to World Bank estimate, China' s share in global CO2 emissions is expected to increase and is likely to exceed those of the U.S. by 2020 if the current trend of economic development in China continues.

Along with China' s rapid economic development, energy consumption rose from 571.4 million tons of coal equivalent (Mtce) in 1978 to 1440.0 Mtce in 1997. Currently, China consumes almost 1400 million tons of coal a year, leading the world in both production and consumption of coal. Over the past 20 years, China has taken concrete steps to conserve energy and reduce emissions growth while simultaneously raising standards of living. Without price reforms and energy efficiency gains, China's emissions would be more than 50% higher than current levels. Per dollar of GDP, China has cut its carbon emission levels in

half since 1980. This is an unprecedented "de-coupling" of carbon emissions and economic growth, relative to any other country.

Despite dramatic improvements in energy efficiency, China remains one of the most carbon- and energy-intensive economies in the world, relying on coal (the most carbon-intensive fossil fuel) for 75% of its commercial energy consumption. China's own studies indicate a potential to further reduce industrial energy use by 40-50%. Switching from coal to natural gas would also dramatically lower carbon dioxide emissions and improve air quality.

Korea has signed the Kyoto Protocol, though not as an "annex I" country required to commit to legally binding targets. Korea, the newest member of the OECD, has undertaken to control emissions voluntarily until 2017, at while time it says will accept a legally binding reeducation target.[18] Korea has also faced increasing pressure from the US and other OECD members to commit to reducing emissions.

But International Energy Agency reported in 1997 that Korea was the world's second largest importer of coal, the fourth largest importer of oil and the tenth of natural gas. Consumption is increasing and there does not appear to be a concerted shift to renewable energy and efficiency measures. [19]

[18] Climate Change and Korea, October 1998
[19] Josh Newell, The North Frontier, September, 1998, P 108

Desertification

China is one of the countries most severely impacted by land desertification in the world. The Chinese government has attached great importance to combating desertification over a long period of time and has, especially in current years, made remarkable progress in the implementation of UN Convention to Combat Desertification, institutional strengthening, development and application of technologies, public awareness, education and capacity building.

In China, the total area of arid, semi-arid and dry sub-humid areas is approximately 3.317 million KM2. The decertified area is 2.622 square kilometers, covering 79% of the arid, semi-arid and sub-humid zones or 27.3% of the total Chinese territory. The overall trend of desertification in China is expanding and deteriorating. The annual spread of decertified land over the whole country is approximately 2,460 square kilometers. The arid, semi-arid and dry sub-humid areas in China are widely distributed in 471 counties of 18 provinces.[20] And vast territory and diversities of climate and land types make the patterns of desertification in China complex and diversified, including water erosion, wind erosion, frozen and melting processes and soil salinization.

One of many impacts of China's ongoing desertification is sand storm to Korea. To deal with the sand storm problem, from 1994, Korea has started to transfer the advanced erosion control

[20] Zhou Guolin, China's Current Desertification Status and Its Combat Measures, *Seminar on Combating*

techniques to China. On the basis of "Cooperation in the Field of Forestry between the Forestry Research Institute of Republic of Korea and the State Forestry Administration of People's Republic of China" concluded in 1994, Forestry Administration of Korea is supporting "the Joint Research Program – Yellow Sand Fixation By Control Works" between Forestry Research Institute of Korea and Chinese Academy of Forestry from 1996. Also Seoul National University and Beijing Forestry University are carrying out "joint research project for Combating Desertification and Sand Industry Development " with support from Ministry of Science and Technology of Korea.[21]

In particularly, according to the agreement of Summit meeting gin November 1998, between Korea and China in regard to strengthening of cooperation in the fields of forestation and soil erosion control, both countries are positively considering the cooperative pilot projects to transfer experiences and know-how of Korea about reforestation to China. Though Korea has enough traditional and modern knowledge for combating desertification in Northeast Asia, but there is still lack of systematization of such traditional knowledge and establishment of information networks. Korea has yet to ratify UN Convention to Combat desertification, and should participate in UNDP projects and UNCCD meetings for combating desertification, thus increase its capacity for cooperation to combat desertification in China and other Northeast Asia countries.

