FROM SMELTER FUMES TO SILK ROAD WINDS: EXPLORING LEGAL RESPONSES TO TRANSBOUNDARY AIR POLLUTION OVER SOUTH KOREA

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INTRODUCTION

As China's industrialization has entered full swing, transboundary pollution has swept eastward across the Manchurian Plain and the Yellow Sea into neighboring Northeast Asian countries. The desertification of Mongolia and Northwestern China due to global warming has fueled seasonal yellow dust storms descending on Korea in increased frequency and intensity in recent years,[1] acting as a vector for various kinds of air pollution. On top of sulfur dioxide and nitrous oxide that cause acid deposition which, in turn, destroys crops and forests, southeasterly winds carry fine particulate matter, aerosols, ozone, and heavy metals with more significant negative consequences on the health of humans and other species.[2] Soaring demand for energy in China (supplied mainly by coal-fired power plants) is casting deep uncertainty on regional air quality for the future, given the historically unprecedented scale and pace of deployment of plants in such a densely populated region.[3] It is widely assumed that coal will be China's principal source of energy for many decades to come, comprising as much as 70% of energy demand.[4] According to the IEA World Energy Outlook for 2011, China will account for more than half of the global share of coal use in 2020 with conservative assumptions.[5] However, as China rapidly becomes a major world market for internal combustion vehicles, increasing carbon monoxide emissions from vehicles are expected to contribute heavily to

1. The Korea Meterological Association records show that from 1960 to 2010, the average yearly number of yellow dust incidents has increased from 2.4 per year from 1960–1970 to 11.7 per year from 2000–2010. *Asian Dust Events in Korea for Recent 100 Years*, KMA, http://web.kma.go.kr/eng/weather/asiandust/intro (last visited Aug. 30, 2012). Numerous bilateral initiatives at many government levels and non-profits have engaged in forestation projects in China and Mongolia to stem the desertification. *Cf. Korea to Lead Fight Against Desertification*, THE KOREA HERALD, Aug. 9, 2011; Whasun Jho & Hyunju Lee, *The Structure and Political Dynamics of Regulation "Yellow Sand" in Northeast Asia*, 33(2) ASIAN PERSPECTIVES 41, 57 (2009). Zhang et al., *Sources of Asian Dust and Role of Climate Change versus Desertification in Asian Dust Emission*, 30 GEOPHYSICAL RESEARCH LETTERS 2272 (2003).

2. Hee-Jin In & Soon-Ung Park, *Parameterization of Dust Emission for the Simulation of the Yellow Dust Sand*, 108 J. OF GEOPHYSICAL RES. 22 (2003).

3. Jiming Hao, Litao Wang, Shen Minjia, Lin Li & Jingnan Hu, *Air Quality Impacts of Power Plant Emissions in Beijing*, 147 ENVTL. POLLUTION 401–08 (2007).

4. Jennifer L. Turner & Linden Ellis, *China's Growing Ecological Footprint*, CHINA MONITOR 7 (Mar. 2007), http://www.wilsoncenter.org/topics/docs/china_monitor_article.pdf.

5. *2011 Factsheet*, INTERNATIONAL ENERGY AGENCY, WORLD ENERGY OUTLOOK (2011), http://www.worldenergyoutlook.org/resources/factsheets/. This prediction is predicated on successful implementation of ambitious energy efficiency targets under the twelfth Five Year Plan. Sheehan, Peter, *The New Global Growth Plan: Implications for Climate Change Policy and Analysis*, 91 CLIMATE CHANGE 211 (2008).

transboundary pollution in Asia and overtake power plants as the primary source of air pollution.[6]

Although Japan, South Korea, and China contribute to the air pollution problems of each other to some degree, South Korea is the most vulnerable to transboundary pollution from China. One expert estimated that 49% of the air pollution in South Korea can be attributed to China.[7] Some reports estimate that as much as 50% of acid rain in South Korea can be attributed to transboundary pollution from China.[8] South Korea has recently attained significant unilateral improvements in air quality.[9] These achievements are threatened by China's continuing and rapid expansion of coal-fired electricity capacity[10] and its expected increased consumption of vehicles with internal combustion engines.

South Korea has neither strongly advocated interstate agreements nor resorted to international dispute resolution to prevent the transboundary atmospheric pollution confronting its population. Even though progress has been steadily made in the diplomatic sphere manifesting a clear intent to cope with the problem,[11] South Korea has carefully refrained from characterizing air pollution from China as a "dispute" or a "problem" as such. Rather, South Korea has approached the issue foremost as an occasion for inter-ministerial and scientific cooperation. As described below, South Korea provides funding and technical assistance to various regional and sub-regional organizations dedicated to measuring and mitigating transboundary air pollution.

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6. JULI S. KIM, TRANSBOUNDARY AIR POLLUTION—WILL CHINA CHOKE ON ITS SUCCESS? (2007), http://www.wilsoncenter.org/sites/default/files/transboundary_feb2.pdf.

7. Esook Yoon, *Cooperation for Transboundary Pollution in Northeast Asia: Non-binding Agreements and Regional Countries' Policy Interests*, 22 PAC. FOCUS 77, 96 (2007).

8. Turner & Ellis, *supra* note 4, at 8. Measuring only the deposition effects of the transboundary air pollution, a study by South Korea's National Institute of Environmental Research in 2002 found that during the summer China accounted for 22% of the total sulfur deposition in South Korea; this figure rose to 35% during the winter. Chan-Woo Kim, *Northeast Asian Environmental Cooperation: From a TEMM's Perspective*, 12 KOREA REV. INT'L STUD.19, 21 n.3 (2009).

9. *Seoul's Air Quality Reaches OECD Level*, CITY OF SEOUL (Oct. 6, 2009), http://english.seoul.go.kr/gtk/news/news_view.php?idx=6960 (reporting particulate matter content from survey from January to October 2009).

10. Under the eleventh Five Year Plan, China planned a 10% reduction in sulfur dioxide mainly from power plants, with an additional 8% in the twelfth Five Year Plan, but it is unclear that these targets are being met. Jing Cao, Richard Garbaccio & Mun. S. Ho, *China's 11th Five-Year Plan and the Environment: Reduction SO2 Emissions, Review of Environmental Economics and Policy*, STATE COUNCIL OF THE PEOPLE'S REPUBLIC OF CHINA 1–20, annex 4 (2011), *available at* http://www.gov.cn/zwgk/2011-09/07/content_1941731.htm

11. Esook Yoon describes how South Korea, while exercising strong regional environmental diplomacy in the gap left by Japan and China, invariably falls short of advocating binding mechanisms. Esook Yoon, *South Korean Foreign Environmental Policy*, 13 ASIA-PAC. REV. 74 (2006).

South Korea's reluctance to use legal solutions for transboundary air pollution in this respect is entirely in concert diplomatically with its Northeast Asian neighbors, who have consistently eschewed binding agreements on matters of transborder environmental harm.[12] South Korea does participate with Japan and China in universal multilateral environmental framework conventions concerning dust storms arising from desertification[13] and long-range air pollution,[14] though it does so without committing to protocols with binding emissions limits. However, South Korea has concluded no bilateral or regional treaties with any of its immediate neighbors on the subject of transboundary air pollution. Regional or bilateral agreements acknowledging State duties to prevent transboundary harm on the environment are unknown to Northeast Asia.[15] In contrast to the multilateral regulatory approach of the European states embodied in the Convention on Long-Range Transboundary Air Pollution ("LRTAP Convention")[16] and the bilateral commitments in the U.S.-Canada Air Quality Agreement,[17] the Northeast Asian pattern of environmental cooperation exemplifies a trend against legalization.[18] This non-legal, non-confrontational approach has not been called into question

12. *See infra* Part III.C.

13. The United Nations Convention to Combat Desertification obliges countries to provide technical and financial assistance to developing countries affected by desertification. United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, June 17, 1994, 1958 U.N.T.S. 3.

14. Convention on Long-range Transboundary Air Pollution, Nov. 13, 1979, 1302 U.N.T.S. 217 [hereinafter LRTAP Convention], *available at* http://www.unece.org/fileadmin/DAM/env/lrtap/full%20text/1979.CLRTAP.e.pdf.

15. One scholar observes:

> [W]hile the agreements entail reciprocal promises or actions for implementation on the part of the individual parties, none of them contains formal clauses that describe the parties' commitments as binding obligations or legal sanctions for non-compliance. Consequently, the interpretation and implementation of the agreements are largely up to the governments of the member countries and their practices are not subject to formal scrutiny under the agreements.

Yoon, *supra* note 7, at 79.

South Korea is a member of the Association of Southeast Asian Nations ("ASEAN") Cooperation Plan on Transboundary Pollution adopted by the ASEAN Ministers for the Environment in October 1994. ASEAN COOPERATION PLAN ON TRANSBOUNDARY POLLUTION (Oct. 21, 1994), http://www.aseansec.org/8938.htm. The ASEAN Cooperation Plan on Transboundary Pollution sets out three program areas of transboundary pollution on which to carry out cooperative activities: atmospheric pollution, the transboundary movement of hazardous wastes, and transboundary ship pollution. It also includes a series of cooperative actions and strategies. *Id.*

16. LRTAP Convention, *supra* note 14.

17. Agreement Between the Government of the United States of America and the Government of Canada on Air Quality, U.S.-Can., Mar. 13, 1991, 30 I.L.M. 676 [hereinafter Agreement on Air Quality].

18. Yoon, *supra* note 7, at 81. "Low legalization is a defining characteristic of East Asian regionalism." *Id.* at 93 n.35.

locally in Northeast Asia by the NGO and regional scientific community, which has yet to play an assertive role in demanding transnational legal standards.[19]

Unfortunately, the current collective policy response does not match the magnitude of the health and environmental problems confronting the region arising from China's current energy consumption path.[20] While multilateral development aid from the Asian Development Bank ("ADB") and other institutions have increased awareness in China and resulted in the installation of flue gas desulfurization technology in most new power plants,[21] this technology does not affect emissions of heavy metals and other fine particulates from the plants. Further, these measures do not address impending accelerating mobile source issues at all. While China has made enormous progress in the legislation of environmental regulation, it currently lacks dependable enforcement that will prevent harm to its neighbors.

The purpose of this article is to review a variety of external legal approaches to transboundary air pollution and to assess the current state of environmental dispute resolution mechanisms and common environmental norms in Northeast Asia in order to stimulate legal solutions to the transboundary air pollution over South Korea. We believe an effective legal solution will ultimately entail the creation of an environmental governance institution for transboundary air pollution or the functional enhancement of a current institution with delegated authority to implement or further establish precisely defined rules on permissible levels of pollution, as demonstrated by the precedents discussed below.[22]

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19. REMAPPING EAST ASIA: THE CONSTRUCTION OF A REGION 233 (T.J. Pempell ed., Cornell Univ. Press 2005) (noting that due to pressure from NGO groups, certain companies are adopting voluntary company-wide environmental standards at the international level).

20. CHARLOTTE KENDRA CASTILLO ET AL., PERRIN QUARLES ASSOCIATES, THE CO-BENEFITS OF RESPONDING TO CLIMATE CHANGE: STATUS IN ASIA 2–10 (2007).

21. NORTH-EAST ASIA SUBREGIONAL PROGRAMME FOR ENVIRONMENTAL COOPERATION (NEASPEC), SUMMARY OF THE CONFERENCE ON TRANSBOUNDARY AIR POLLUTION IN NORTH EAST ASIA 17–19 (Tokyo, Japan, Dec. 2008), http://www.neaspec.org/documents/som14/SOM14_ADB%20RETA%20Project_annex%20I%20Int%27%20Conference%20on%20Transboundary%20Tokyo.pdf.

22. We do not contend an interstate agreement by itself will guarantee an effective limitation on emissions:

> IEAs [International Environmental Agreements] have little if any persuasive power of their own. Their ability to influence behavior depends on supportive governments, corporations, NGOs, and individuals taking steps necessary to 'breathe life into' IEC provisions by monitoring the behavior of relevant actors, responding to those behaviours in ways that foster behavioural change, shedding light on the environmental and economic consequences of particular behaviours, and engaging various actors in normative dialogue.

Ronald B. Mitchell, *Compliance Theory*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW 893, 920 (Daniel Bodansky et al. eds., 2007).

As the historic doctrinal font of the modern international law of transboundary environmental harm, the seminal 1941 *Trail Smelter* arbitration[23] ("*Trail Smelter* case") between the United States and Canada is the natural starting point for discussing relevant international law norms as well as the evolution of transnational environmental dispute resolution methods outside of Asia. The *Trail Smelter* case occurred at a transition point in international environmental law,[24] representing the prototypical example of interstate dispute settlement using an international arbitral tribunal and a classical *ex-post* procedure that allocates liability for transboundary harm based on State responsibility.[25]

In the 1930s, at the request of farmers in the U.S. state of Washington who asserted that the fumes from a copper mine in Trail, British Columbia, Canada had damaged their crops and forests, the U.S. government "espoused" the claims of its citizens against Canada in an arbitration administered by the International Joint Commission ("IJC"). The IJC was established under the 1909 Boundary Waters Treaty[26] between the United States and Great Britain, concerning Canada. Although it is obvious that a procedural solution like the *Trail Smelter* arbitration could never be applied for long-range transboundary air pollution of the sort at issue in South Korea, many features of this quintessentially legal solution to transboundary pollution are informative for addressing transboundary air pollution over South Korea. The two countries understood the urgent necessity of intergovernmental action and applied rules that resulted in an equitable long-term preventive regime (however ineffective). The faulty *Trail Smelter* arbitration has inspired diverse legal-institutional approaches to transboundary environmental harm, helping international environmental law overcome initial difficulties stemming from the lack of a centralized enforcement authority. Above all, recognition by the Northeast Asian States of its central normative

23. Trail Smelter *Arbitral Tribunal Decision*, 33 AM. J. OF INT'L L. 182 (1939) [hereinafter *Trail Smelter I*]; Trail Smelter *Arbitral Tribunal Decision*, 35 AM. J. OF INT'L L. 684 (1941) [hereinafter *Trail Smelter II*].

24. There has been an historical shift of international environmental law from classical dispute resolution under international law principles of territorial sovereignty and reciprocity to multi-state regulation driven by conservation and prevention ethics. *See* Peter H. Sand, *The Evolution of International Environmental Law*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22, at 29.

25. Although the liability scheme adopted was an international tort, the case did not actually have binding status under international law under the dispute resolution provisions chosen. *See infra* Part II.A.1.

26. Treaty Between the United States and Great Britain Relating to the Boundary Waters and Questions Arising Along the Boundary between the United States and Canada, U.S.-U.K., Jan. 11, 1909, 36 Stat. 2448 [hereinafter Boundary Waters Treaty].

conclusion that all States have a duty to prevent transboundary environmental harm is essential to securing a solution to the problem of the transboundary air pollution in the region.

In Part I, this article reviews South Korea's present international cooperation policies concerning transboundary air pollutants over its territory and discusses some reasons for the reluctance of the region to adopt binding legal solutions. Because of the priority allocated to strategic considerations in trade, energy security, and industrial policy, Northeast Asian countries have almost uniformly opted for policy autonomy in environmental matters. A legacy of historical distrust, multiple competing regional environmental institutions, and wide gaps in economic development have further hindered regional commitments to reduce transboundary air pollution.

In Part II, we review some legal approaches to cope with transnational air pollution that are potentially applicable to Northeast Asia. After describing the *Trail Smelter* case in detail, the article turns to the bilateral acid-rain dispute that emerged in the 1970s between Canada and the United States. The interplay is a positive example of how the two countries ultimately transformed contentious political dialogue into bilateral interstate regulation of overall air quality—in this case, through the U.S.-Canada Air Quality Agreement.[27] The pivotal institutional role of the IJC in the process is particularly instructive here. The IJC spurred action toward legal solutions while exercising multiple bilateral policy functions that have augmented its original purpose as an arbitral panel for inter-state dispute resolution.[28] In the LRTAP Convention, the United Nations Economic Commission for Europe created a different model for controlling transboundary air pollution,[29] the essence of which is multilateral preventative regulation and integrated policy-making based on sophisticated scientific assessments and economic modeling.[30] The LRTAP is a cooperative framework treaty to which a series of binding commitments for different types of pollutants were attached in later protocols.[31] LRTAP mainly utilizes non-adversarial, non-binding, "non-compliance" procedures for dispute resolution, which administer

27. Agreement on Air Quality, *supra* note 17.
28. *See infra* Part II.C.
29. *See generally* LRTAP Convention, *supra* note 14.
30. *See infra* Part II.D.
31. *See* UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, HANDBOOK FOR THE 1979 CONVENTION ON LONG RANGE TRANSBOUNDARY AIR POLLUTION AND ITS PROTOCOLS 2004.

regulations that are devised internally by treaty institutions (or by the States as members of treaty institutions).[32]

Next, we discuss the example of transborder environmental litigation initiated by private parties or by States occurring outside of Asia. As part of a general trend of transnationalization of environmental law, aggrieved parties have increasingly brought claims in national courts for environmental damage that originated in another country. Most commonly, these are private claims facilitated by a treaty for reciprocal judicial access or a relevant international civil liability convention.[33] We focus on one particularly controversial incident where private parties brought a transboundary environmental claim against a foreign entity using domestic environmental regulation. Thus, from the viewpoint of international affairs, it can also be considered an example of unilateral regulatory enforcement by one state against a non-resident national of another State.[34] Nearly fifty years after Canada was required to pay compensation for damage caused by the *Trail Smelter*, the same facility was implicated in alleged releases of heavy metals into the Columbia River that flowed downstream and settled into Lake Roosevelt in the U.S. state of Washington.[35] On the opposite side of the spectrum of Asia's non-confrontational, internationalist approach, the United States acted unilaterally through its environmental regulator and judicial system without bothering with diplomacy or international law questions of comity.[36] A ruling of the U.S. Court of Appeals for the Ninth Circuit[37] garnered international criticism for finding liability for the Canadian company and ordering it to remediate.[38] However, we believe the U.S. court acted properly and consistently with international law for the reasons discussed below. Since, in many cases, either private claims are barred by differences in legal systems or intergovernmental bodies are unable to

32. LRTAP, art. 13 (settlement of disputes provision).

33. For other relatively recent examples of such cases, see Peter Sand, *The Evoluton of Transnational Environmental Law: Four Cases in Historical Perspective*, 1 TRANSNAT'L ENVTL. L. 183 (2012); *see also* Malgosia Fitzmaurice, *International Responsibility and Liability*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22, at 1010.