Japan's efforts in fighting desertification have been featured by legendary eco-warrior, Seiei

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Desertification and Mitigating Drought in Northeaset Asia, July 9, 1999

[21] Bo-Myeong Woo, Korea's Role for combating Desertification in Northeast Asia Region, KOICA

Toyama. Seiei Toyama, a 93-year Japanese, has spent nine years afforesting the Engebei desert in China. Seisei, an Emeritus Professor of Tottori University of Japan, says that ever since he saw deserts in Inner Mongolia during his first trip to China in 1935, as a student of agricultural studies, he was inspired to make the desert green. Toyama sold off much of his property in 1991 and invested the money in the development of this desert. Every year, he spends most of the time at Engebei. In the past eight years, he has mobilized thousands of volunteers to visit Engebei and plant trees. To date, 182 groups of more than 5,000 Japanese have paid visits to the desert and planted trees at their own expense.[22]

Nuclear Issues

Japan, Korea and China all have ambitious plan for nuclear energy development. All believe that nuclear energy is a solution for huge demand generated by its economic growth. However, the effectiveness of nuclear safety regulation systems will be increasingly challenged as the number of nuclear power plants increases. The rapid development of nuclear power will make spent fuel and radioactive waste management an enormously difficult and challenging task. If radioactive waste is not stored and managed properly, it poses a great danger to the ecosystem and to human health. John Harte, an author of "Toxic A to Z", warns that a radiation hazard will exist far longer into the future than humanity could conceivably plan for.

One of the most difficulty of treat nuclear waste in Japan and Korea is the lack of storage space. Korea's spent fuel storage capacity is to be used up by 2006. Korea plans to build a

[22] Guo Nei, Japan Vows Continuted Support, China Daily, December 2, 1999

total of 15 nuclear power plants by 2015 under the fifth long-term program on power supply and demand.[23]

A ruling party lawmaker Kim Myoung-kyu of the National Congress for New Politics (NCNP) claimed that all 16 nuclear power plants under operation in Korea have been found to be defective. According to Kim, Kori Nos. 1-4 and Younggwang Nos. 1-2, manufactured by Westinghouse of the United States, are in danger of losing their controlling functions, due to damage to the controlling rods and buttress pins. The damage to the buttress pins at Younggwang No. 1 last March was due to ageing inner facilities and faulty design of supporting pins. The lawmaker also claimed the Korea Electric Power Corp. (KEPCO)' s operations also leave the nuclear facilitates vulnerable to accidents. [24]

Japan had a criticality accident at the JCO uranium-processing plant in Tokai, Ibaraki Prefecture, on Sept. 30, 1999. The mere 1 mg of uranium involved in that accident caused a nation-wide panic. At least 439 people were exposed to radiation, and two plant employees died. Some 180 people were forced to evacuate, and 300,000 were advised to stay indoors. The prefecture government announced that just within the month after the accident, the direct cost of damage done amounted to about 15.3 billion yen. This figure does not include perceived damage to tourism, agricultural products, fisheries and real-estate values, which have not recovered since the accident. The investigation by the government simply concluded

[23] Katsura Fujiike, Nuclear Power Development and Regional Security in Northeast Asia, *Ecological Security in Northeast Asia, 1998.*
[24] Chae Hee-mook, All 16 N-power Plants Defective, *Korea Times*, Oct. 15, 1999

that the direct responsibility for causing the accident fell on the workers. However, it was the pressure for competitiveness and lax governmental safety control that led to this accident. [25]

Clearly Japanese government's safety-control system failed to prevent the accident. Although the government investigation admitted that there are problems with safety regulations, safety check systems and the nuclear industry's attitude toward safety, the band-aid measures taken in the aftermath of the accident are far from sufficient. For example, the newly created Law on Special Nuclear Disaster Countermeasures obliges nuclear-business operators to equip their facilities with radiation monitors and has made nuclear-disaster drills mandatory. However, the law is based on the assumption of an accident of the Three Mile Island level, and thus does not go far enough in preparing for all possible types of accidents. Nor do amendments made to laws concerning nuclear-safety control go far enough to prevent another serious accident from occurring. The next accident might even occur at a power station where 300 kg of uranium burns daily.

The government has always had to advertise the safety of nuclear energy and make creative calculations that resulted in apparently cheap nuclear-generated electricity. But rigorous cost calculations from early on in Europe showed that nuclear energy was more expensive than coal or natural gas. It is now clear that nuclear energy is both expensive and risky. And the costs of nuclear energy will only rise further as the disposal of radioactive waste and

[25] Najnedin Neshkati and Josph Deato, Japan Must Commence Nuclear Reforms, *The Japan Times*, Oct. 2, 2000

decommissioning of plants continue. Instead of rigidly sticking to a policy that was formed nearly half a century ago, the government should thoroughly review its nuclear policy based on an independently conducted evaluation of the economic viability and safety of nuclear energy. [26]

In addition, now that over 90 percent of the public is wary of nuclear energy, according to a poll conducted in October 1999 by the Japan Public Opinion Poll Research Association, the government must respond to such concerns. The decision to develop nuclear energy did not involve public consent. Nor was nuclear energy developed because of a genuine need or because it was a preferable form of energy. Rather, politicians and financial interests developed it because of the naive expectations for a new technology. It is appropriate, after the experience of the JCO accident, to include the public in the decision on whether or not to continue using nuclear energy.

Besides nuclear plants and its potential danger, radioactive wastes have also been a concern for the region. In 1999, a Korean lawmaker, Rep. Song Hun-suk of the ruling National Congress for New Politics (NCNP), claimed that due to nuclear tests conducted by China from 1950s, Korea's forests and soil have been contaminated by radioactive material more seriously than European nations were affected by the disastrous Chernobyl radiation leak accident. He said that plutonium, which had remained on desert areas of China following the

[26] Gaia Hoerner, Time to Reassess the Nuclearr Energy Option, *The Japan Times*, Sept. 30, 2000

communist nation's nuclear tests from the 1950s through the 1980s, has been blown onto the Korean peninsula. [27]

During a National Assembly inspection of the National Forestry Administration, Song said 1.22Bq (radioactive concentration unit) of radioactive material was detected in a 1kg sample of surface soil in Kwangnung arbor region in Kyonggi-do, while 1.09Bq was found in the earth eight to nine centimeters under the surface in the same area. Quoting research carried out by the Korea Institute of Nuclear Safety, Song went on to claim that 0.066Bq of the material was also found in the soil at depths of 17 to 19 centimeters. The institute reached their conclusions after researching the existence of plutonium in 27 regions across the nation from 1992 until 1995, which showed that plutonium 239 and 240 were detected in 1kg samples of surface soils in Tosong-myon, Kosong-gun, Kangwon province. In Okryon region, Inchon, 1.60Bq of plutonium was found while Chonju and Kangnung registered levels of 1.39Bq and 1.16Bq, respectively. Korea has posted average plutonium concentrations of 0.80Bq, ranging from 0.18Bq to 1.85Bq.

Another hotspot on nuclear issue is Japan's transportation of plutonium from Europe. In September 1999, the Japanese government plans to transport 440 kg of plutonium through waters off the southeastern city of Pusan. According to the Korean Federation of

[27] Shim Jae-hyun, Chinese Radioactive Pollution Serious, *Korea Times*, Oct. 6, 1999

Environmental Movement and Greenpeace International, this will create a new threat to the environment surrounding the Korean peninsula and the East Sea. [28]

One ship will deliver its cargo of over 220 kg of plutonium to Takahama, a nuclear power plant in the Fukui region of Japan on the East Sea. Another shipment will deliver its plutonium cargo of 220 kg to the Fukushima nuclear power plant on the east coast of Japan. The KFEM and Greenpeace claimed that no environmental impact assessment has been conducted for this transport, nor have countries that are threatened on the route been given prior notification of the shipment. There has been no emergency planning discussions with these countries in the event of an accident. And it is believed by both environmental groups that the shipment is potentially only the beginning of a deadly new phase in Japan's plutonium program, and the Korean environment is more directly threatened than before, The KFEM joined forces with other environmental groups in an attempt to halt the Japanese shipment of plutonium, calling for the Korean government to map out measures and the National Assembly to adopt a resolution opposing the shipment plan.

Safety concerns about the new plan have led to many delays for Japan's plutonium shipment plan. In particular, the risk of serious accidents is increased by the use of the plutonium in conventional thermal reactors, which, in the event of an accident, would lead to a tremendous release of radioactivity into the environment. And Shaun Burnie of Greenpeace International

[28] Environmental Groups Set to Halt Japan's Plutonium Shipment Program, *Korea Times*, June 22, 1999

told reporters that if full-scale use of plutonium in Japan proceeds over the next few years, as much as 50 tons of weapon-usable plutonium could be shipped to Japan, most of which will pass within 50-100 km from the Korean mainland.