34. Austin Parrish, Trail Smelter *Déjà vu: Extraterritoriality, International Environmental Law, and the Search for Solutions to Canada-U.S. Transboundary Water Pollution Disputes*, 85 B.U.L. REV. 2, 385–98 (2005).

35. *Id.* at 369–79.

36. Prescriptive comity, within the context of international law, is the presumption that legislators take into account the legislative interests of other nation. *See, e.g.*, Hartford Fire Ins. Co. v. Cal., 509 U.S. 764, 817 (1993) (defining "prescriptive comity" as "the respect sovereign nations afford each other by limiting the reach of their laws").

37. Pakootas v. Teck Cominco Metals, Inc., 452 F.3d 1066 (9th Cir. 2006).

38. Parrish, *supra* note 34.

reach agreement for effective remediation or prevention, unilateral measures should not be disavowed completely for significant levels of environmental harm.

In Part III, we contrast the approaches above with the legal infrastructure for environmental dispute resolution in Northeast Asia. The Northeast Asia preference for non-interference and policy sovereignty manifested in regional foreign affairs is domestically reflected in the insulation of national legal structures from each other; this is even more apparent in matters of environmental law.[39] This further affirms the suitability of interstate preventative regulation rather than *ex-post* dispute resolution for the air pollution problem. The article reviews the current State practice of the three countries with respect to environmental treaty-making and associated interstate environmental dispute resolution mechanisms. We will discuss a recent trend, particularly strong in Asia, of attempting to incorporate environmental protection, in particular climate-change mitigation, into industrial policy. In Korea, this is called the "Green Growth"[40] economic paradigm. South Korea has led a parallel campaign externally to establish Green Growth as an international norm,[41] Green growth is potentially complimentary to legal solutions, such as a regional transboundary air pollution treaty, through its emphasis on clean energy investment, resource conservation and mitigation of climate change.

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39. Inkyoung Kim, *Environmental Cooperation of Northeast Asia: Transboundary Air Pollution*, 7 INT'L RELATIONS OF THE ASIA-PACIFIC 3, 439–54 (2007).

40. Green growth is defined under South Korea's Low Carbon Green Growth Act as "growth achieved by saving and using energy and resources efficiently to reduce climate change and damage to the environment, securing new growth engines through research and development of green technology, creating new job opportunities, and achieving harmony between the economy and environment . . . ." Framework Act on Low Carbon, Green Growth, Act. No. 9931, Jan. 13, 20120, ch. 1, art. 2 (S. Kor.), *available at* http://www.greengrowth.org/download/Framework%20Act%20on%20Low%20Carbon%20Green%20Growth%202010.pdf.

41. In July 2009, an OECD Ministerial chaired by former South Korean Prime Minister Han Seung Soo mandated the OECD to develop a comprehensive green growth strategy for its members. Since then the OECD has maintained a research project on Green Growth. *See* ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, DECLARATION ON GREEN GROWTH (June 25, 2009), *available at* http://www.oecd.org/dataoecd/58/34/44077822.pdf. In more universal fora, many developing countries have resisted the displacement of the concept of sustainable development with that of the Green Economy or Green Growth. *See, e.g.*, *Summary of the Second Session of the Preparatory Committee for the UN Conference on Sustainable Development: 7–8 March 2011*, EARTH NEGOTIATIONS BULL., INT'L INST. FOR SUSTAINABLE DEV. (Mar. 11, 2011), http://www.iisd.ca/download/pdf/enb2703e.pdf. On the Korean diplomatic drive for green growth generally, *See* Jill Kosch O'Donnell, *ROK Green Growth: Looking Back on Three Years*, COUNCIL ON FOREIGN RELATIONS (July–Sept. 2011), http://www.cfr.org/south-korea/rok-green-growth-quarterly-update/p26445.

In the final part, we suggest some international environmental law principles and regionally accepted concepts that could underpin a regional environmental governance mechanism for regional air quality control.

I. SOUTH KOREA'S POLICIES ON TRANSBOUNDARY AIR POLLUTION

A. Regional Scientific Cooperation and Technical Assistance for Mitigating Transboundary Air Pollution

South Korea's transboundary air pollution policy towards the rest of Asia has long made international scientific cooperation the top priority, with more recent efforts emphasizing both transferring technical advice on regulatory compliance and capacity building for environmental regulators.[42] The most significant permanent inter-governmental body coping with transboundary air pollution has been the Northeast Asian Subregional Program for Environmental Cooperation ("NEASPEC"), under the United Nations Economic and Social Commission for Asia and the Pacific (launched in 1993).[43] NEASPEC, a general environmental forum, is governed by the Senior Officials Meetings of the six countries[44] involved, which convene annually.[45] The participating governments fund NEASPEC's projects with assistance from the ADB, the World Bank and other governments.[46] The UNESCAP Subregional Office for East and Northeast Asia (located in Incheon, Republic of Korea) provides the services of a secretariat.[47] Among NEASPEC's most important related projects has been a project on Mitigation on Transboundary Air Pollution from Coal-fired Power Plants in Northeast Asia, implemented jointly with the ADB during 1996 to 2011.[48] This project has introduced technical assistance to China on installation and management of SO_2 control technologies and assisted Mongolia in drafting new emission regulations.[49] Some other examples of multilateral cooperation on air pollution related issues include the Acid Deposition and Monitoring Network in East Asia

42. Yoon, *supra* note 7.

43. *See Cooperation Mechanisms for Nature Conservation in Transboundary Areas*, NEASPEC (2011), http://www.neaspec.org/nature.asp [hereinafter NEASPEC].

44. The six countries are South Korea, Russia, the Democratic People's Republic of Korea, Monglia, the People's Republic of China and Japan. Kim, *supra* note 6, at 27.

45. *See* NEASPEC, *supra* note 43.

46. *Id.*

47. *Id.*

48. *Mitigation of Air Pollution from Coal-fired Power Plants in North-East Asia*, NEASPEC (2011), http://www.neaspec.org/mitigation.asp.

49. *Id.*

("EANET"), and the project for Joint Research on Long-range Transboundary Air Pollution in Northeast Asia ("LTP").[50]

There are good reasons for South Korea to have stressed scientific cooperation, monitoring and capacity building at the outset. Monitoring activities can bring about agreement on scientific causation.[51] Decades of experience with multilateral environmental treaties has shown that investigation and monitoring can be important tools underlying a dynamic regulatory framework that can adapt to changes in levels of risk identified by science.[52] In so far as this is the policy direction, the cooperative scientific approach is entirely appropriate. However, as argued below, active prevention through regional commitments, not just monitoring, is necessary to spur parties to fulfill their obligations under international environmental law to prevent transboundary harm.

Like its neighbors, South Korea treats transnational environmental issues at the highest diplomatic and political levels, where it can manage sensitive political issues outside of the public eye and ensure that regional environmental decisions comport with other domestic priorities. At the center of cooperative environmental efforts of the three main countries in Northeast Asia is the annual Tripartite Environment Ministers Meeting ("TEMM") established in 1999.[53] In June 2009, the TEMM in Beijing announced its cooperation priority areas for 2009 to 2014.[54] It identified dust and sandstorms ("DSS") from Mongolia and China as the most pressing regional issue, followed by pollution control (air, water and marine environment).[55] As the country most impacted by DSS (yellow dust storms), South Korea has consistently exercised leadership over the DSS-related issues in this forum.[56] DSS is of particular concern in South Korea because, *inter alia*, the yellow dust storms from China carry with

50. *See* Jeong-Soo Kim, Nat'l Inst. of Envtl. Res., Joint Research Project on Long-range Transboundary Air Pollutants in Northeast Asia: Progress and Outcomes, http://www.neaspec.org/documents/airpollution/PDF/S3_18am_JeongSoo_Kim(NIER)_LTP.pdf (last visited Sept. 27, 2012).

51. In the *Trail Smelter* case, the IJC affirmed the roles of monitoring and scientific investigation as an indispensible part of the legal solution to transboundary air pollution for the calculation of damages and the institution of a regulatory framework to curb future emissions. *Trail Smelter II*, *supra* note 23, pt. 4, sec. 3.

52. *See generally* Hakan Pleijel, *Transboundary Air Pollution: Scientific Understanding and Environmental Policy in Europe* (2007).

53. Chan-Woo Kim, *supra* note 8.

54. *Id.* at 20.

55. *Id*.

56. TEMM, FOOTPRINTS OF TEMM: THE HISTORICAL DEVELOPMENT OF THE ENVIRONMENTAL COOPERATION AMONG KOREA, CHINA, AND JAPAN FROM 1999 TO 2010 TRIPARTITE ENVIRONMENT MINISTERS MEETING AMONG KOREA, CHINA, AND JAPAN 30 (2011), http://www.env.go.jp/earth/coop/temm/archive/pdf/footprints_E12.pdf.

them heavy metals and other persistent organic pollutants ("POPs") from industrial activities as well as fine particulates that exacerbate local pollution and endanger human health.[57] As the top global priority, the countries identified climate change (including co-benefits approaches and the Low Carbon Society and Green Growth).[58] Environmental governance in Northeast Asia was found to be the top cross-sectoral priority.[59]

B. Reasons for South Korea's Non-Legal Response

Why has South Korea not more assertively attempted legal solutions to the problem of transboundary air pollution with China? The reasons lie in a mix of economic, historical and institutional factors. A few excellent studies have explored the non-binding nature of environmental cooperation in Northeast Asia from the point of view of the interests of each of the actors: China, South Korea and Japan.[60] Although these studies acknowledge cultural factors may exist, in the main the authors agree that current diplomatic practices are probably more due to conscious policy choices by the key players rather than Asian culture.[61] The inference that "there may be an 'Asian' way of decision-making which is based on the principles of non-interference, consultation, and unanimous consensus without legalization"[62] contravenes the reality that Northeast Asian countries have readily entered into binding legal agreements with each other containing adversarial dispute resolution for purposes other than environmental protection.[63]

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57. TEMM, *Abstract of the Special Committee on Sandstorm and Dust Issues*, http://www.env.go.jp/en/earth/dss/051014.pdf (last visited Sept. 25, 2012).

58. Chan-Woo Kim, *supra* note 8.

59. *Id*. at 31.

60. Yoon, *supra* note 7; *see also* Inkyoung Kim, *supra* note 39.

61. *See* Yoon, *supra* note 7; *see also* Reinhard Drifte, *Transboundary Pollution as an Issue in Northeast Asian Regional Politics* (Asia Research Ctr., Working Paper No. 12, 2003). For a different point of view, see Sangbum Shin, Domestic Environmental Governance and Regional Environmental Cooperation in Northeast Asia 3 (Apr. 28, 2009) (unpublished paper, Seoul Workshop of the Nautilus Insitute) (on file with Nautilus Institute) ("[T]he three countries share similar and relatively top-down patterns of domestic environmental governance structure, which makes it relatively difficult to build up effective regional environmental cooperation mechanisms."). Shin also cites the relative weakness of environmental NGOs in China and Japan. *Id.*

62. Yoon, *supra* note 7, at 93.

63. *See infra* Part II.C.

1. Economic Relations with China

Economic relations with China have raised swiftly to the top of South Korea's foreign policy agenda in the last few decades.[64] China is South Korea's largest trading partner and likely will continue to be so for the foreseeable future.[65] The level of foreign direct investment in China by South Korean companies is remarkable considering the worldwide competition for access to China's markets: in 2008 South Korea invested U.S. $3.1 billion, the third largest amount after Japan (U.S. $ 3.7 billion) and Singapore (U.S. $ 4.4 billion).[66] Originally a manufacturing base for Korea's export-oriented economy, China is now a crucial market for South Korea's consumer goods, especially electronics.[67] Korea has for the last decade enjoyed a substantial trade surplus with China.[68] A Korea China Bilateral Free Trade Agreement has been a priority of the Korean government and is under negotiation.[69]

From this perspective, South Korea's conciliatory position on atmospheric pollution seems to be part of a holistic approach to diplomatic relations that prioritizes the trade relationship with China. South Korea does not want to endanger the privilege of access to Chinese consumer markets nor disadvantage itself with respect to other countries competing for investment privileges in China. The fact that cooperation on transboundary harm has been undertaken in annual meetings at the ministerial level, but has resulted in little more than declarations of cooperation on scientific projects without any firm intergovernmental commitments lends credence to the theory that regional air pollution treaties in Asia have not advanced for fear of "upsetting the apple cart" in economic relations.

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64. JAE HO CHUNG, BETWEEN ALLY AND PARTNER: KOREA-CHINA RELATIONS AND THE UNITED STATES (Cambridge Univ. Press, 2007); *see also* David Shambaugh, *China and the Korean Peninsula: Playing for the Long-term*, 26 WASH. Q. 2, 43–49 (2003).

65. Troy Stangarone, *Korea China Trade Relations a Decade after China's WTO Accession*, KOREA ECONOMIC INSTITUTE (Dec. 2011), http://blog.keia.org/2011/12/korea-china-trade-relations-a-,decade-after-chinas-wto-accession/.

66. *Foreign Direct Investment in China*, US CHINA BUSINESS COUNCIL, http://www.uschina.org/statistics/fdi_cumulative.html (last visited Mar. 2011).

67. Stangarone, *supra* note 65.

68. *Id*.

69. Zheng Lifei & Eunkyung Seo, *China, South Korea Start Talks on Free-Trade Pact*, BLOOMBERG NEWS (May 2, 2012), http://www.bloomberg.com/news/2012-05-02/china-south-korea-start-talks-on-free-trade-pact.html.

2. Historical Distrust

In contrast to Europe, where economic and legal integration and political cooperation has largely overcome the legacy of World War II, in Asia, controversies over World War II and pre-war and war-time conduct of Japan still make headlines, exerting significant influence on both international relations and domestic politics.[70] Frequent and heated controversies over official histories disrupt Japanese relations with China and South Korea.[71] In addition, for these countries, bilateral affairs with the United States dominated foreign relations agendas until relatively recently. This system of Cold War era alliances with North Korea as a potential catastrophic flash point interferes with environmental and social cooperation between Socialist China and its neighbors. Unpredictable provocations by North Korea, such as the sinking of the South Korean warship, the Cheonan, or the attacks on Yeonpyeong Island in 2010, and the ballistic missile launch in April, 2012, create distractions and sometimes turbulence in relations between China and South Korea, hindering progress in dimensions other than security.[72]

Nevertheless, it would be beneficial to Asians to delink environmental protection from other foreign affairs issues in order to handle the problems posed by each field separately in an incremental fashion. Allowing health and environmental concerns to be swept aside or ignored because of sporadic or past conflicts or national pride wastes an opportunity to improve the lives of current and future generations. After all, as mentioned above, that notwithstanding such friction, treaty-making in trade and investment areas has been actively advancing.

Moreover, there is more reason than ever to be optimistic that delinking can work when it comes to air pollution. First, China currently pays an

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70. *South Korea and China Urge Japan to Show Greater Contrition for War*, THE GUARDIAN, Aug. 15, 2012, *available at* http://www.guardian.co.uk/world/2012/aug/15/second-world-war-anniversary-asia (noting the tensions between South Korea, China, and Japan that still pervades on the sixty-seventh anniversary of World War Two). For regional Asian issues related to disputed islands and islets between China, Japan, and South Korea, see Yuka Hayashi & Mitsuru Obe, *Japan Puts More Pressure on South Korea*, WALL ST. J. (Aug. 30, 2012), http://online.wsj.com/article/SB10000872396390443864204577620982322860966.html. Hayashi and Obe provide an overview of the tensions between South Korea and Japan regarding having the issue of the Dokdo/Takeshima islet dispute heard by the International Court of Justice in the Hague, Netherlands, which Japan is requesting, but South Korea is refusing. *Id.*

71. *Id*.