Environmental Cooperation among China, Korea and Japan

The most significant symbol of environmental cooperation among China, Korea and Japan are the Tripartite Environment Ministers Meeting(TEMM). The TEMM came about when the Korea Minister of Environment proposed the idea to China and Japan at the 6th United Nations Commission On Sustainable Development (UNCSD) meeting in New York in May 1998 and a consensus on the need for the TEMM was reached through further discussion after the meeting. On 13 January 1999, the first Tripartite Environment Ministers Meeting among Japan, China and Korea was held in Seoul at the invitation of Mr. Choi Jae-Wook, Minister of the Environment of Korea. China was represented by Minister Xie Zhenhua of the State Environmental Protection Administration and Japan by Minister Kenji Manabe of the Environment Agency. [29]

The ministers expressed their concerns about ongoing environmental degradation in the Northeast Asia resulting from dynamic development of the region, despite individual nations' efforts to prevent environmental pollution. They recognized that because of the important roles of the three countries in the region, environmental cooperation among them is indispensable for sustainable development there.

They identified particular areas of cooperation that should be given priority and expressed their intention to tackle a number of issues, including raising awareness that the three

[29] Green Korea, Ministry of Environment, Korea, 1999

countries are in the same 'environmental community'; activating information exchange; strengthening cooperation in environmental research; fostering cooperation in the field of environmental industry and on environmental technology; pursuing appropriate measures to prevent air pollution and to protect the marine environment; and strengthening cooperation on addressing global environmental issues such as biodiversity and climate change. The ministers decided to hold the TEMM annually in turns every year.

Another example of bilateral cooperation is the initiation of the Japan-China Environmental Development Model City Plan. In the fall of 1997, the then Prime Minister Ryutaro Hashimoto and the then Chinese Premier Li Peng agreed on "The Japan-China Environmental Development Model City Plan" to resolve deteriorating environmental problems such as air pollution in China. In this plan, Japan and China will select three Chinese cities, Chongqing, Dalian, and Qiyong, as the model cities. China will strengthen environmental regulation and promote investments for environmental protection, and Japan will concentrate its fund and technologies as Official Development Assistance (ODA) onto environmental problems. This plan aims to demonstrate successful examples that are achieved through the environmental protection measures against air pollution and acid deposition, etc. In this process, (i) establishing recycling-oriented industries and social systems utilizing by-products of desulfurization for example gypsum as fertilizer, (ii) measures against global warming by improving energy efficiency will be implemented with intensity.

A special committee composed of Japanese and Chinese experts had studied a concrete action

plan. Eventually, in April 1999 in Tokyo, the committee submitted its recommendation to both governments. In the recommendation, not only basic principles, but also detailed projects in each of these three cities are included. Overseas Economic Cooperation Fund (OECF) and Japan International Cooperation Agency (JICA), which are the implementing agencies of Japan's ODA, will try to realize the plan in the future. At most, 40.5 billion yen in Japanese yen loans to China from 1999 to 2000 will be used for this plan.

The Japanese Environment Agency works jointly with the Ministry of Foreign Affairs, the Ministry of International Trade and Industry, and the two related agencies to implement the plan by dispatching experts and cooperating with the Japan-China Friendship Environmental Protection Center.

Cooperation among the three nations has also been held in the regional context such as Northeast Asian Environment Conference. In October 1997, the 6th Northeast Asian Conference on Environmental Cooperation (NEAC) was held in Niigata, Japan, with the participation of China, the Republic of Korea, Mongolia, and Japan, and representatives from the UNDP, UNEP, and ESCAP. The NEAC acts as a forum for the exchange of information and views on environmental issues of northeast Asia, and seeks to strengthen environmental cooperation. The main topics of discussion included acid deposition, wide-range water pollution control, biodiversity conservation, and cleaner production. Regarding acid deposition, the Acid Deposition Monitoring Network in East Asia advocated by Japan and the Expert Meeting for Long-range Trans-boundary Air Pollutants in Northeast Asia were

recognized as beneficial. The session included presentations on the status of water pollution, oil contamination in coastal areas, and recognized the importance of harmonizing water management policy among countries. On biodiversity protection and cleaner production, the importance of information exchange was stressed.