72. *China Proposes Emergency Talks on Korean Crisis*, NBCNEWS.COM (Nov. 28, 2010), http://www.msnbc.msn.com/id/40401513/ns/world_news-asia_pacific/t/china-proposes-emergency-talks-korea-crisis/; Mark McDonald, *'Crisis Status' in South Korea After North Shells Island*, N.Y. TIMES (Nov. 23, 2010), http://www.nytimes.com/2010/11/24/world/asia/24korea.html?pagewanted=all.

enormous price domestically as a result of air pollution, estimated by the World Bank to be as much as 3.8% of GDP.[73] In 2007, it was calculated that, each year, air pollution causes 400,000 premature deaths in China.[74] Air pollution is a primary factor (in addition to smoking) that contributed to emphysema and chronic bronchitis becoming the leading cause of death in China, with a mortality rate five times greater than in most developed nations.[75] Since China is already in the process of imposing stringent internal controls over air pollution,[76] trilateral commitments for the reduction of the most hazardous air pollutants which also carry additional incentives for scientific technical aid, legal technical assistance and financial aid for China could be a win-win situation. The pragmatism and recognition of mutual benefit that is at the core of the opening of the socialist market economy may again aid negotiations with respect to transboundary air pollution, especially as it could have the happy coincident effect of reducing China's contribution to global warming.

3. Bureaucratic Competition and Institutional Barriers

Until now, bureaucratic turf wars between state agencies in both Japan and South Korea may have interfered with the conclusion of a multilateral treaty on the environment that would have had significant consequences on the energy sector. Power plant regulation, being closely aligned with energy and industrial policy, has mainly been the province of the Ministry of Economy, Trade and Industry in Japan and the Ministry of Knowledge Economy (formerly Ministry of Commerce and Energy) in South Korea, while air pollution is handled by the relatively less powerful environmental agencies.[77] At the same time, the foreign affairs agencies,

73. THE WORLD BANK, THE COST OF POLLUTION IN CHINA: ECONOMIC ESTIMATES OF PHYSICAL DAMAGES (2007), *available at* http://go.worldbank.org//FFCJVBTP40.

74. Turner & Ellis, *supra* note 4, at 7; *see also* Mun S. Ho & Dale Jorgenson, *Greening China: Market-based Policies for Air-Pollution Control*, HARV. MAG., Sept.–Oct. 2008, at 32, *available at* http://harvardmag.com/pdf/2008/09-pdfs/0908-32.pdf (updating the results from a 10-year Harvard-Tchinghwa Project to evaluate the risks of air pollution in China published by the Harvard China Project and estimating 710,000 deaths resulted from Chinese pollution as of 2002).

75. GARY HAQ ET AL., AIR POLLUTION IN THE MEGACITIES OF ASIA (APMA) PROJECT, BENCHMARKING URBAN AIR QUALITY MANAGEMENT AND PRACTICE IN MAJOR AND MEGA CITIES OF ASIA: STAGE 1 19 (2002).

76. For an analysis of the progress of China's air quality regulations, see Hao Ji Ming et al., *Air Pollution and its Control in China*, 1(2) FRONTIERS OF ENVTL. SCI. & ENG'G IN CHINA 129 (2007).

77. Karen Lee, *Renewable Energy Law*, *in* KOREAN BUSINESS LAW: THE LEGAL LANDSCAPE AND BEYOND 313–23 (Jasper Kim ed., Carolina Academic Press 2010). On bureaucratic competition in South Korea over green hours gas regulations, see also the Jill Kosch O'Donnell, *Three Hurdles for the Emissions Trading Scheme*, COUNCIL ON FOREIGN RELATIONS (2012), http://www.cfr.org/south-korea/three-hurdles-emissions-trading-scheme/p28570. Concerning Japanese power plant regulation,

which are the lead players in international relations and more powerful institutions than the ministries of industry and energy or the environment, accord lower priority to this type of treaty making than to bilateral investment and free trade agreements; indeed, South Korea has entered into bilateral investments treaties with the majority of countries in the world.[78] In China, power plant regulation is ultimately decided by the National Development and Reform Commission, which is simultaneously responsible for national economic and social development as well as international climate change negotiations.[79]

In South Korea, the bureaucratic conflict has been provisionally settled with the passage of the Low Carbon Green Growth Act ("LCGGA")[80] and the creation of the Presidential Commission on Green Growth ("PCGG") in 2009.[81] The PCGG has ultimate authority for framing national economic strategies based on green growth principles and deciding matters of energy security and efficiency and climate change.[82] With the Minister of the Environment, the Minister of Information Economy, the Minister of Land Transport and Maritime Affairs and the Minister of Strategy and Finance in its membership, the PCGG coordinates the low-carbon policies under the separate jurisdictions. According to the LCGGA, however, primary authority over power plant emissions now resides exclusively with the Ministry of the Environment.[83]

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see AGENCY FOR NATURAL RESOURCES AND ENERGY, http://www.enecho.meti.go.jp/english/index.htm (last visited Sept. 26, 2012).

78. The United Nations Commission for Trade and Development Bilateral Investment Treaty Database contains 89 investment treaties entered into by the Republic of Korea. *See* United Nations Conference on Trade & Development, Total Number of Bilateral Investment Treaties concluded, 1 June 2011, http://www.unctad.org/sections/dite_pcbb/docs/bits_korea_republic.pdf.

79. The NDRC lists environmental goals as its tenth main function:

> To promote the strategy of sustainable development; to undertake comprehensive coordination of energy saving and emission reduction; to organize the formulation and coordinate the implementation of plans and policy measures for recycling economy, national energy and resource conservation and comprehensive utilization; to participate in the formulation of plans for ecological improvement and environmental protection; to coordinate the solution of major issues concerning ecological building, energy and resource conservation and comprehensive utilization; to coordinate relevant work concerning environment-friendly industries and clean production promotion.

Main Functions of the NDRC, NATIONAL DEVELOPMENT AND REFORM COMMISSION (NDRC) PEOPLE'S REPUBLIC OF CHINA, http://en.ndrc.gov.cn/mfndrc/default.htm (last visited Jan. 30, 2012).

80. Framework Act on Low Carbon, Green Growth (LCGGA), Act No. 9931, Jan. 13, 2012; *see also* discussion *supra* note 40.

81. *See PCGG Green Growth Korea*, ENERGY KOREA, http://energy.korea.com/archives/18990 (last visited Sept. 26, 2012).

82. Enforcement Decree of the Framework Act on Low Carbon, Green Growth (LCGGA), art. 15 (discussing the functions of the PCGG).

83. *Id.*; Presidential Decree No. 22124, Apr. 13, 2010, art. 26 (S. Kor.).

Regionally, on the other hand, multiple competing institutions with overlapping functions for transboundary air pollution inhibit consensus formation for coordinated legal responses to air pollution.[84] Concerning acid rain, South Korea has historically led functions of monitoring acid rain through LTP while Japan has historically led on modeling through EANET.[85]

One scholar described the situation as follows:

> One result is the whole array of parallel institutions for environmental cooperation which have been established through different channels and sponsors, including environment ministries, foreign ministries, environmental institutes, NGOs and the epistemic community. This has led to duplication and redundancy and sometimes these endeavours seem to serve more the vanity or ambition of some national institution or individuals than a more effective subregional coordination. The problem of duplication is also worsened by the geographic scope of these parallel institutions which varies between global, broader-than-regional (i.e. Asia Pacific) and subregional.[86]

Compounding difficulties in political coordination, China, Japan and South Korea have failed to agree on a single air pollution model for the region; instead, they employ three models simultaneously.[87] Thus, each of the countries can point to scientific ambiguity concerning the measure of responsibility or the costs to avoid action.[88] Employing monitoring and models designed to address acid rain, the states of the region have failed to adequately account for the transboundary harm from small particulate matter (PM10 or below).[89] Although small particulate matter travels greater distances more easily and poses more direct risk to human health, the cooperative monitoring capacity for transboundary transmission of

84. Chan-Woo Kim, *supra* note 8, at 27.

85. Inkyoung Kim, *supra* note 39, at 445.

86. Drifte, *supra* note 61, at 15.

87. The three models are Community Multi-scale Air Quality ("CMAQ") in China, Comprehensive Acid Deposition Model ("CADM") in South Korea, and Regional Air Quality Model ("RAQM") in Japan. SUMMARY OF THE CONFERENCE ON TRANSBOUNDARY AIR POLLUTION IN NORTH EAST ASIA, *supra* note 21, at 3.

88. Lack of scientific consensus has been stressed as a factor creating difficulties in regional environmental governance. Kim, *supra* note 39, at 447. Sangmin Nam, *Ecological Interdependence and Environmental Governance in Northeast Asia: Politics versus Cooperation*, *in* INTERNATIONAL ENVIRONMENTAL COOPERATION: POLITICS AND DIPLOMACY IN PACIFIC ASIA 168 (Paul G. Harris ed., 2002).

89. *Second Period Report on the State of Acid Deposition in East Asia: Part III Executive Summary*, EANET (2011), http://www.eanet.cc/product/PRSAD/2_PRSAD/2_ex.pdf.

small particulate matter and heavy metals lag significantly behind the cooperative investigations on sulfur dioxide or nitrates.[90] Monitoring of small particulate matter began in 2008[91] by NEASPEC in eight locations, but not in major urban areas such as Tokyo or Seoul where yellow dust episodes severely exacerbate already high levels of ambient atmospheric pollution.[92]

4. The Developmental Gap

Due to different stages of development, South Korea and Japan, on the one hand, and China, on the other, have widely different regulatory capacities for environmental protection, impeding the harmonization of regulation. In the case of South Korea, South Korea's per capita GDP in 2011 was U.S. $22,424, more than four times that of China's per capita GDP (U.S. $5,430).[93] With a great *de facto* head start on environmental regulation due to the chaos in the Chinese legal system during the Great Leap Forward and the Cultural Revolution, South Korea has considerable experience with emissions regulation and much higher demand domestically for a clean environment.[94] In environmental relations, China argues that its development priorities outweigh the harms incurred by other countries from transboundary-atmospheric pollution, demanding more aid for technology to be provided by the other players.[95] At the same time, the scale and scope of aid necessary to bring China, with its enormous size and population, into compliance with higher standards may

90. *Id.*

91. LTP's investigations of source and receptors currently involves SO2, NOx, NH3, CO, VOC, and PM10, but more attention may be paid to ozone precursors and hazardous air pollutants, including heavy metals, in the future. For Korean proposals to update the LTP project for the post-2012 phase, see The NATIONAL INSTITUTE OF ENVIRONMENTAL RESEARCH OF THE REPUBLIC OF KOREA, JOINT RESEARCH PROJECT ON LONG RANGE TRANSBOUNDARY AIR POLLUTANTS—PROGRESS OUTCOMES AND FUTURE PLAN (2011), *available at* http://www.neaspec.org/documents/tap_nov_2011/3-2%20 Joint%20Research%20Project%20on%20Long-Range%20Transboundary%20Air%20Pollutants.pdf.

92. One recent study conducted in Seoul on PM2.5 found that secondary sulfate (20.9%) and secondary nitrate (20.5%) from regional sources were the greatest contributors to local PM2.5. The authors concluded the secondary sulfate was most likely to come from industrial regions in Eastern China and that long-range transport of yellow dust from Mongolia and the Gobi Desert influenced the high soil impact of PM2.5 in and around Seoul. *See* J.-B. Heo, P.K. Hopke & S.-M. Yi, *Source Apportionment of PM2.5 in Seoul, Korea*, 9 ATMOS. CHEM. PHYS. 4957, 4968–69 (2009).

93. *Data: GDP Per Capita (current US$)*, THE WORLD BANK (2012), http://data.worldbank.org/ indicator/NY.GDP.PCAP.CD.

94. A good summary of the development of South Korea's environmental laws can be found in Ki Han Lee, South Korean Environmental Policies and Environmental Cooperation Issues in Northeast Asia, Presentation at the 21st Conference on the Law of the World (Aug. 17–23, 2003).

95. See Inkyoung Kim, *supra* note 39, at 452, discussing China's position on the Montreal Protocol.

be such that the costs of a bilateral treaty might outweigh its benefits for either South Korea or Japan alone.

II. EXPLORING LEGAL SOLUTIONS FOR TRANSBOUNDARY AIR POLLUTION OVER SOUTH KOREA

A. Why Legalization?

1. The Nature of Transboundary Air Pollution

The harm from transboundary air pollution seldom has spectacular manifestations on par with an oil spill or a nuclear accident, even though it is spread over a large number of people. The most serious victims of transboundary air pollution tend to be: (1) the very young, whose life-time lung capacity is formed under the influence of ambient air, (2) chronic bronchitis and asthma sufferers and (3) the very old, who may die prematurely from related bronchitis, emphysema or heart attacks.[96] At the same time, identifying the source of long-range transboundary air pollution is impossible for the average victim, thus public action through regulation is the only means to ensure that harm stays within acceptable levels. When a transboundary public good such as air is at issue, the collective action problems are acute.[97] Whereas in other environmental areas where a prominent catastrophe, such as an oil spill or a nuclear accident, will serve to excite national legislatures to action, there are no threshold events in the field of air pollution.[98]

At the time of the *Trail Smelter* case, the citizens of the United States were forced to rely on their government for redress because of limitations in coordination between the legal systems of the United States and Canada. (Today, such a private claim would be allowed, as in many other

96. The important effects of long-term exposure to PM include reduction in lung function in children, increase in chronic obstructive cardio-pulminary disease, increase in lower respiratory systems, reduction in life expectancy, mainly due to cardiopulmonary mortality but probably also to lung cancer. WORLD HEALTH ORGANIZATION, THE HEALTH RISKS OF PARTICULATE MATTER FROM LONG-RANGE TRANSBOUNDARY AIR POLLUTION 11 (2006), *available at* http://www.euro.who.int/__data/assets/pdf_file/0006/78657/E88189.pdf.

97. *See* Jonathan Baert Wiener, *On the Political Economy of Global Environmental Regulation*, 87 GEO. L.J. 749 (1999); *see also* Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 DUKE L.J. 931 (1997).

98. Concerns have been raised recently in South Korea that the yellow dust storms will carry radioactive elements from the recent Fukushima nuclear disaster. Se Young Lee, *Radiation Fear Also Rises in Korea*, WALL ST. J. (Mar. 17, 2011), http://blogs.wsj.com/korearealtime/2011/03/17/radiation-fear-also-rises-in-korea/; *South Korean Schools Close Amid Radiation Fears*, THE GUARDIAN (Apr. 8, 2011), http://www.guardian.co.uk/world/2011/apr/08/south-korea-schools-radiation-fear.

jurisdictions).[99] The relationship between South Korea and China is analogous, though interstate coordination is necessary for different reasons. Given the nature of long-range transboundary pollution, the citizens must rely on their governments for resolution because of the extreme distances involved and the corresponding difficulty of tracing the sources of liability for *expost* resolution.[100]

Transboundary air pollution is an unpriced negative externality with high social costs. With no possibility of defining property rights over the air involved, countries will not, by themselves, engage in Coasean bargaining to arrive at the socially optimal output of pollution without some form of regulation between them.[101]

> Just as within the national context externalities are considered a market failure to which the law should react, the same is the case as well for transboundary environmental harm. In the absence of legal rules which force countries to take into account the transboundary pollution they cause, States will have no incentives to do so. The primary goal of international environmental law should therefore, from this simple economic perspective, be no other than the internalization of the transboundary externality caused by pollution.[102]

2. Rules and Principles versus Policies

The responses to transboundary pollution from outside of Northeast Asia show that states often move beyond policy-making and instead utilize legal norms-that is, they also use rules and principles to address transboundary pollution. Ronald Dworkin first distinguished between policies, principles and rules to build a theory of legal obligation for his

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99. *See* Sand, *supra* note 33.

100. LRTAP Convention, *supra* note 14. According to article 1(b) of the LRTAP treaty,

> "long-range transboundary air pollution" means air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one State and which has adverse effects in the area under the jurisdiction of another State at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources.

Id.

101. *See* Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

102. Michael Faure & Gerrit Betlem, *Applying National Liability Law to Transboundary Air Pollution: Some Lessons from Europe and the United States*, *in* CHINA AND INTERNATIONAL ENVIRONMENTAL LIABILITY: LEGAL REMEDIES FOR TRANSBOUNDARY POLLUTION 129, 129 (Michael Faure & Song Ying eds., 2008).

theory of liberal democratic jurisprudence.[103] Dworkin defines "policy" as "that kind of standard that sets out a goal to be reached, generally an improvement in some economic, political, or social feature of the community . . . ."[104] He defines a "principle" as:

> a standard that is to be observed, not because it will advance or secure an economic, political, or social situation deemed desirable, but because it is a requirement of justice or fairness or some other dimension of morality. Thus the standard that automobile accidents are to be decreased is a policy, and the standard that no man may profit by his own wrong is a principle.[105]

Building on the work of Dworkin, Ulrich Beyerlin further distinguishes between rules and principles in the context of international environmental law. He explains that the former "are norms immediately aimed at making the addressees take action, refrain from action, or achieve a fixed result, while the latter only aim at influencing the states' decision-making, which otherwise remains open to choice . . . ."[106]

Northeast Asian countries have strongly preferred policies or non-binding declarations of principles rather than rules to deal with matters of transboundary pollution in order to preserve their policy discretion, as well as to avoid taking responsibility for the choices made by private actors. But now, China's rapid industrialization has raised a stark dilemma for the region: how to meet growing energy needs while maintaining air quality in the region for coming generations. The urgency of the dilemma demands that countries adopt action-oriented rules rather than policies, which would only postpone effective solutions to intensifying problems. It is important to point out that legal solutions need not be adversarial, or even necessarily grounded in a strict right or duty state responsibility paradigm, but they do involve a certain binding mutual accountability brought about through a compliance or monitoring process. Accountability and legitimacy can be reinforced by public participation and delegation.

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103. RONALD DWORKIN, TAKING RIGHTS SERIOUSLY 22 (1977).
104. *Id.*
105. *Id.*
106. Ulrich Beyerlin, *Policies, Principles and Rules*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22, at 437.

3. Legalizing Institutions: Obligation, Precision and Delegation

An effective treatment of transboundary air pollution in the Northeast regions is likely to involve more than just binding pollution reduction commitments in a treaty, the creation of a regional air pollution institution for implementation (such as the IJC) or rulemaking, or the functional enhancement of an existing institution.[107] As Yang and Percival noted, "the modern trend in environmental treaty making has been to create environmental institutions as key tools for achieving treaty objectives. Thus, multilateral agreements are not mere 'contracts' between the states, but are increasingly crafting regulatory regimes and multi-function institutions."[108]

As discussed above, a variety of Northeast Asian inter-governmental environmental *fora* currently exist or lie dormant in treaties,[109] but they are all strictly diplomatic or scientific in nature. How could an existing institution become "legalized"? Kenneth Abbot and colleagues have presented a theory of legalization of international organizations based on three characteristics: obligation, precision and delegation.[110] They define these terms as follows:

> *Obligation* means that states or other actors are bound by a rule or commitment or by a set of rules or commitments. Specifically, it means that they are *legally* bound by a rule or commitment in the sense that their behavior thereunder is subject to scrutiny under the general rules, procedures and discourse of international law . . . . *Precision* means that rules unambiguously define the conduct they require, authorize, or proscribe. *Delegation* means that third parties have been granted authority to implement, interpret, and apply the rules; to resolve disputes; and (possibly) to make further rules.[111]

Accordingly, in order for a current Northeast Asian environmental cooperative forum to become legalized, these three characteristics would have to be strengthened. For example, an obligation to set binding air

107. In principle, such environmental governance institutions need not be exclusively part of an environmental treaty, but could also be in an annex to an FTA if they include an explicit mandate to control regional air pollution. Although no current FTA example of this model of enforcement exists, enforcement could be linked to other benefits of the treaty.

108. Tseming Yang & Robert V. Percival, *The Emergence of Global Environmental Law*, 36 ECOLOGY L.Q. 615, 656 (2009).

109. *See infra* Part III.C.

110. Kenneth W. Abbot et al., *The Concept of Legalization*, 54 INT'L ORG. 401 (2000).

111. *Id.* at 401, 408–10.

pollution standards over a precisely defined period and the delegation of powers by the States to an entity (staffed by regional air quality experts from each of the countries) for implementation or dispute resolution would enhance the legalization, as well as the legitimacy, of an existing environmental governance mechanism. However, we would add another recommendation for effective regional governance for air quality. Many of the active current inter-State environmental *fora*, such as TEMMS, attempt to cover many environmental issues simultaneously.[112] A permanent standing institution committed to the air quality issue alone and centralizing the related activities of the other institutions may be more efficient in its decision making.

B. The Trails Smelter Case: The Duty to Prevent Transboundary Environmental Harm

The diverse range of legal responses that have been employed by the United States and Canada to grapple with transboundary harm offers interesting comparisons for South Koreans.[113] To a remarkable extent, the agreed modes of environmental dispute resolution between Canada and the United States on air and water issues have been shaped by the example of the resolution of a single dispute. Although its procedural example was not followed again by the U.S. and Canadian governments nor by any other government with regard to regional transboundary harm,[114] its normative conclusions have resonated widely beyond North America. It is often acknowledged that modern international environmental law owes its origins to this case.[115]

In the early 1900s, a copper smelter owned by Teck Cominco in Trail, British Columbia began emitting fumes near the border of the United States.[116] In the 1920s, the level of such emissions began to increase to more than 300 tons of sulfur emitted daily, large quantities of which were

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112. *See* Chan-Woo Kim, *supra* note 8. Under TEMMS, several related working groups have been established in the last five years besides the JRPLT: the Joint Research on Sand and Dust storms, as well as Research on Photochemicaloxidents. TEMMS FOOTPRINTS, *supra* note 56, at 30, 35.

113. For a lengthier discussion of the harmonization of national and international law using the historical example of United States and Canada, see Noah D. Hall, *Transboundary Pollution: Harmonizing International and Domestic Law*, 40 U. MICH. J.L. REFORM 681 (2007).

114. *See* John Knox, *The Flawed* Trail Smelter *Procedure: The Wrong Tribunal, the Wrong Parties and the Wrong Law*, *in* TRANSBOUNDARY HARM IN INTERNATIONAL LAW: LESSONS FROM THE *TRAIL SMELTER* ARBITRATION (Rebecca M. Bratspies & Russel A. Miller eds., 2006).

115. ALEXANDRE KISS & DINAH SHELTON, INTERNATIONAL ENVIRONMENTAL LAW 45 (2d ed. 2000).

116. *Trail Smelter II*, *supra* note 23.

of sulfur dioxide.[117] Contending the fumes were destroying nearby orchards and crops, Washington state farmers requested intervention by the U.S. government.[118] After a period of negotiations between the United States and Canada, in 1928, Canada agreed to refer the matter to the IJC pursuant to the Boundary Waters Treaty of 1909.[119]

The subject matter jurisdiction of the IJC was founded in Article IX of the treaty. Article IX and X confer authority on the tribunal to investigate matters "involving the rights, obligations or interests of the United States or of the Dominion of Canada either in relation to each other or to their respective inhabitants" referred to it by either of the two parties.[120] Decisions made under Article IX are not binding, while those under Article X are binding.[121] Both the *Trail Smelter* decision and the subsequent arbitration were referred to the IJC under Article IX.[122] In 1931, the Commission concluded that damages in the amount of U.S. $350,000 had resulted; Canada agreed to pay the amount.[123] However, one major omission of the decision was that no enjoinment action was issued to compel Canada to cease the Smelter's sulfur emissions.[124] As a result, emissions from the lead and zinc plant continued.[125] In 1938, the United States argued for U.S. $2 million in damages for the period from 1931 to 1938; the Commission awarded damages of U.S. $78,000.[126] Again, no enjoinment was issued by the Commission until 1941, when the United States argued for such remedy.[127]

The issue in the 1941 case was whether Canadian Trail Smelter could be refrained from emitting fumes that could cause damage to the U.S. state of Washington.[128] At this point, the IJC noted that no case of air pollution existed for an international tribunal, and in order to avoid a *non-liquet*, the tribunal relied upon two sources of U.S. federal law for direction. It looked

117. *Id*.
118. *Id*.
119. *Id*.
120. *Id*. Boundary Waters Treaty, *supra* note 26, arts. I, X.
121. Article X of the Boundary Waters Treaty, which has never been used, states: "Any questions or matters of difference arising between the High Contracting Parties involving the rights, obligations, or interests of the United States or of the Dominion of Canada either in relation to each other or to their respective inhabitants, may be referred for decision to the International Joint Commission by consent of the Parties . . . ." Boundary Waters Treaty, *supra* note 26.
122. *Trail Smelter I*, *supra* note 23; *Trail Smelter II*, *supra* note 23.
123. *Trail Smelter I*, *supra* note 23.
124. *Id*.
125. *Trail Smelter II*, *supra* note 23.
126. *Trail Smelter I*, *supra* note 23.
127. *Trail Smelter II*, *supra* note 23.
128. *Id*.

to U.S. Supreme Court cases involving the common law of nuisance between U.S. states and a case of the Swiss Federation, applying them by analogy to international disputes.[129] However, the Commission did refer to various international law sources, including Professor Eagleton (an international law scholar), who posited that "[a] state owes at all times a duty to protect other states against injurious acts by individuals from within its jurisdiction."[130] The Commission ultimately concluded that "no State has the right to use or permit the use of its territory" so as to "cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence."[131] Thus, the Commission deemed that the Dominion of Canada had a duty to act in conformity with the principles of international law (as stated by the Commission).[132]

The "no harm" principle of the *Trail Smelter* case extended to international relations an ancient civil law maxim, *sic utere tuo ut alienem non laedus* ("use your own property so as not to harm that of another"). Not long after the *Trail Smelter* case, the International Court of Justice ("ICJ") endorsed this principle in the *Corfu Channel* case to state that no State may use its territory contrary to the rights of others.[133] In its Advisory Opinion of the Threat or Use of Nuclear Weapons[134] and in the judgment of the Gabcikovo-Nagymaros Project,[135] the Court also stated, "The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment."

In codifying the law of international responsibility for transboundary harm, the International Law Commission affirmed with reference to the *Trail Smelter* arbitration: (1) there exists a duty of States to prevent significant transboundary harm or at least minimize its impact; and (2) the prevention of harm is an obligation of due diligence.[136] The most familiar

129. *See Trail Smelter I*, *supra* note 23, at pt. 2; *Trail Smelter II*, *supra* note 23, at pt. 3.

130. CLYDE EAGLETON, RESPONSIBILITY OF STATES IN INTERNATIONAL LAW 80 (1928).

131. *See Trail Smelter II*, *supra* note 23, at pt. 3.

132. *Id*.

133. Corfu Channel Case (U.K. v. Alb.), 1949 I.C.J. 4, 35 (Apr. 3).

134. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶ 29 (July 8).

135. Gabčíkovo-Nagymaros Project (Hung. V. Slovk.), 1997 I.C.J. 7, ¶ 53 (Sept. 25).

136. *Draft Articles on the Prevention of Transboundary Harm*, 1 U.N.Y.B. INT'L L. COMM'N 65, pt. 2 (2000). For other implications of the *Trail Smelter* decision, see Mark Drumbl, *Trail Smelter and the International Law Commission's Work on State Responsibility for Internationally Wrongful Acts and State Liability*, *in* TRANSBOUNDARY HARM IN INTERNATIONAL LAW: LESSONS FROM THE TRAIL

restatement of the *Trail Smelter* rule is found in Rio Principle 2 in which the duty to prevent significant transboundary harm is balanced against the right of states to determine their own economic development policies:

> States have, in accordance with The Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.[137]

C. The International Joint Commission and the U.S.-Canada Air Quality Agreement: Accountability Through Delegation

1. The Agreement on Air Quality

Canada and the United States have instituted a highly coordinated bilateral transboundary pollution regulatory regime through almost a century of legal and diplomatic interaction with dialogue and litigation involving civil society groups, national and regional governments, and private claimants. The foundation of the current bi-national system is the Agreement on Air Quality,[138] which refers to the Trail Smelter and Principle 2 of the Rio Declaration in its preamble.[139] The treaty and its annexes on binding reductions for sulfur and nitrous emissions of the two countries were achieved in no small measure through objective scientific investigation and progressive formalization of policies formulated by the IJC.[140]

When the harmful effects of sulfur dioxide, nitrogen dioxide and other particulates were first beginning to be understood in the United States and Canada after World War II, the power plant industry responded by building its stacks at even larger heights.[141] As a result, by mixing with

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SMELTER ARBITRATION, *supra* note 114. Drumbl discusses Draft Articles 14, 30, 31 and 36 of the Draft Articles on State Responsibility. *Id.*

137. United Nations Conference on Environment and Development, Rio de Janiero, Braz., June 3–14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), Annex I (Aug. 12 1992) [hereinafter Rio Declaration].

138. Agreement on Air Quality, *supra* note 17.

139. *Id.*

140. *See* HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 555–57 (3d ed. 2006); WEISS ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY, 505–08 (2d ed. 2006).

141. Jes Fenger, *Air Pollution in the Last 50 Years: From Local to Global*, 43 ATMOSPHERIC ENVIRONMENT 15–17 (2009).

precipitation and atmospheric winds, pollution became delocalized.[142] In 1966, the governments of these countries entrusted the IJC with the authority to investigate the acid rain issue. In response to studies by the IJC and others that concluded pollution from stacks caused acid deposition in the Great Lakes and other surface waters, the United States and Canada formed a Bilateral Research Consultation Group on the long range transport of airborne pollutants in 1978.[143] Although both countries were already members of Europe's LRTAP Convention, in 1980 they signed a Memorandum of Intent on Transboundary Air Pollution to work towards developing a bilateral agreement on air quality.[144] Both countries appointed special envoys on acid rain.[145] In 1983, separate peer reviews of scientific reports from each country produced by working groups established under the Memorandum called for immediate emissions reductions and regulatory action.[146] Canada, whose transboundary flux was far less than that of the United States, had taken unilateral action to reduce its flux by 50% while continuously requesting the United States to do the same.[147] However, for much of the 1980s, the United States averred that more scientific research was necessary, resisting calls from the Canadian government and the states of New York and Ontario.[148] Finally, in 1990, the United States amended the Clean Air Act to require utilities to reduce emissions of sulfur by ten million tons by the year 2000 through employing an emissions trading system to reduce costs; this system was quantitatively consistent with Canada's demands for a 50% decrease in transboundary sulfur dioxide.[149] Shortly thereafter, negotiations began at the head of State level, which eventually led to the Agreement on Air Quality Agreement that was concluded in 1991.[150]

Under Article IV, both countries should establish specific objectives for emissions limitations or reductions, undertake environmental impact assessment for projects likely to cause significant fluxes with prior

142. *Id*.

143. JURGEN SCHMANDT, JUDITH CLARKSON & HILLARD RODERICK, ACID RAIN AND FRIENDLY NEIGHBORS 65 (Duke Univ. Press, 1988).

144. United States-Canada Memorandum of Intent on Transboundary Air Pollution, Interim Report (Feb. 1981), *available at* http://nepis.epa.gov.

145. *Id*.

146. CO-CHAIRMEN G.E. BANGAY & C. RIORDAN, IMPACT ASSESSMENT WORK GROUP I (1983), *available at* http://nepis.epa.gov.

147. *Id*.

148. *See* Thomas v. New York, 802 F.2d 1443 (D.C. Cir. 1986), *cert. denied* 482 U.S. 919 (1987); Ontario v. EPA, 912 F.2d 1525 (D.C. Cir. 1990).

149. Amendments to Clean Air Act of 1990, Pub. L. No. 101-549 (1989), *available at* http://thomas.loc.gov/cgi-bin/bdquery/z?d101:S1630.

150. Agreement on Air Quality, *supra* note 17.

notification and carry out coordinated cooperative scientific activities.[151] A Joint Air Quality Committee composed of the deputy secretaries of the environmental agencies was created to assist the countries in implementation by producing a biennial report on air quality that would be subject to review and assessment.[152] The IJC was entrusted with reviewing the air quality reports, soliciting public comment and submitting recommendations to the Parties based on the public comment.[153] After each five year assessment cycle, the parties "shall consider such action as may be appropriate, including (a) the modification of this Agreement (b) the modification of existing policies, program or measures."[154]

In the event of a dispute, Art. XIII prescribes the methods of resolution:

> (1) If, after consultations in accordance with Article XI, a dispute remains between the Parties over the interpretation or the implementation of this Agreement, they shall seek to resolve such dispute by negotiations between them. Such negotiations shall commence as soon as practicable, but in any event not later than ninety days from the date of receipt of the request for negotiation, unless otherwise agreed by the Parties.
>
> (2) If a dispute is not resolved through negotiation, the Parties shall consider whether to submit that dispute to the International Joint Commission in accordance with either Article IX or Article X of the Boundary Waters Treaty. If, after such consideration, the Parties do not elect either of these options, they shall, at the request of either Party, submit the dispute to another agreed form of dispute resolution.[155]

The referral to the IJC would result in a binding agreement with respect to the particular dispute without precedential legal effect for any other dispute.[156]

In the Annexes to the agreement, both countries pledged to achieve a permanent national cap on sulfur dioxide emissions by 2010 (twenty years after the execution of the treaty), and to meet technology-based standards for reducing NOx emissions from mobile sources.[157] Between 1980 and

151. *Id*. art. IV.
152. *Id*. art. VIII.
153. *Id*. art. IX.
154. *Id*. art. X.
155. *Id*. art. XIII.
156. *Id*.
157. *Id*. annexes.

2001 Canada and the United States had reduced sulfur dioxide emissions by 48% and 39% respectively, although many challenges remained due to the uncertainty of atmospheric interactions between chemical compounds other than sulfur dioxide.[158] The Air Quality Agreement was followed by an Ozone Annex in 2000 in which both countries agreed to aggressively reduce nitrogen oxides and Volatile Organic Compounds.[159]

It would be manifestly unfair to draw strict comparisons between Northeast Asia and North America on regional regulation of transborder pollution. Compared to Northeast Asia, conditions for regulatory integration between the United States and Canada were highly favorable, including contiguous borders, the same language, similar cultural heritage and common legal traditions. Still, history serves as a helpful model for progressive legalization of diplomatic and cooperative scientific efforts.