The cooperation among the three countries has also been organized on the specific field. The formation of acid deposition monitoring network in East Asia is a clear demonstration of such an effort. The First Inter-Governmental Meeting on the Acid Deposition Monitoring Network in East Asia was held in Yokohama on the 19th and 20th of March, sponsored by the Environment Agency and Ministry of Foreign Affairs. The inter-governmental meeting agreed on the implementation of the preparatory-phase activities of the network starting in April 1998, as well as the major activities and tentative schedule during the preparatory phase. The objectives of the Acid Deposition Monitoring Network in East Asia are to create a common understanding of the state of acid deposition in East Asia, and to provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on human health and the environment due to acid deposition.

The Environment Agency of Japan sponsored a series of four expert meetings, held in 1993, 1995 (twice) and 1997 which resulted in adoption of "Guidelines for Monitoring Acid Deposition in the East Asian Region" as well as technical manuals for monitoring of wet deposition, soil and vegetation, and inland aquatic environments.

Case 1. Exchange program for protected areas in East Asia”

The establishment of WCPA/IUCN steering committee aimed to coordinate and promote the exchange on the construction, management, and research of protected areas in East Asia in order to share the experience and information.

The exchanged among the protected areas and park in East Asia has made a progress since the IUCN/WCPA-EA Steering Committee have been established. Early draft of the Regional Action Plan for protected areas in East Asia was published in 1994. It is offered advice to the relevant institution and individuals who are involved in protected areas in the East Asia region. In 1997, Japan hosted a workshop in biodiversity and culture diversity conservation in Koyo. Korea's annual meeting on national park also invite Chinese and Japanese delegates to participate, thus help to strengthen the mutual understanding and exchanges in the region of East Asia. But generally, an exchange has been working on the meeting, workshop and conference. The exchange program has not been implanted yet. [30]

Case 2. Cooperation on the field of Nature conservation

In June 1993, the Wild Bird Society of Japan and Yomiuri Shimbun organized a symposium on the conservation of cranes. The idea of forming a network of important sites for cranes was discussed. It was agreed the next logical step for the satellite tracking of the migratory routes of cranes is to form a network of the sites along the migratory route. In March 1997, the "North East Asian Crane Site Network" was launched at the "International Workshop on East

[30] Li Bosheng, Implementation of Exchange Program for Protected Area in East Asia, Proceedings of the Third

Asian Wetland and Waterbird Conservation" in Beidaihe, China. The Network was developed as a part of the "Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000" which is supported by the Environment Agency of Japan and Environment Australia in order to strengthen mutual collaboration on waterbird conservation in the Asia Pacific region. Wild Bird Society of Japan has responsibility for the Crane Site Network Activities and Environment Agency of Japan, have also supported the Network with NGOs in the region and government agencies in the network countries.

Conservation of migratory birds and their habitats cannot be achieved without mutual collaboration by the countries on the flyway. Although constitution of a multilateral treaty with enforcement is expected, early development is challenging due to different economic background of the regional countries. Additionally a legal framework for protection of migratory birds is not sufficiently equipped in many countries.

Establishment of the Network has been a very good opportunity for local people of the network sites to reconsider importance of their wetlands under the international relationships. Additionally, encouraging conservation of crane habitats, as well as network sites, is expected to be accomplished through exchanging information about each crane habitat in North East Asia, and the ideas or experiences of experts who work for crane conservation.

Kojiro Mori, director of Wildlife Protection Division with Environment Agency of Japan put

it, Environment Agency of Japan, look forward to more collaboration among North East Asian countries for conservation of cranes and their habitats as a result of more participation at the network sites, while also making efforts to expand the Network and promote the conservation goals of the Network.

Case 3. The 2nd Eco-Club Asia Conference

On the 17th and 18th of January, 39 children and government officials from 9 countries besides Japan gathered at the foot of Mount Fuji in Shizuoka Prefecture for the 2nd Junior Eco-Club Asia Conference. Countries represented were China, Japan, Korea, Malaysia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, and Thailand.