Some features of the Air Quality Agreement that serve to make it a more effective instrument are:

(1) Legally binding commitments to reduce emissions;

(2) Public access to technical records and public review of compliance; and

(3) Permanent transnational institutions dedicated to prevention and dispute resolution, such as the IJC overseeing compliance which enjoys legitimacy with NGOs and national and regional governments.[160]

2. The Institutional Role of the IJC

No doubt one of the most important factors in the success of the diplomatic process that resulted in the Air Quality Agreement was the IJC itself, a non-diplomatic entity with multiple roles in inter-State environmental governance and interstate environmental scientific cooperation.[161] The IJC's overall reputation for objectivity and effectiveness in breaking impasses comes from its bilateral, non-political,

158. NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM REPORT FOR CONGRESS: AN INTEGRATED ASSESSMENT 17 (2005), *available at* http://ny.water.usgs.gov/projects/NAPAP/NAPAPReport2005.pdf.

159. Canada-U,S. Air Quality Agreement, Ozone Annex (2000), *available at* https://www.ec.gc.ca/air/default.asp?lang=En&n=FA26FE79-1.

160. Jason Bhuhi & Lin Feng, *The International Joint Commission's Role in the United States-Canada Transboundary Air Pollution Control Regime: A Century of Experience to Guide the Future*, 11 VT. J. ENVTL. L. 107 (2009).

161. *Id.*

non-professional character. The United States and Canada each appoint three commissioners who are experts in air and water quality.[162] Although the IJC may take up an issue on the initiative of either country, by custom, the States have generally cooperated to formulate and submit the questions for investigation.[163]

a. Scientific Investigation and Policy Recommendations

In its 100 years of existence, on five different occasions the IJC has overseen scientific investigations and economic studies on questions referred to it and reported its conclusions on matters concerning transboundary air and water.[164] For this purpose, it normally creates provisional bi-national technical bodies staffed with experts and government officials at state and regional levels of government from both countries.[165] Although the reports and recommendations of the IJC are not binding, they are recognized as authoritative and have often led to further regulatory actions by the countries.

b. Compliance and Public Accountability

As noted above, the IJC has been delegated powers in the compliance procedures of relevant bilateral environmental treaties, while serving as an important conduit for public opinion and accountability to the public in the compliance process. In addition to the IJC's role noted above under the Air Quality Agreement, in 1978 the Great Lakes Water Quality Agreement conferred upon the IJC the power to conduct public hearings and compel testimony on compliance.[166] This element of these treaties recognizes that the nature of the collective action problems inherent in transboundary

162. Boundary Waters Treaty, Art. XII, *supra* note 26.

163. Noah Hall, *Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region*, 77 U. COLO. L. REV. 405, 418 (2006).

164. The five instances were as follows: Trail Smelter in Docket 25R (1928); the first Detroit river vessel reference to the Windsor and Detroit's ship smoke in Docket 61R (1949); the second Detroit-St. Clair river region reference to Port Huron-Sarnia and the Detroit Windsor in Docket 85R (1966); the third Detroit-St. Clair region reference to Port Huron-Sarnia and the Detroit Windsor in Docket 99R (1975); and the Air Quality Agreement in Docket 112R (1991). *Boundary Waters Treaties: Dockets*, IJC.ORG (2012), http://bwt.ijc.org/index.php?page=dockets&docket-search-region=13&hl=eng&sortBy=region.

165. For the current composition of boards and task forces, see *Boards*, INTERNATIONAL JOINT COMMISSION, http://www.ijc.org/en/boards/boards_conseils.htm (last visited Sept. 27, 2012).

166. Great Lakes Water Quality Agreement of 1978, *available at* http://www.ijc.org/en/activities/consultations/glwqa/agreement.php.

pollution require a strong and continuous communicative link between the public and the government.

D. The Convention for Long-Range Transboundary Air Pollution: Institutionalization of Prevention[167]

The UNECE's LRTAP Convention consists of a framework treaty for forty-nine countries supplemented by binding protocols on individual pollutants.[168] The main substantive obligations of LRTAP found in Articles 2 and 3 are: "Contracting Parties . . . shall endeavor to limit, and as far as possible, gradually reduce and prevent air pollution, including long-range transboundary air pollution" and "each Contracting Party undertakes to develop the best policies and strategies including air quality management systems, and as part of them, control measures compatible with balanced development, in particular by using the best available technology which is economically feasible and low-and non-waste technology."[169] Specific obligations were clarified through subsequent protocols instituting emissions limits on sulfur, nitrogen oxides, volatile organic compounds, heavy metals and persistent organic pollutants.[170] Subsequent implementations of air pollution targets have included flexible

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167. LRTAP Convention, *supra* note 14.

168. The Northeast Asian countries have already adopted the idea of a cooperative program for the monitoring and evaluation of long-range air pollutants (EANET), but there are no substantive obligations for reduction or maintenance of emissions as in the case of LRTAP. The objectives of EANET are

1. To create a common understanding of the state of acid deposition problems in East Asia;
2. To provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on the environment caused by acid deposition; and
3. To contribute to cooperation on the issues related to acid deposition among the participating countries.

EANET's periodic reports on acid deposition in the region and technical guidelines can be found at http://www.eanet.cc/product/index.html.

169. LRTAP, *supra* note 14.

170. *See generally* Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulfur Emissions or their Transboundary Fluxes by at least 30 percent, July 8, 1985, 1480 U.N.T.S. 215; Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes, Nov. 4, 1988, 1593 U.N.T.S. 287; Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes, Nov. 18, 1991, 2001 U.N.T.S. 187; The Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulfur Emissions, June 14, 1994, 2030 U.N.T.S. 122; Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, June 24, 1998, 2237 U.N.T.S. 4; Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants, June 24, 1998, 2230 U.N.T.S. 79; Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidifcation, Eutrophication and Ground-level Ozone, Nov. 30, 1999, Document of the Economic and Social Council EB.AIR/1999/1.

means of compliance to accommodate the diversity of country participants, such as grandfathering in the Eastern European countries.[171]

Unlike in North America, where the United States and Canada committed to an average level of emissions over a broad area, the Second Sulfur Protocol adopted the "critical load" approach to reduce emissions.[172] The critical load is defined as the amount of exposure to one or more pollutants below which significant harmful effects on certain sensitive elements of the environment do not occur.[173] Critical loads were defined over 150 km^2over the continent.[174] Then using air transport models, the parties calculated their emission reductions by reference to the critical loads of the areas that their fluxes impacted.[175] The critical load approach is significant because it more realistically reflects true environmental impact than flat calculations of percentage contributions.

In addition, LRTAP's standard setting takes into account the "co-benefits" of conventional air quality standards. Recognizing that reduction of conventional air pollution can reduce climate change as well, the countries of LRTAP set their emissions limits by opting for both policy goals using the integrated approach of the Greenhouse Gas and Air Pollution Interactions and Synergies ("GAINS") model developed by the International Institute for Applied Systems Analysis.[176] In other words, using GAINS to find the right policy mix, the countries can achieve the same health benefits while meeting greenhouse gas ("GHG") targets and saving money in comparison to the old standards-setting approach.[177]

The North American and European treaties utilize very different institutions for implementation. In line with the international trend toward making law within treaties rather than without,[178] the Executive Body of

171. See Directives 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air and 2008/50/EC the Air Quality Directive with extended time limits for countries that so request. Also, the calculation of allowances under the European Union Emissions Trading System, under Directive 2003/87/EC, which covers nitrogen oxide is based on historical emissions.

172. *See* J. P. Hettlingh et al., *The Use of Critical Loads in Emission Reduction Agreements in Europe*, 85 WATER, AIR, AND SOIL POLLUTION 2381, 2381–88 (1995) (describing methods and outcomes).

173. *Id.* at 2381.

174. *Id.*

175. *Id.*

176. The periodic reports using the GAINS model to the Task Force for Integrated Assessment Modeling and the EMEP Steering Committee in the treaty can be found at http://www.unece.org/env/lrtap/taskforce/tfiam/welcome.html.

177. *See* Markus Amman et al., *Cost-effective Control of Air Quality and Green House Gasses in Europe: Model and Policy Applications*, 26 ENVTL. MODELING AND SOFTWARE 1489 (2011).

178. Thomas Gehring, *Treaty-making and Treaty Evolution*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22.

the Conference of the Parties of LRTAP has created an Implementation Committee for non-adversarial dispute resolution.[179] The Implementation Committee reviews compliance with reporting obligations and prepares in-depth reviews of compliance with specified obligations in individual protocols. The Implementation Committee will submit its conclusions concerning a non-compliant party, usually a request for a progress report on compliance, to the Executive Body, who has the final authority.[180] This non-adversarial process supports the preventative goal of long-term participation of the non-compliant party.

1. Unilateral Enforcement and the Pakootas *Case*

Environmental cooperation between Canada and the United States has not been without its bumps and twists in the road. In the wake of the *Trail Smelter* controversy in the 1990s, the forum of the dispute was abruptly switched to the U.S. national court system. The U.S. Environmental Protection Agency ("EPA") joined a claim by private parties under U.S. environmental law against the Canadian company, which in turn raised the concern that the United States was attempting to apply its environmental regulation extraterritorially.[181] In the late 1990s, Teck Cominco was the defendant again for the alleged annual discharge of up to 145,000 tons of waste in the form of slag (a byproduct of the lead and zinc smeltering plant) into the Columbia River from 1906 to 1995.[182] In August 1999, the Colville Tribes[183] requested that the EPA study the contamination of the Columbia River's portion located in Washington State.[184] In March 2003, the EPA completed its site assessment and concluded that the upper Columbia River site could be listed on its National Priorities List ("NPL")

179. *See* LRTAP Executive Body Decision 1997/2, *available at* http://www.unece.org/env/lrtap/executivebody/eb_decision.html.

180. UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, STRUCTURES AND FUNCTIONS OF THE IMPLEMENTATION COMMITTEE AND PROCEDURES FOR REVIEW OF COMPLIANCE (2011), *available at* http://www.unece.org/fileadmin/DAM/env/eia/documents/ImplementationCommittee/2011_Structure_and_functions__operating_rules_etc/Implementation_Committee_procedures_rules.e.pdf.

181. *See* Michael J. Robinson-Dorn, *The Trail Smelter: Is What's Past Prologue? The EPA Blazes a New Trail for CERCLA*, 14 N.Y.U. ENVTL. L.J. 233, 313–14 (2005); Libin Zhang, *Pakootas v. Teck Cominco Metals, Ltd.*, 31 HARV. ENVTL. L. REV. 545, 552 (2007).

182. Pakootas v. Teck Cominco Metals, Inc., No. CV–04–256–AAM, 2004 WL 2578982, at *1, *3 (E.D. Wash. Nov. 8, 2004).

183. This group is described as an Indian Tribe. Today, over 9000 descendants of twelve aboriginal tribes of Native Americans are enrolled in the Colville Tribes. The Colville Reservation land base covers 1.4 million acres located in north central Washington. *Demographics*, THE CONFEDERATED TRIBES OF THE COLVILLE RESERVATION, http://www.colvilletribes.com/demographics.php (last visited Sept. 27, 2012).

184. Pakootas v. Teck Cominco Metals, Inc., 452 F.3d 1066, 1069 (9th Cir. 2006).

of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA").[185]

The primary purpose of CERCLA is to allocate liability for hazardous waste releases.[186] In doing so, it sets out a procedural framework and a funding mechanism (referred to colloquially as "the Superfund") to ensure the identification and clean-up of toxic waste sites.[187] If an entity has fallen within its strict liability conditions, CERCLA can impose a duty on specific persons ("potentially responsible parties" or "PRP"s) to repay the fund for remediation or remediate themselves.[188] CERCLA strict liability attaches when three conditions are satisfied: (1) the site at which there is an actual or threatened release of hazardous substances is a "facility" under § 9601(9); (2) a "release" or "threatened release" of a hazardous substance from the facility has occurred, § 9607(a)(4); and (3) the party is within one of the four classes of potentially responsible persons subject to liability under § 9607(a).[189]

On December 11, 2003, the EPA issued a Unilateral Administrative Order for Remedial Investigation/Remedial Study (the "UAO") against Teck, with which Teck did not comply.[190] The EPA did not take further action; instead, plaintiffs Joseph A. Pakootas and Donald Michel of the Colville Tribes exercised their private right of enforcement on Teck's compliance with the EPA-issued UAO, pursuant to the "citizen suit" provision of CERCLA[191] which allows for private parties to "step into the shoes" of the EPA for injunctive relief.

Pakootas v. Teck Cominco Metals, Ltd.[192] was filed with the Eastern District Court of Washington and later appealed to the Ninth Circuit of the U.S. federal court system.[193] The plaintiffs requested injunctive relief and penalties for clean up and non-compliance of the UAO.[194] The state of Washington also joined as a plaintiff to the suit pursuant to CERCLA.[195]

185. *Id*.
186. *CERCLA Overview*, EPA, http://www.epa.gov/superfund/policy/cercla.htm (last visited Sept. 27, 2012).
187. *Id*.
188. *Id*.
189. *Pakootas*, 452 F.3d at 1073–74.
190. For the related cover letter and text by the EPA to Teck relating to the UAO, see Region 10, *Region 10: Pacific Northwest, Enforcement*, EPA, http://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Enforcement (last visited Sept. 27, 2012).
191. 42 U.S.C. § 9659(a)(1) (2011).
192. Pakootas v. Teck Cominco Metals, Inc., No. CV–04–256–AAM, 2004 WL 2578982, at *1 (E.D. Wash. Nov. 8, 2004).
193. Pakootas v. Teck Cominco Metals, Inc., 452 F.3d 1066, 1070 (9th Cir. 2006).
194. *Id.*
195. *Id.*

Defendant Teck moved to dismiss the suit by both plaintiffs for lack of personal jurisdiction as well as a failure to state a claim upon which relief could be granted.[196] Teck argued that because CERCLA cannot apply extra-territorially to a Canadian defendant, there was no proper cause of action.[197] In denying this motion, the U.S. district court found CERCLA could be applied extraterritorially against the Canadian entity Teck.[198] Such a position was striking given that American law contains a presumption that its law will not be automatically applied extraterritorially unless specific Congressional intent provides otherwise.[199] The district court insisted that a clear Congressional intent did exist to remedy domestic issues in situations regarding adverse effects within U.S. territory with respect to foreign parties.[200] The district court held that it would constitute "legal fiction" to distinguish between and bifurcate Teck Cominco into separate Canadian and American parts.[201] The district court also held that Pakootas had stated a valid claim under CERCLA.[202] Specifically, Teck was a "person" (pursuant to §9601) who could be found liable as a potentially responsible person with regard to the "facility" (§9601(9)), where a "release" or "threatened release" occurred (§9607(a)(4)) in the upper Columbia River section of Washington state.[203]

Teck appealed to the U.S. Court of Appeals for the Ninth Circuit.[204] Following Teck's filing, but prior to hearing of the case, the EPA and Teck reached a settlement agreement, which compelled the EPA to drop its suit against Teck.[205] However, the other plaintiffs, namely the Pakootas and the U.S. state of Washington, were not parties to the EPA-Teck settlement agreement.[206] Thus, the remaining plaintiffs could still take the case forward based on their claims of the UAO violation and related civil penalties.

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196. *Id*.
197. *Id*.
198. *Id*. at 1071 (citing Pakootas v. Teck Cominco Metals, Inc. 2004 WL 2578982, at *1, *17–18 (E.D. Wash. 2004)).
199. *See* Foley Bros., Inc. v. Filardo, 336 U.S. 281, 285 (1949).
200. *Pakootas*, 2004 WL 2578982, at *17.
201. *Id*. at 6.
202. *Id*. at 18.
203. *Id*. at 10–11.
204. Pakootas v. Teck Cominco Metals, Inc., 452 F.3d 1066 (9th Cir. 2006).
205. The settlement agreement can be found at the EPA website at http://www.epa.gov/newsroom/pdf/teckcominco.pdf, and also at the Teck website at https://encrypted.google.com/#hl=en&output=search&sclient=psy-ab&q=teck+epa+settlement&oq=teck+epa+sett&gs_l=hp.1.0.33i21.1827.4711.0.7767.13.13.0.0.0.0.1113.4440.0j5j6j7-2.13.0.les%3B..0.0...1c.1.B5epQG7fwi8&pbx=1&bav=on.2,or.r_gc.r_pw.r_qf.&fp=c7cc1d5b71cea433&biw=1574&bih=918.
206. *See id*.

Interestingly, in its 2006 decision, the U.S. Ninth Circuit Court of Appeals applied the exact "legal fiction" that the lower district court denounced.[207] Specifically, the Court held that it was Teck's Canadian "facility" that "released" the "hazardous substances" into the upper Columbia River in Washington state.[208] Under CERCLA, a "facility" can be defined as "any site or area where a hazardous substance has . . . come to be located."[209] The Court also stressed that CERCLA's intent was to impose liability for pollution site clean-ups, as opposed to the regulation of such substance releases-that the slag released into the upper Columbia River could be linked to Teck, which in turn, could constitute a "release" under CERCLA that covers passive migration of hazardous substances into the environment.[210]

The Court held that such "release" was distinguishable and separate from the original discharge from the Trail Smelter located in Trail, British Columbia, and further, that such "release" or "threatened release" occurred in the American subsidiary of Teck (located in the state of Washington), which is within U.S. territory and CERCLA's jurisdiction.[211] In other words, the issue of whether CERCLA could be applied extraterritorially to Canada (or more broadly, to any non-U.S. party) was conveniently avoided in this instance, as was the issue of whether the EPA could impose liability upon Canadian parties regarding releases of hazardous substances that directly or indirectly enter and cause damage to U.S. interests (which the EPA generally does not consider to be within its normal purview).[212] The court explained that as CERCLA was primarily intended to allocate liability, this did not constitute extraterritorial application of U.S. environmental regulation.[213]

Although the case was appealed to the U.S. Supreme Court, *certiorari* was denied.[214] Thus, the legal effect was that the 2006 decision of the U.S. Ninth Circuit Court of Appeals rendered the final decision on the matter relating to the dispute between Teck and the EPA (separate from the ongoing dispute between Teck and the state of Washington and Pakootas).

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207. *Pakootas*, 452 F.3d at 1079.
208. *Id.*
209. 42 U.S.C. § 9601(9) (2012).
210. Pakootas v. Teck Cominco Metals, Inc., 452 F.3d 1066, 1079 (9th Cir. 2006).
211. *Id.* at 1068–69.
212. EPA interview with Jasper Kim in Seattle, Washington, United States (July 9, 2009).
213. *Pakootas*, 452 F.3d at 1073.
214. Teck Cominco Metals, Ltd. v. Pakootas, 552 U.S. 1095 (2008) (denying cert).

The United States has invited international criticism for its unilateral approach. One scholar notes:

> In the last two decades, the United States has disengaged from the traditional sources of international law, declining to enter into multilateral conventions or undertake new international legal obligations. Concomitant with this retreat—filling the void left by U.S. disengagement—the number of U.S. lawsuits where American laws are applied extraterritorially to solve global problems has grown. This trend, however, is not peculiar to the United States. Increasingly other countries are also applying their laws extraterritorially to exert international influence and solve transboundary challenges.[215]

When is unilateral action justified? As Dan Bodansky and Gregory Schaffer point out, neither consent-based international environmental law (treaties) nor transnational environmental law based on unilateral actions is inherently superior for environmental protection, even though it appears that consent-based international environmental law is more legitimate.[216] Both are imperfect tools and should be compared by their tradeoffs.[217] Unilateralism should be retained as an option for serious environmental harm, especially if intergovernmental actions are too little or too late.[218]

In the instant case, we agree with Michael Robinson-Dorn that the U.S. court acted in accordance with the international law.[219] In *Pakootas*, counsel for Teck argued that the suit would disrupt U.S.-Canadian relations and should be barred on the principle of international comity because it constituted extra-territorial application of the U.S. environmental laws.[220] It contended that the two countries had concluded a relevant bilateral treaty on the subject matter which committed dispute resolution to the IJC; the Boundary Waters Treaty did not permit the use of private claims in national courts.[221] However, Articles X and XI of the

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215. Austen L. Parrish, *Reclaiming International Law from Extraterritoriality*, 93 MINN. L. REV. 815, 818 (2009); Zhang, *supra* note 181.

216. Gregory Shaffer & Daniel Bodansky, *Unilateralism and International Law*, 1 TRANSNAT'L ENVTL. L. 31 (2012).

217. *Id*. at 38.

218. *Id.* The authors raise climate change as an outstanding example.

219. Robinson-Dorn, *supra* note 181, at 301–04.

220. Appellant's Opening Brief *Pakootas v. Teck Cominco Metals*, Ltd., 452 F.3d 1066 (9th Cir. 2006).

221. *Id.*

treaty make clear that submitting an issue to the IJC is voluntary for the States,[222] and Canada had declined to refer the dispute to the IJC.

Although it is universally accepted under customary international law that the sovereign rights of States places limits on extraterritorial jurisdiction of criminal law,[223] there is less consensus concerning civil law or environmental law jurisdiction.[224] The United States and Canada generally recognize the effects doctrine for prescriptive jurisdiction, whereby a State may exercise prescriptive jurisdiction over "conduct outside its territory that has or is intended to have substantial effect within its territory," so long as the exercise of jurisdiction is reasonable.[225] To determine reasonableness, the courts should consider, among other factors, "the extent to which the activity . . . has substantial, direct, and foreseeable effect upon or in the territory."[226]

2. Using Private Law to Recover for Transboundary Environmental Harm

The *Pakootas* case is consistent with a broad trend towards the transnationalization of domestic environmental law.[227] Aside from the rare instances such as this when States attempt to apply their domestic laws to an out-of-state defendant, States have also facilitated private transborder resolution in national courts through treaties on "reciprocal access to justice" on the principle of "non-discrimination."[228] Canada and the United States, for example, have concluded a reciprocal access treaty: the Uniform Transboundary Pollution Reciprocal Access Act.[229] It states that:

> a person who suffers or is threatened with injury to his person or property in a reciprocating jurisdiction caused by pollution originating, or that may originate, in this jurisdiction has the same

222. *See* Boundary Waters Treaty, *supra* note 26.

223. *See* Barcelona Traction, Light & Power Co., Ltd. (Belg. v. Spain), 1970 I.C.J. 50, ¶ 70 (Feb. 5).

224. *See* INT'L B. ASS'N, REPORT OF THE TASK FORCE ON EXTRATERRITORIAL JURISDICTION 124 (2009), *available at* http://www.ibanet.org/Article/Detail.aspx?ArticleUid=597D4FCC-2589-499F-9D9B-0E392D045CD1p.68 [hereinafter IBA REPORT].

225. RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES, § 402(1)(c) (1987).

226. *Id.* § 403(2)(a).

227. *See* Faure & Betlem, *supra* note 102, at 59–60.

228. *See* ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, *Recommendation of the Council on Principles Concerning Transfrontier Pollution*, Nov. 14, 1974, 14 I.L.M. 242.

229. The act is implemented on a state by state basis in the United States. The Canadian version can be found at http://www.ulcc.ca/en/us/index.cfm?sec=1&sub=1t4.

> rights to relief with respect to the injury or threatened injury, and may enforce those rights in this jurisdiction, as if the injury or threatened injury occurred in this jurisdiction.[230]

The court will apply the law where the suit is brought.[231] More generally, States have promoted the expansion of civil liability internationally through various treaty regimes dealing with environmental harm and mutual access to court systems in civil disputes between private parties.[232]

States use these procedures rather than the traditional rules of state responsibility or international dispute settlement in transnational disputes probably because they do not want to establish legal precedents that cause them to be responsible for private actors in their territories. The practical benefit of the dispute for States is that it localizes the dispute while avoiding disruptions in international relations that could affect other spheres of relations. Among the moral advantages of this approach, it confines the dispute to the true parties of the dispute and it conforms with the polluter pays principle. In situations where harm is caused by many actors and the victims are widespread, such as with transboundary air pollution, prevention-centered treaties are the appropriate legal solution.

Such private suits on transboundary environmental harm facilitated by treaties are part of what Tseming Yang has termed "the globalization" of environmental law:

> Advancements in global information flows have not only made it easier for countries to borrow legal and regulatory policy innovations from each other, they have also created closer linkages between international and national legal systems. Elements of national environmental law have been "uploaded" into international agreements and international legal norms have in turn been "downloaded" into national and regional systems.
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> . . . .

230. *Id*. § 3.
231. *Id*. § 4.
232. *See* INT'L L. ASS'N, SECOND REPORT ON TRANSNATIONAL ENFORCEMENT OF ENVIRONMENTAL LAW (2004) (discussing efforts to remove obstacles to transnational enforcement in the European Communities as well as global private law efforts).

> . . . In the brave new world of global environmental law, the focus is on "transnational legal processes, governmental and non-governmental networks, and judicial influence and cooperation across borders."[233]

III. THE CONTEXT FOR TRANSBOUNDARY ENVIRONMENTAL DISPUTE RESOLUTION IN ASIA

It would be an obvious mistake to attempt to unilaterally transplant western legal solutions to transboundary harm in Northeast Asia without considering the legal-institutional, military-strategic and cultural context for the treatment of environmental disputes. Appraising what may be well received in Northeast Asia at any moment in time is an especially difficult task and is exacerbated when considering the level of globalization and economic dynamism of the region. Below we discuss the status of environmental dispute resolution and some considerations from the legal culture and legal infrastructure that may shape the receptiveness of Northeast Asians to various proposals for legal resolution of transboundary air pollution problems.

A. Low Rate of Diffusion of Environmental Litigation

Compared to Europe and North America, there has been a relatively lower rate of development of environmental law and diffusion of environmental litigation within the national legal systems in the Northeast Asian countries. In Korea, a great many environmental disputes have arisen in relation to massive government development projects, such as dams, nuclear sites and road construction projects.[234] According to Lee Jae-Hyup, these disputes have quickly taken on national dimensions through environmental activism because of concern that the government is sacrificing environmental values for economic development.[235] Lee posits that "[t]he lack of public participation in the decision-making process for environmental policy and the forceful implementation of the policy on the part of bureaucrats also contribute to the generation of environmental disputes."[236] The Ministry of Environment administers an Environmental Dispute Resolution Commission, which has a very successful settlement

233. Yang & Percival, *supra* note 108, at 623, 625.

234. Lee Jae-Hyup, *Negotiating Values and Law: Environmental Dispute Resolution in Korea*, *in* LEGAL REFORM IN KOREA 199, 201, 203–08 (Tom Ginsburg ed., 2004).

235. *Id*. at 202.

236. *Id*. at 201.

rate for administrative conciliation of disputes other than the major government development projects.[237] However, many cases are still resolved informally through demonstrations or through political negotiations.[238] Lee believes that the prevalence of informal and political dispute resolution in environmental matters is due to frustration with the weak enforcement record of the courts.[239]

Examples of successful outcomes for plaintiffs in air pollution litigation[240] are relatively rare.[241] There are few environmental laws in South Korea with strict liability and none comparable to CERCLA (i.e., containing a procedural mechanism for private enforcement against an array of potentially responsible parties) that facilitate enforcement, remediation and compensation many years after the fact. Citizens may file a tort claim for damages from air pollution under Article 750 of the Civil Code of South Korea under which they need only prove a sufficient probability that the harm was caused by the tort.[242] Most recently, the Seoul Central District Court dismissed a claim filed by a seven-year-old asthma sufferer and twenty-two others against the city of Seoul and five car companies under Article 750.[243] The petition also requested compensation from the city of Seoul under Article 5 of the National Compensation Act, an injunction against the emissions from the cars in the city of Seoul and a demand to bring air quality to the level of WHO air quality guidelines.[244] In rejecting the tort claim, the court acknowledged the argument of the car companies that there was a failure to take into account China's contribution of urban fine particulate matter pollution, which precluded a finding of liability.[245]

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237. *Id*. at 204.

238. *Id*. at 203.

239. *Id*. at 210.

240. *But see* Supreme Court [S. Ct.], 72da1774, Dec. 10, 1974 (S. Kor.) (exhibiting an early case awarding damages to an orchard owner for sulfur dioxide from a neighboring power plant).

241. This is in contrast to the relatively long history of successful air pollution litigation in Japan. *See* Eri Oska, *Revaluating the Role of the Tort Liability System in Japan*, 26 ARIZ. J. INT'L AND COMP. L. 393 (2009). Eri Oska discusses the evolution of the State Administrative Compensation system for air pollution victims through successive litigation. *Id*. at 413–21. In 2007, Tokyo air pollution victims achieved a settlement with the State, the Tokyo metropolitan government, the Metropolitan Expressway Public Corporation, and seven companies that manufacture and sell diesel vehicles that requires the government to set up a health care subsidy system for asthma and bronchitis sufferers and ensure air quality, while the car companies must pay 1.2 billion yen in damages. *Id.* at 421.

242. Minbeob [Civil Act], Act. No. 471, Feb. 22, 1958, art. 750 (S. Kor.).

243. Seoul Central District Court [Dist. Ct.], 2007 kahab 16309, at 1, Feb. 3, 2010 (S. Kor.).

244. *Id*.

245. *Id.* at 30; *see also* Nathan Schwartzman, *Korea's First Major Air Pollution Law Suit to Conclude Soon*, ASIAN CORRESPONDENT.COM (Jan. 15, 2010), http://asiancorrespondent.com/27617/koreas-first-major-air-pollution-lawsuit-to-conclude-soon.

B. Adherence to Territorial Principle of Prescriptive and Judicial Jurisdiction

With the exception of the treaties the countries participate in for civil liability,[246] China, Korea and Japan have largely remained outside of the transnationalization of environmental law, specifically, and even civil law, generally. Overall, there is lower "interoperability" of national court systems in Northeast Asia. Even in commercial disputes, Asian plaintiffs generally do not participate in the grand American tradition of forum shopping. Strict reciprocity is still required for the recognition of foreign judgments in the three countries, discouraging foreign plaintiffs' recourse to justice in the region.[247] At the same time, the Chinese justice system, which is at a different stage of development, is in many ways struggling to attain enforceability of judgments on behalf of domestic plaintiffs.[248] Accordingly, foreign plaintiffs appear to be a long way away from enjoying the benefits of reciprocal justice for environmental claims in both countries. The authors are unaware of any environmental case to date in South Korea with a non-native plaintiff, although cross-claims have been filed in oil spill cases.[249]

In Northeast Asia, unilateralism exercised by an environmental domestic regulator could cause a far more serious disruption in foreign relations than has occurred in North America. State practice has consistently emphasized diplomatic channels to address transnational concerns, particularly in the field of transboundary pollution.[250] Also, South Korea's laws on public administration forbid independent international actions by South Korea's Ministry of the Environment. The

246. *See, e.g.*, International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto, Feb. 17, 1978, 1340 U.N.T.S. 61, 17 I.L.M. 546, *available at* http://www.imo.org/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-%28marpol%29.aspx [hereinafter MARPOL]; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 928 I.L.M. 657, *available at* http://www.basel.int/TheConvention/Overview/Textof theConvention/tabid/1275/Default.aspx [hereinafter Basel Convention]; Vienna Convention on Civil Liability for Nuclear Damage, May 21, 1963, 2 I.L.M. 727.

247. In the case of Korea, this is required in the Civil Code. Korean Civil Code, art. 217(4). In Japan there is a condition for a "mutual guarantee" equivalent to reciprocity in the Civil Execution Act, art. 200(v). In China, the reciprocity requirement is expressed in the Law of Civil Procedure of the People's Republic of China, Chapter XXIX, art. 268.

248. *See* Donald C. Clarke, *The Execution of Civil Judgments in China*, 1995 CHINA Q. 65, 66; *see also* Mo Zhang, *International Civil Litigation in China: A Practical Analysis of the Chinese Judicial System*, 25 B.C. INT'L & COMP. L. REV. 59, 90 (2002) (concerning China's difficulties with the execution of foreign civil judgments).

249. *See* Supreme Court [S. Ct.], 2008do1192, Apr. 23, 2009 (S. Kor.).

250. *See infra* Part III.C.

Foreign Affairs power has been granted to the Ministry of Foreign Affairs and Economy under the Government Organization Act, which it has exercised now until exclusively.[251] In terms of foreign relations law in South Korea, South Korea adheres to the territorial principle for judicial and prescriptive jurisdiction generally. The courts will exercise "international jurisdiction" only if a "substantial connection" exists between the parties or the case and the Republic of Korea.[252] The law that will be applied in an international tort case will be the law where the tort was committed, not where the damage occurred.[253] Express extraterritorial effect can only be found in South Korea's antitrust laws, based on effects in the Republic of Korea, which is similar to the effects principle of prescriptive jurisdiction in U.S. law.[254] This is consistent with the overall attitude of respect for legislative and judicial sovereignty in Northeast Asia.

C. Patterns of Northeast Asian Participation in Environmental Treaties

In order to understand the legal context for environmental dispute resolution under international law in Northeast Asia, it is helpful to review the state practice of the Northeast Asian countries in environmental treaties. China, Japan and South Korea have signed or joined various worldwide multilateral international environmental treaties that provide dispute resolution mechanisms as well as monitoring and non-compliance measures inducing compliance. Amongst themselves, the agreements that have relevance to regional transboundary environmental pollution in Northeast Asia are far more limited. As a general rule, they contain no binding obligations, monitoring or compliance procedures or adversarial dispute resolution mechanisms.

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251. Government Organizations Act, Law No. 1, art. 30 (July 17, 1948). Recently, however the LCGGA delegated authority for international cooperation in matters of climate change to the PCGG, an inter-agency, cabinet level body, *supra* note 82.