The conference was held to exchange information on children's environmental activities and to discuss issues and areas of future cooperation for the promotion of children's environmental activities. Participants reported on environmental education and children's environmental conservation activities in their countries, including the Junior Eco-Club program in Japan; a GLOBE program in China where twenty schools monitor the environmental quality; environmental reporting at Korea Youth Journalism School;

Implement Global Conventions and bilateral Environment Agreements:

International environmental conferences and agreements have influenced capacity-building efforts at the national level in Northeast Asia. Today, most nations in Northeast Asia are parties to numerous global environmental conventions, including the Convention on International Trade in Endangered Species, Convention on Conservation of Migratory Species of Wild Animal (Bonn Convention), the Montreal Protocol on Substances that Deplete the Ozone Layer, the Framework Convention on Climate Change, and the Convention on Biological Diversity. Participation in these international environmental agreements have led to the formulation of domestic environmental laws and the build-up of environmental management capacities. [31]

Bilateral agreements for environmental protection have also been existing for years. China and Japan established the Migratory Bird Protection Agreement. In recent years, more bilateral environmental agreements have been formed among China, Korea and Japan. In 1993, Korea formed bilateral environmental agreement with both Japan and China. Japan and China set a cooperative agreement in 1995.

Japan is the most active sponsor of bilateral environmental initiative in the region. There are many reasons why Japan has an interest in promoting environmental protection. At the

[31] Miranda A. Schreurs, The future of Environmental Cooperation in Northeast Asia, Yonsei University Press, 1998, P 208

political level, there has been a search to define a new role for Japan into the 21st century. Environmental ODA is a relatively non-contentious way for Japan to improve relations with China and Korea. Thus Japan has begun many new programs to promote energy efficiency improvement and environmental protection particularly in china.

Under Japan's Green Aid Plan, the Japanese Ministry of International Trade and Industry (MITI) emphasize on combining financial transfers with technology transfer and technical assistance. MITI train technicians from China in the use of Japanese environmental equipment. The ministry also dispatches environmental advisers to China and Korea to implement technology transfers. Under the plan, Japan provided grant capital assistance to China to establish the Sino-Japanese Friendship Environmental Center. The center is involved in environmental monitoring, information dissemination, and pollution abatement.

Non-governmental Organizations

Environmental awareness has grown substantially in East Asia in the last decade. This may be the single most important factor driving environmental protection efforts at the regional level. At the domestic political level, growing environmental awareness correlated with democratization of South Korea and greater political openness in China. As US Embassy staff David Cowhig put it:

"Many Chinese environmentalist find they need to fight hard against corruption at many different levels. And people' s thinking is changing in China. Running through Mao Zedong's writings is the conviction that the consciousness of the people is a very powerful force. The change in Chinese people's minds is now a very powerful force for change in the environmental and other fields, even though it is not an easily quantifiable change."[32]

East Asia is not known for having strong NGOs or for a long tradition of free press. Since the 1992 UNCED, however, there has been considerable growth in the number of NGOs and citizens' movements throughout the region.

Japan is the only country in the region with a long history of environmental movement activity. Particularly in the late 1960s and early 1970s, citizens' movements played a crtical role in getting the Japanese government to address basic human pollution problems plaguing the country. Despite the important role citizens' movement played in pushing Japan to adopt some of most advanced pollution control regulations and technologies in the world, few national and western-style groups formed. As of the mid-1980s, there were almost no major environmental NGOs working on regional and international environmental issues in Japan.

[32] Personal Communication

This only started to change in the late 1980s as greater attention to the global environment in Japan rained the sensitive issue of why Japan's one-time strong environmental movement had faded from the scenes. Today there are pressures on the Japanese government to change tax laws so as to make it easier for NGOs to receive non-profit status. At present, it remains difficult for NGOs in Japan to finance their activities due to small membership numbers and a lack of a strong philanthropic tradition. Compared with a decade ago, however, the environmental NGOs movement in Japan has made tremendous progress.

Democratization in Korea has similarly made it possible for NGOs to form and lobby the government. In the past decade, considerable progress has been made in Korea in cleaning up urban air pollution, though much remains to be done. Korea also has played most visible roles in supporting regional pollution control efforts. In particular, Korea has started to be more active in hosting regional conferences for the promotion of environmental protection.

In China, political space has also opened to some degree since economic reforms were first introduced under Deng Xiaoping. Though there is still no freedom of expression, there are signs that the government is permitting greater environmental activism as long as it does not directly challenge the state. There are many environmental groups that address environmental issues. These include such groups as the Friends of Nature, Green Plateau Institute, China Green Students Forum ect. The groups work with the government in promoting environmental awareness. These groups have been working on various issues such as Tibetan Antelope conservation, and save old-growth forests.