252. Kukjaesaboeb [The Act on Private International Law], Act No. 6465, Apr. 2001, art. 2(1) (S. Kor.).

253. INT'L L. ASS'N, SECOND REPORT ON ENFORCEMENT OF TRANSNATIONAL ENVIRONMENTAL LAW, GLOBAL PRINCIPLES OF JURISDICTION § 2.1 (2004). The report notes a trend of allowing transnational jurisdiction for torts in line with the preliminary draft Convention on Jurisdiction and Foreign Judgments in Civil and Commercial Matters submitted to the First Part of a Diplomatic Conference of the HCCH held in June 2001.

254. *See* IBA REPORT, *supra* note 224, at 68.

1. Multilateral Environmental Treaties to which the Three Countries are Members, Their Implementing Procedures and Their Dispute Resolution Provisions

Each of the three countries has joined various universal environmental conventions which can roughly be categorized into five categories of environmental concern: chemicals and hazardous waste, water pollution, air pollution, food safety and biodiversity. These treaties include the following:

Treaty	Subject Matter	Content
Stockholm Convention on Persistent Organic Pollutants[255] (the "Stockholm Convention")	Persistent and hazardous chemicals	Bans production, trade and use of persistent organic pollutants ("POPs")
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention)[256]	Hazardous chemicals and pesticides	Obligates the parties to ensure that the export of a chemical covered by the convention takes place only with the prior informed consent
Basel convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal[257] (the "Basel Convention")	Transboundary transfer of hazardous wastes	Controls the transboundary movement of hazardous wastes and hazardous recyclable materials and to promote the environmentally sound management of these wastes and materials
Convention on International Trade in Endangered Species[258] (the "CITES Convention")	Trade in endangered species	Identifies endangered species of wildlife and plants and establishes cooperation for the regulation of trade of the species through a permit system
Convention on Biological Diversity[259]	Conservation of bological diversity	Obligates parties to take measures to conserve biodiversity, cooperate on open access to genetic resources

255. *See* Stockholm Convention on Persistent Organic Pollutants, May 22, 2001, 2256 U.N.T.S. 119, 40 I.L.M. 532, *available at* http://chm.pops.int/Convention/ConventionText/tabid/2232/Default.aspx.

256. *See* Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, U.N. Doc. UNEP/CHEMICALS/98/17 (Sept. 10, 1998), *available at* http://www.pic.int/TheConvention/Overview/TextoftheConvention/tabid/1048/language/en-US/Default.aspx.

257. *See* Basel Convention, *supra* note 246.

258. Convention on International Trade in Endangered Species, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243.

259. Convention on Biological Diversity June 5, 1992, 1760 U.N.T.S. 79, 143; 31 I.L.M. 818 (1992).

Treaty	Subject Matter	Content
UN Convention on the Law of the Sea [260] ("UNCLOS")	Use of Global Marine Resources	Prevents, reduces and controls pollution from land-based sources, seabed activities subject to national jurisdiction, activities in the high sea area, dumping, vessels and the atmosphere
International convention for the Prevention of Pollution from Ships[261] ("MARPOL")	Civil liability for pollution from ships	Creates a civil liability regime for release of oil, chemicals, harmful substances in packaged form, sewage and garbage by ships into the marine environment
Montreal Protocol on Substances that Deplete the Ozone Layer[262] (the "Montreal Protocol")	Ozone-depleting substances	Phases out the production and consumption of chemicals that reduce atmospheric ozone levels and bans trade in them
Kyoto Protocol to the United Nations Framework Convention on Climate Change[263] (the "Kyoto Protocol")	Greenhouse gasses	Provides that developed countries commit to specific limits on their emissions of greenhouse gases
Cartegena Protocol on Biosafety[264] (the "Biosafety Protocol")	Living Modified Organisms	Requires countries intending to export a LMO to seek prior consent from importing country

a. Implementing Mechanisms

Traditional adversarial dispute resolution has been rendered far less significant in recent years by the trend toward non-compliance implementing procedures.[265] In the treaties above, non-compliance procedures exist alongside, but without prejudice to, adversarial dispute resolution clauses. Resolution according to non-compliance procedures has generally become the standard practice for dispute resolution in international environmental law, with countries rarely resorting to adversarial dispute resolution under international environmental treaties.[266]

260. *See* United Nations Convention on the Law of the Sea [UNCLOS], Dec. 10, 1982, 1833 U.N.T.S. 3, *available at* http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm.

261. *See* MARPOL, *supra* note 246.

262. *See* Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 1522 U.N.T.S. 3, *available at* http://www.unep.org/ozone/pdf/Montreal-Protocol2000.pdf.

263. *See* Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 148, *available at* http://unfccc.int/resource/docs/convkp/kpeng.pdf.

264. *See* Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Jan. 29, 2000, 2226 U.N.T.S. 208, *available at* http://bch.cbd.int/protocol/text/.

265. *See* TULIO TREVES ET AL., NON-COMPLIANCE PROCEDURES AND MECHANISMS AND THE EFFECTIVENESS OF INTERNATIONAL ENVIRONMENTAL AGREEMENTS (2009).

266. Some recent exceptions to this reluctance to use traditional international tribunals for transboundary environmental disputes are as follows: the MOX Plant case (Ireland v. UK), Case No. 10, Order of Dec. 2001, 41 I.L.M. 405 (dispute resolution under UNCLOS); Gabčíkovo-Nagymaros Project, *supra* note 135 (dispute resolution under the Treaty of Budapest); Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), Case Nos. 3 and 4, Order of Aug. 27, 1999, *available at* http://www

Non-adversarial, non-compliance procedures are designed to de-escalate disputes and solicit technical support for non-compliance at the early stages. Non-compliance can be self-reported or reported by another treaty party. Most often, a standing compliance committee will report back to the plenary Conference of the Parties, which has ultimate authority based on consensus.[267] Decisions by bodies vested with powers for judging non-compliance are often just recommendations, such as a suggestion to create a compliance plan or advice on implementation.[268]

The above multilateral environmental treaties contain a variety of compliance incentives, including both sanctions and positive incentives. Sanctions may include financial penalties or countermeasures primarily with respect to trade, such as those found in the Montreal Protocol and the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("CITES" conventions).[269] Positive incentives, which are far more universal, may include financial and technical assistance.[270]

b. Adversarial Dispute Resolution

Side-by-side with implementation procedures, the multilateral conventions ratified by the three countries allow traditional dispute resolution.[271] Although details of these provisions vary, the procedures are similar for most of the treaties. As a first step to resolve disputes, most of the environmental treaties above require that parties to a dispute first seek

.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/Order.27.08.99.E.pdf (dispute resolution under UNCLOS); Pulp Mills on the River Uruguay (Arg. v. Uru.), 2010 I.C.J. 135 (Apr. 20) (dispute resolution under the Statute of the River Uruguay), *available at* http://www.icj-cij.org/docket/files/135/15877.pdf.

267. See for example, point nine of the non-compliance procedures of the Montreal Protocol, available at http://ozone.unep.org/new_site/en/Treaties/non_compliance_procedure.php.

268. *See An Indicative List of Measures that Might be Taken by the Conference of the Parties in Respect of Non-compliance with the Protocol*, UNITED NATIONS ENVIRONMENT PROGRAM OZONE SECRETARIAT, http://ozone.unep.org/new_site/en/Treaties/indicative_list_on_non_compliance.php (last visited Sept. 27, 2012).

269. For a review of the history of trade restrictions under the Montreal Protocol, see Jacob Werksman, *Trade Sanctions under the Montreal Protocol*, 1 R. OF EUROPEAN COMMUNITY AND INT'L ENVTL. L. 69 (1992); Convention on International Trade in Endangered Species, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243.

270. *See, e.g.*, Montreal Protocol, *supra* note 262, art. 10. Laurence Boisson de Chazournes, *Technical and Financial Assistance, in* THE OXFORD BOOK OF INTERNATIONAL LAW 964 (Daniel Bodansky et al. eds., 2007) (discussing first generation financial assistance through MEA trust funds, as in the Basel Convention and in the CITES Convention, as well as cooperation between second generation financial mechanisms and bodies established MEAs).

271. About half of all MEAs contain adversarial dispute resolution clause alongside with and as an alternative to non-adversarial non-compliance procedures. CESARE P.R. ROMANO, PEACEFUL SETTLEMENT OF INTERNATIONAL ENVIRONMENTAL DISPUTES: A PRAGMATIC APPROACH 39 (2000).

amicable settlement through consultation or negotiation.[272] The Montreal Protocol, for example, provides that parties to a dispute may request mediation by a third party.[273] When these initial attempts fail, some of the conventions provide that the parties may agree to one or both of the following means of compulsory dispute settlement: (i) submission of the dispute to the ICJ and/or (ii) arbitration in accordance with procedures adopted by the relevant parties.[274] If the parties have not accepted either of the above means of compulsory dispute settlement, the conventions usually require that the dispute shall be submitted, at the request of any party, to conciliation; the conciliation commission makes a recommendation that must be considered in good faith.[275]

In some cases, a country has made a specific declaration rejecting certain dispute resolution mechanisms provided in a treaty to a certain degree. For example, China and South Korea declared that, amongst other things, they do not accept any of the procedures with respect to boundary limitations and disputes concerning military activities.[276] Further, it should be noted that some treaties and conventions require local remedies for a given dispute to be exhausted before such dispute is submitted to either the ICJ or arbitration proceedings.[277]

2. Bilateral Agreements of the Three Countries Concerning Shared Natural Resources

Separate from the multilateral environmental treaties and conventions discussed above, the three countries have entered into bilateral agreements concerning natural resources. Notably, among such bilateral agreements, no environmental agreement provides a legally binding dispute resolution mechanism.

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272. *See, e.g.*, Rotterdam Convention, *supra* note 256, art. 20, ¶ 1 ("Parties shall settle any dispute between them concerning the interpretation or application of this Convention shall be settled through negotiation or other peaceful means of their own choice"); Basel Convention, *supra* note 246, art. 20 ("In case of a dispute between Parties as to the interpretation or application of, or compliance with, this Convention or any protocol thereto, they shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.").

273. Montreal Protocol, *supra* note 262, art. 11.

274. *See, e.g.*, Rotterdam Convention, *supra* note 256, art. 20, ¶ 2.

275. *See, e.g.*, *id.* art. 20, ¶ 6.

276. UNCLOS, *supra* note 260, Declarations and Reservations, *available at* http://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXI/XXI-6.en.pdf (declaring that Section 2 of Part XV of UNCLOS, which provides compulsory procedures entailing binding decisions, does not apply to certain categories of disputes).

277. *See, e.g.*, UNCLOS, *supra* note 260, art. 295.

On the other hand, some investment-related bilateral agreements provide the classical two-step dispute resolution mechanisms as mandated by Article 33 of the UN Charter (i.e., amicable negotiation and diplomacy followed by arbitration).[278] With respect to procedural rules for arbitration, the Convention on the Settlement of Investment Disputes between States and Nationals of Other States[279] ("Washington Convention") and the UNCITRAL Arbitration Rules[280] have been adopted in some treaties and conventions, whereas other treaties and conventions are silent.[281]

a. South Korea and Japan

In 1965, under the Park Jung Hee administration, South Korea and Japan entered into a series of bilateral agreements concerning the loans provided by the Japanese government to the South Korean government and various other issues.[282] Among such agreements are the Exchanges of Notes Constituting an Agreement Concerning the Settlement of Disputes ("South Korea-Japan Dispute Settlement Agreement")[283] and the Agreement on Fisheries, with Annex, Exchanges of Notes, Exchanges of Letters, Agreed Minutes and Record Discussions ("South Korea-Japan Fisheries Agreement"),[284] each signed on June 22, 1965.

Under the South Korea-Japan Dispute Settlement Agreement, any dispute between the two countries shall be resolved "primarily through diplomatic channels."[285] If such efforts through these diplomatic channels fail, the two countries shall seek settlement by conciliation in accordance

278. Charter of the United Nations and Statute of the International Court of Justice, June 26, 1945, 59 Stat. 1031.

279. Convention on the Settlement of Investment Disputes between States and Nationals of Other States, Mar. 18, 1965, 575 U.N.T.S. 159.

280. Arbitration Rules of the United Nations Commission on International Trade Law, G.A. Res. 31/98, U.N. Doc. A/RES/31/98 (Dec. 15, 1976), *available at* http://www.uncitral.org/pdf/english/texts/arbitration/arb-rules/arb-rules.pdf.

281. *See, e.g.*, UNCLOS, *supra* note 260, art. 188(2)(c) (adopting the UNCITRAL Arbitration Rules).

282. *See, e.g.*, Treaty on Basic Relations between Japan and the Republic of Korea, Japan-S. Kor., June 22, 1965, 583 U.N.T.S. 44; Agreement on the Settlement of Problems Concerning Property and Claims and on Economic Co-operation (with Protocols, Exchanges of Notes and Agreed Minutes), Japan-S. Kor., June 22, 1965, 583 U.N.T.S. 173.

283. Exchanges of Notes Constituting an Agreement Concerning the Settlement of Disputes, Japan-S. Kor., June 22, 1965, 584 U.N.T.S. 147 [hereinafter South Korea-Japan Dispute Settlement Agreement].

284. Agreement on Fisheries (with Annex, Exchanges of Notes, Exchanges of Letters, Agreed Minutes and Record of Discussions), Japan-S. Kor., June 22, 1965, 583 U.N.T.S. 51.

285. *See* South Korea-Japan Dispute Settlement Agreement, s*upra* note 283, at 149.

with procedures to be agreed upon between them.[286] Since the scope of this agreement is undefined therein, it may be interpreted as being applicable to any disputes of whatever nature, including environmental disputes between the two countries, unless agreed otherwise by another binding agreement between them. Under the Fisheries Agreement, pursuant to which various fishing, economic and research zones and a joint commission have been established, any dispute regarding interpretation or application of the agreement shall be settled through diplomatic channels.[287] If such diplomatic efforts fail, the dispute shall be settled through an arbitration board of three arbitrators.[288]

In 1998, the countries entered into a new, supplementary fisheries agreement related to their Exclusive Economic Zones pending final delimitation of the zones under the UNCLOS convention.[289] The dispute resolution provisions in Article 13 stipulate non-compulsory arbitration.[290] It also establishes a "Korea-Japan Fisheries Committee" to consult, and render recommendations and binding decisions (if agreed to by representatives of both sides) to both Governments on the various matters relating to the implementation of the Agreement.[291]

On June 29, 1993, the two countries entered into an Agreement on Cooperation in the Field of Environmental Protection, with a comprehensive coverage of environmental issues-including pollution abatement and control, which comprises air pollution control, water pollution control, marine pollution control, soil pollution control, waste management and resource recovery, conservation of ecosystem and biodiversity, prevention of anthropogenic interference with the climate system and other environment protection and improvement.[292] Although the agreement does not provide a dispute resolution mechanism, it does create a joint committee on environmental cooperation.[293]

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286. *Id.* at 149–50.

287. The South Korea-Japan Fisheries Agreement, *supra* note 284, art. IX, ¶ 1.

288. *Id*. art. IX, ¶ 2.

289. Agreement between Japan and the Republic of Korea concerning Fisheries (with Agreed Minutes and Annexes). Kagoshima, Nov. 28, 1998, UN Treaty No. 48295 (entered into force Jan. 22, 1999) (registered on Feb. 2, 2011) (available in Korean at the website of the Ministry of Foreign Affairs and Trade of the Republic of Korea, http://www.mofat.go.kr/webmodule/htsboard/template/read/korboardread.jsp?typeID=6&boardid=25&seqno=274385); *see also* Sun Pyo Kim,. *The UNCLOS Convention and the New Fisheries Agreements in Northeast Asia*, MINISTRY OF FOREIGN AFFAIRS AND TRADE OF THE REPUBLIC OF KOREA, Apr. 2012.

290. *Id*. at 5.

291. *Id*.

292. Agreement on Cooperation in the Field of Environmental Protection, S. Korea-Japan, art. 4, June 29, 1993, 1752 U.N.T.S. 131.

293. *Id.* art. 3, ¶ 1.

b. South Korea and China

South Korea and China entered into the Agreement on Environmental Cooperation on October 28, 1993, under which they agreed to cooperate in various areas including the following pollution abatement and control, comprising air pollution control, water pollution control, coastal and marine pollution control, agricultural runoff and pesticide control, solid waste management and resource recovery, control of transboundary movement and disposal of hazardous solid wastes, and management of environment and natural resources.[294] In order to coordinate and facilitate cooperative activities under the agreement, a joint committee on Environmental Cooperation has been established.[295]

In 2000, the countries entered into a fisheries agreement in mutually disputed areas pending final delimitation of their Exclusive Economic Zones under the UNCLOS convention: The Agreement Concerning Fisheries Between the Republic of Korea and the Peoples Republic of China.[296] There are no dispute settlement provisions. It also establishes a "Korea-China Fisheries Committee" with the power to decide matters regarding the conservation and management measures and it can recommend to the Government of each Contracting Party measures relating to fishing access in Article 13.

c. China and Japan

China and Japan signed the Fishery Agreement on August 15, 1975,[297] and the Trade Agreement on January 5, 1974,[298] both of which cover certain environmental issues. However, neither of the agreements provides a binding dispute resolution mechanism. After the UNCLOS convention took effect, in 1997, the two nations entered into a new fisheries agreement in their declared Exclusive Economic Zones areas pending final delimitation of the zones: the Agreement Concerning Fisheries between

294. Agreement on Environmental Cooperation, S. Kor.-China, art. 3, Oct. 28, 1993, 1767 U.N.T.S. 71.

295. *Id.* art. 4, ¶ 1.