In Korea, NGOs has been active on environmental issues during the past 20 years. Anti-pollution and anti-nuclear campaigns dominated the agenda. Started from early 1990s, Korean NGOs have also branched out into other environmental issues, such as wetland conservation, anti-golf campaign and bio-diversity issue.

While many Korean NGOs remain focused on domestic issues, they are starting to reach out to international environmental NGOs and embrace some of the critical global environmetnal issues. As many Korean NGOs have a large membership base, they can use this constituency to pressure their government and the corporation not only on domestic issues but on international ones.

Korea NGOs have also started to seek greater solidarity with Chinese groups. On Earth Day of 2000, both Korean Federation for Environmental Movement and Green Korea sent their representative to Beijing and attended Earth Day events there. In November, Green Korea organizes a visiting program for Chinese environmental activists. Green Korea hold a workshop to introduce both countries' environmental situation and field trips for Chinese environmentalists to have a better understanding of Korea's environment. Such initiatives to promote understanding between Korean and Chinese NGOS will result in the development of a close relationship and sustainable network, thus lead to more environmental cooperation in Northeast Asia.

Problems and remaining tasks for cooperative environmental relations among Korea, China and Japan

Bilateral and currently emerging multilateral environmental cooperative efforts among Korea, China and Japan have moved forward in the 1990s, thus greatly increasing chances that workable solutions to the environmental problems facing these countries will be found. Still to date, no remarkable environmental clean up successes have been registered. This is due to both the short period of collaborative efforts and the conflicting interests among the countries that hamper substantial progress in regional environmental cooperation.

Given the Trans-boundary nature of many environmental problems in the region, cooperation at the bilateral level will not be sufficient to protect the region from environmental degradation. The region is faced with the difficult question of how to facilitate environmental cooperation at the multilateral level. Multilateral environment cooperation will require that countries share the burdens and benefits of environmental protection. Which there is some cooperation within NEA on monitoring, modeling and the exchange of information on environmental problems, there are still few formal environmental agreements for reducing acid rain causing pollutants or protecting the regional seas with the exception of efforts for addressing oil spills.

The establishment of a regional institution that functions may aid environmental cooperation

at the multilateral level in the NEA in ways comparable to existing regional trade regimes. The institution could work to identify the causes and effects of major environmental problems, and pave the way for the region to work collectively to achieve a desired end and to avoid unwanted outcomes. Such as mechanism could provide regional countries with a powerful incentive to conserve the commons together for their mutual enjoyment,. It also must be a inclusive entity, encompassing a wide array of cooperative issues, such as environmental monitoring and the transfer of pollution control technology, and it must include a set of binding measures and devices to resolve various issues pertaining to "responsibility sharing".

The birth of an European style environmental regime in which member states give up considerable sovereignty over environmental issues to a supra-national body is unlikely in NEA in the near future. There are several reasons for this. First, there is little consensus among countries in the region as to the nature and scope that multilateral environmental cooperation should take. This partly stem from differences in the levels of economic development and the socio-political systems of regional countries. Moreover, environmental degradation is closely linked to energy consumption patterns an industrial structure. In addition, there are conflicts of interests among polluter and victim countries over where responsibility for pollution lies and what mitigation strategies are necessary. These differences make is difficult to come to agreement on the equitable distribution of costs and benefits. Countries in this region are unlikely to be willing to cooperate in forming an environmental regime.[33]

[33] Miranda A Schreurs, The Future of Environmental Cooperation in Northeast Asia, Yonsei University Press, 1998

Furthermore, the region still suffers from a lack of mutual understanding and trust among countries due to historical animosities at he political level. As a result, the lack of confidence and the significant perception gap among the countries in the region hamper any meaningful progress in regional cooperation. This also partly stems from the diversity of socio-political and economic systems and differing levels of economic development and policy objectives in the region. Further complicating the matter is the existence of politically sensitive issues such as the division of the Koreas. Past historical experiences and lingering conflicts, such as the territorial dispute that exists between Russia and Japan and the issue of reunification on the Korean peninsula and China engender friction. This situation makes it hard for any country in the region to take on a leadership role in promoting regional cooperative arrangements.

Leadership is a critical ingredient for the effectiveness of collective environmental efforts. Japan's interest in promoting environmental protection at the regional level within NEA is somewhat questionable. Japan's environmental policy toward China and Korea appears to be built on two pillars, either of which is focused primarily on the Northeast Asia region. On the one hand, Japan is pursuing financial and technological support through bilateral channels in order to enhance it is political, diplomatic, and economic relationship with individual countries in NEA On the other hand, it is extending its cooperative networks beyond NEA to include Asia –Pacific countries more broadly. An example of this approach can be found in the Japanese-lead non-governmental forum, Eco-Asia. Japan appears less interested in regime formation that is limited to NEA than it is in some broader form of regional cooperation. Perhaps this is because Japan feels that the best way to get China to agree to environmental

protection is to build coalitions with other Asian states and to use this to apply diplomatic pressure on China.

As for China, it does not have ability or the interest in playing leadership roles. Korea may want to take on a regional leadership role if for no other reason than because of its location, its direct engagement with the acid rain problem, an its web of bilateral arrangements. However, even if Korea does try to play a dominant role, it is unlikely to secure the participation of all concerned parties, given its precarious relations with North Korea.

These factors explain why the development of regional environmental cooperation has been so sluggish and why NEA has lagged far behind other regions in terms of cooperative problems solving. The high degree of heterogeneity in the interests and motives of the countries of the region will make it difficult for the countries of NEA to pursue regional environmental regimes for the control of air and marine pollution. Even more difficult would be the formation of supra-national body with the kind of jurisdiction over regional environmental problems that exist in Europe. For such a regional body to form, the countries of the region would have to be willing to dilute their national sovereignty in favor of broader regional politics. This is unlikely to occur in the near future in NEA. Instead, multilateral cooperation is more like y to continue on a project b project basis as is slowing starting in the region now. It's important to realize that both Japan and Korea have expressed a desire to upgrade multilateral cooperation from the current working level to the ministerial level, but they have disagreements over how this should be done. Korea is more interest in limiting the

scope of such a cooperative mechanism to NEA while Japan is more interested in extending the cooperative mechanism to the broader Asia-Pacific region.

Conclusion

It is important that there be multilateral cooperation among Japan, Korea and China over the common environmental issues, and that existing bilateral cooperation be enhanced. Japan, Korea and China could jointly take the lead in establishing a multilateral consultative body, which may organize and sponsor a "Research Forum for Northeast Asian Environmental Cooperation." Member countries in rotation could host the regional research from. Since the cause and consequences of regional environmental issues are poorly understood, cooperation on solving these environmental problems will help in acquiring and interpreting relevant date, especially scientifically valid data on pollution levels. Accumulation of such date can eventually serve as a basis for the establishment of rules and regulations designed to keep the region free of environmental deterioration. Through this type of cooperation baseline studies, monitoring and pollution prevention could be provided, thereby educating policy makers and the public as to the distribution, causes and consequences of environmental pollution. As a result m a reduction in perception gaps among countries on common environmental concerns could be expected. As of now, acid rain, marine pollution, fisheries and Tran boundary pollution are main environmental problem with will affect the long term welfare of the region.

Cooperation that begins with China, Korea and Japan could lead to the establishment of a region-wide regime that extended to Mongolia, North Korea and Russia Far East.

One of the single most important factors determining chances for success in forming a regional environmental operative body is attitudinal. In order to accelerate the process of regional cooperation it is essential to keep the current discussion on environmental problems going through various forums. Frequent meetings and joint attempts to work out solutions to regional environment problems in such for a will enhance mutual understanding and foster a sense of community as well as a recognition of the need to further protect the environment within the region, to assure member states that potential benefits of regional cooperation will outweigh the costs, information must be exchanged and high level diplomatic meeting must be institutionalized. These processes will undoubtedly contribute to the elimination of existing obstacles to regional environmental cooperation and make possible eventual creation of formal multilateral environmental agreements.

The importance of North Asian Environmental Cooperation is growing, and governmental interests and efforts in this region are very vivid. But the political and environmental gap between the countries of this region makes it hard to get the real fruit of cooperation. On the other hand, even they are located geographically close to one another; there has been not enough cooperation between NGOs compared to other imperative to try to understand each other. As the activists of Chinese environmental NGOs increase, it is especially important that an alliance is formed.