296. The Agreement Concerning Fisheries Between the Republic of Korea and the Peoples Republic of China, Beijing, Aug. 3, 2000, UN Treaty No. 14839 (available in Korean at the web-site of the Ministry of Foreign Affairs and Trade of the Republic of Korea, http://www.mofat.go.kr/webmodule/htsboard/template/read/korboardread.jsp?typeID=6&boardid=25&seqno=274386); *see* Kim, *supra* note 289, at 12.

297. Fishery Agreement (with Annexes, Exchanges of Notes, and Agreed Minutes), China-Japan, Aug. 15, 1975, 1103 U.N.T.S. 3.

298. Trade Agreement, China-Japan, Jan. 5, 1974, 1002 U.N.T.S. 89.

Japan and the Peoples Republic of China.[299] There are no dispute settlement provisions. It also establishes a "China-Japan Fisheries Committee" the power to decide matters regarding the conservation and management measures and it can recommend to the government of each contracting party measures relating to fishing access in Article 13.

D. Addressing the Environment Through Industrial Policy: Low Carbon-Green Growth

In Asia, a general and overarching concern with climate change has had a strong impact on domestic policies, even as the world has struggled to find a successor to the Kyoto protocol. In 2008, all three countries committed to substantial green stimulus packages against a backdrop of deepening and widening national policies to promote energy efficiency and renewable energy investment.[300] China had by far the largest green stimulus package of any country in the world, which has subsequently fostered extraordinary growth in its wind and solar energy sectors.[301] Implicit in these actions appears to be the assumption that there is a first-mover advantage for countries that develop green industries.

South Korea has also moved aggressively to formally place environmentally protective industries and technologies at the center of its economic strategy, as exemplified by the announcement of its national green growth strategy in 2008.[302] The strategy's long term implementation was institutionalized in the Low-Carbon Green Growth Act.[303] While mandating targets on energy efficiency and GHG emissions in multiple sectors, it requires the government to carry out the "greening" of the industrial base and to create new engines of economic growth based on green technologies.[304] In South Korea, the widespread notion that environmental protection erodes national or business-level

299. *See* Agreement between Japan and the People's Republic of China concerning fisheries (with agreed minutes and annexes), Tokyo, Nov. 11, 1997, UN Treaty No. 48293; *see also* Kim, *supra* note 289, at 18.

300. *See* UNITED NATIONS ENVIRONMENTAL PROGRAMME, THE GLOBAL GREEN NEW DEAL, POLICY BRIEF (2009), *available at* http://www.unep.org/pdf/A_Global_Green_New_Deal_Policy_Brief.pdf.

301. UNITED NATIONS ENVIRONMENTAL PROGRAMME, GLOBAL GREEN NEW DEAL: AN UPDATE FOR THE PITTSBURGH SUMMIT 3 (2009), *available at* http://www.unep.ch/etb/publications/Green%20Economy/G%2020%20policy%20brief%20FINAL.pdf.

302. UNITED NATIONS ENVIRONMENTAL PROGRAMME: OVERVIEW OF THE REPUBLIC OF KOREA'S NATIONAL STRATEGY FOR GREEN GROWTH (2010), *available at* http://www.unep.org/PDF/PressReleases/201004_unep_national_strategy.pdf.

303. *See* LCGG Act, *supra* note 41.

304. *Id.* art. 22.

competitiveness is being challenged outright by Green Growth's claim that environmental sustainability and growth are complimentary and synergistic.[305] These actions by the South Korean government have done much to focus attention on climate change and dampen criticism that curbing pollution is bad for industry, thus perhaps making a regional treaty on transboundary pollution more acceptable to the industry and the public.

IV. THE PATH TOWARD LEGALIZATION

The countries that contribute most regionally to transboundary air pollution, namely South Korea, Japan and China, should move on from purely diplomatic *fora* to discuss solutions for transboundary air pollution. These solutions should implement legal principles and procedures while employing dedicated, permanent public institutions that would publicly monitor commitments. In accordance with Principle 2 of the Rio Declaration, a regional agreement to control transnational air pollution must strike the appropriate balance between the right to economic development and the duty to prevent the use of its territory to harm to other countries.[306] Specifically, it must weigh China's burden of commitment as a developing country against the costs imposed on its neighbors by its emissions. But we believe this balance point lies substantially beyond the current level of mainly scientific cooperation and provision of technical aid to China by South Korea and Japan. It would be naive to assume that the technological solutions and regulatory standards devised for Europe and America will be adequate to protect contemporary Asia from the current environmental challenge due to its higher population density and dramatically accelerated pace of industrialization.

To have a realistic and effective response to pollution in Asia, affirmative legal limits must be placed on the polluting conduct of all three countries through concrete mutual commitments to reduce or maintain emissions. Such a treaty should be designed to optimally address the critical nexus between energy-demand, air pollution and global warming in Asia. Treaty and regulatory precedents from Europe and North America can be updated for these purposes to reflect the current state of atmospheric science and epidemiological knowledge on the long-range

305. According to the Presidential Commission on Green Growth ("Green Growth Korea"), the green growth strategy strives to find "new engines of economic growth" by tackling climate change and the energy crisis. *See Declaration of Low Carbon Green Growth as National Vision*: *From a History of Rapid Catch-up, Towards a Green Dream*, GREEN GROWTH KOREA, http://www.greengrowth.go.kr/?page_id=42478 (last visited Sept. 27, 2012).

306. Rio Declaration, *supra* note 137.

transport of small particulate matter and the emerging low-carbon economy.

A. Relevant International Environmental Law Norms

The globalization of environmental law is leading to significant strengthening of domestic environmental norms throughout Northeast Asia, which is opening up new possibilities for legal solutions to the regional environmental problems. International environmental law principles and common environmental norms in the region can assist at the negotiating stage of treaties to establish common ground before identifying rules. As Beyerlin stated, "Principles can be understood as norms that are first and foremost designed to give guidance to their future addressees for future conduct in rule-making processes as well as to shape the interpretation and application of rules already in existence."[307] Below, we suggest the international law principles that we believe will be helpful to establish an approach towards negotiations and to structure the institutional mechanisms of the treaty.

1. The Duty to Prevent Transboundary Environmental Harm and Principle 2 of the Rio Declaration

With reference to the *Trail Smelter* arbitration, in codifying customary international law on transboundary harm, the International Law Commission has stated that the "State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event minimize the risk thereof."[308] In other words, if there is a high risk of substantial harm outside of its jurisdiction due to activities within its own jurisdiction, a State must act in advance before the harm occurs. The *Trail Smelter* conclusions have been incorporated in modified form in Principle 21 of the Stockholm Declaration on the Human Environment.[309]

This well-recognized rule of customary international law was again articulated in Principle 2 of the Rio Declaration on Environment and

307. Beyerlin, *supra* note 106.

308. Rep. of the Int'l Law Comm'n, 53d Sess., Apr. 23–June 1, July 2–Aug. 10, 2001, U.N. Doc. A/56/10; GAOR, 56th Sess., Supp. No. 10 (2001).

309. Stockhold Declaration on the Human Environment. Adopted June 16, 1972 at the United Nations Conference on the Human Environment, Stockholm. UN Doc. A/CONF 48/14/Rev. 1 at 3 (1973) 11 I.L.M. 1416 (1972).

Development[310] and cited as the guiding principle for a number of major international environmental law treaties.[311]

Notwithstanding the conclusion of the *Trail Smelter* tribunal that Canada was responsible for the harm caused by the smelter, the contemporary expression of the "no harm" rule does not mean that States will always be internationally responsible for polluting activities of corporations within their borders. It means that States have a duty of care with respect to neighboring States, or, in other words, an obligation of "due diligence" to prevent transboundary harm. State responsibility will usually be based on breach of an obligation of due diligence in the regulation and control of such potentially harmful activities.[312]

> (2) The principle does not impose an absolute duty to prevent all harm, but rather requires each state to prohibit those activities known to cause significant harm to the environment, such as the dumping of toxic waste into an international lake, and to mitigate harm from lawful activities that may harm the environment, by imposing limits, for example, on the discharges of pollutants into the atmosphere or shared watercourses.[313]

The standard of care required by the due diligence obligation depends on the social and economic development level of the source country. At a minimum, however, the International Law Commission says it is an obligation of "good governance" that requires that the source State "should possess a legal system and sufficient resources to maintain an adequate administrative apparatus to control and monitor the activities."[314]

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310. Rio Declaration, *supra* note 137, princ. 2.

311. *See, e.g.*, The Environmental Law Programme of the International Union for the Conservation of Nature and Natural Resources in cooperation with The International Council of Environmental Law, Draft International Covenant on the Environment and Development, art. 13 (2004), *available at* http://www.i-c-e-l.org/english/EPLP31EN_rev2.pdf; Convention on Biological Diversity, June 5, 1992, art. 3, 1760 U.N.T.S. 143; United Nations Framework Convention on Climate Change, pmbl., May 9, 1992, 1771 U.N.T.S. 107; Agreement on the Conservation of Nature and Natural Resources, July 9, 1985, art. 20, *available at* http://www.aseansec.org/1490.htm; UNCLOS, *supra* note 260, art. 194 ¶ (2); LRTAP Convention, *supra* note 14.

312. HUNTER, *supra* note 140, at 475–76.

313. ALEXANDRE KISS & DINAH SHELTON, GUIDE TO INTERNATIONAL ENVIRONMENTAL LAW 91 (2007).

314. *Draft Articles on the Prevention of Transboundary Harm*, *supra* note 136, commentary to art. 3, ¶ 17.

2. The Precautionary Principle

While not enjoying the same status as a rule in international law as the duty to prevent transboundary harm, the precautionary principle has been widely adopted in environmental practice in Europe[315] and many multilateral environmental treaties.[316] The essence of the precautionary principle is "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[317] The precautionary principle has been incorporated into environmental regulation with varying strengths. The weakest version merely rebuts the presumption that action is unwarranted until it is proven that a risk is real; the strongest version would reverse the burden of proof on the person undertaking an activity to show that the activity was safe.[318]

3. Sustainable Development

Sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs."[319] Many would dispute that sustainable development is a legal norm; sustainable development in many ways resembles an economic paradigm in which normative goals are embedded. Notwithstanding, sustainable development has been recognized as a concept expressing "the need to reconcile environmental protection and economic development" by the International Court of Justice[320] and in various forms by national judiciaries.[321]

The sustainable development concept is often interpreted to include two underlying principles: intergenerational equity and intra-generational

315. Treaty Establishing the European Economic Community, Mar. 25, 1957, 294 U.N.T.S. 17, *amended by* Treaty on European Union, Title XVI, art. 130r, Feb. 7, 1992, 1759 U.N.T.S. 3, *available at* http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html.

316. United Nations Framework Convention on Climate Change, May 9, 1992, art. 3.3, 1771 U.N.T.S. 107, 165; S. Treaty Doc No. 102-38 (1992); Cartagena Protocol on Biosafety, *supra* note 264, art. 10; Stockholm Convention on Persistent Organic Pollutants, *supra* note 255; The Basel Convention, *supra* note 246.

317. Rio Declaration, *supra* note 137, princ. 15.

318. *See* Jonathan B. Wiener, *Precaution in a Multirisk World*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22, at 1509.

319. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT (WCED), OUR COMMON FUTURE 43 (Oxford Univ. Press 1987).

320. Gabčíkovo-Nagymaros Project, *supra* note 135, ¶ 140.

321. *See* Brian Preston, *The Role of the Judiciary in Promoting Sustainable Development: The Experience of Asia and the Pacific*, 9 ASIA PAC. J. OF ENVTL. L. 109 (2008).

equity. It is generally understood that sustainable development is more than an environmental mandate and rests on three pillars: environmental protection, economic development and social development.[322] Thus, sustainable development compels States to try to simultaneously eliminate poverty. In this regard, any treaty should hope to promote, or at least not prejudice, energy access for the poor.

4. Common but Differentiated Responsibilities ("CBDR")

Principle 7 of the Rio Declaration states:

> In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.[323]

This version of CBDR implies that when defining preventative obligations, both the different capacities of States and their different contributions to the problems need to be taken into account.[324] Although CBDR is not customary international law and is still controversial with some developed countries like the United States, it has helped facilitate consensus for many universal treaties, such as the Climate Change Convention (Article 3), the Montreal Protocol (Article 4) and the Stockholm Convention on Persistent Organic Pollutants (Preamble).[325]

Differences in economic development levels of the members of the region should not be a bar to a regional treaty. Under principles such as CBDR and Rio Principle 2, the structure of modern MEA soften take into account the different interests of developed and developing countries.[326] Among the treaty techniques for taking into account the differing needs to develop are grandfathering clauses, delayed time frames for compliance and various funds to subsidize technology transfer.[327] These devices are

322. *Id*. at 637.
323. Rio Declaration, *supra* note 137, princ. 7.
324. HUNTER, *supra* note 140, at 464, 340.
325. *See supra* note 316.
326. *See supra* note 171.
327. The differential treatment of developing countries under the UNFCCC is manifested in different mitigation requirements in Articles 4.1 and 4.2; Technology Transfer in Article 4.1; Assistance in Meeting Costs of Adverse Impacts in Article 4.4; and Financial Commitments in Article 4.3-5. United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, 165; S. Treaty Doc No. 102-38 (1992); U.N. Doc. A/AC.237/18 (Part II).

useful to treaty negotiators for ensuring a long-term stable solution by meeting the needs of both developing and developed country parties.

5. The Polluter Pays Principle

The polluter pays principle directs environmental authorities to design regulation with the goal of internalizing negative pollution externalities to reduce the social costs of pollution.[328]

One version states, "National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution with due regard to the public interest and without distorting international trade and investment."[329]

Originating within the OECD,[330] the polluter pays principle is generally held as a normative principle of environmental law in the European Union; however, the widening acceptance of the practice of emissions trading is one indication of the growing popularity of the logic of the principle.[331] Within Northeast Asia, the polluter pays principle seems to be accepted by Japan and South Korea, and China also seems to accept the principle with respect to regulating many internal sources of domestic pollution.[332]

B. Transparency, Public Participation in Decision-making and Access to Justice

Public participation in environmental decision-making and access to justice at the national level were the central concerns of Principle 10 of the Rio Declaration:

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328. HUNTER, *supra* note 140, at 484.

329. Rio Declaration, *supra* note 137, princ. 16.

330. ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, RECOMMENDATION OF THE COUNCIL ON GUIDING PRINCIPLES CONCERNING INTERNATIONAL ECONOMIC ASPECTS OF ENVIRONMENTAL POLICIES, ANNEX, 1A (1972), *available at* http://webnet.oecd.org/oecdacts/Instruments/ShowInstrumentView.aspx?InstrumentID=4&InstrumentPID=255&Lang=en&Book=False; ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, COUNCIL RECOMMENDATIONS ON THE IMPLEMENTATION OF THE POLLUTER-PAYS PRINCIPLE (1974), *available at* http://webnet.oecd.org/oecdacts/Instruments/ShowInstrumentView.aspx?InstrumentID=11&InstrumentPID=9&Lang=en&Book=False.

331. *State and Trends of the Carbon Market 2012*, THE WORLD BANK (2012), http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:23206428~menuPK:5575595~pagePK:64168445~piPK:64168309~theSitePK:4125853~isCURL:Y,00.html.

332. Michicazu Kochima, *Promoting 3Rs in Developing Countries: Lessons from the Japanese Experience*, IDE-JETRO (2008), http://www.ide.go.jp/English/Publish/Download/Spot/30.html.

> (e) Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.[333]

In matters of significant transboundary harm between States, the ILC also provides for disclosure to the public by the state, stating that a state "shall, by such means as are appropriate, provide the public likely to be affected by an activity within the scope of the present articles with relevant information relating to that activity, the risk involved and the harm which might result and ascertain their views."[334]

In international environmental policy-making, public participation has risen dramatically in the last decade as NGOs have been allowed to obtain observer status under various treaties.[335] At the domestic level, the emphasis has been on the right to take part in decision-making and enforcement through administrative procedures and judicial redress; in contrast, at the international level, the main purpose has been promoting increased public awareness and understanding of environmental issues.[336] While NGOs have certainly had a massive impact in the international law debates, they do not participate directly in the decision-making for treaties.

Recently, however, a rights-based approach has emerged in the international law-making arena that advocates citizen participation in decision-making and enforcement of environmental law through administrative procedures and judicial redress at all levels.[337] Even though it is still quite controversial, there have been "some signs that the norms and procedures applicable to participation in, respectively, the

333. Rio Declaration, *supra* note 137.

334. *Draft Articles on the Prevention of Transboundary Harm*, *supra* note 136, art. 13.

335. UN Releases List of Organizations Applying for Observer Status, UNFCCC NEWS REPORT, (2010), *available at* http://climate-l.iisd.org/news/unfccc-releases-list-of-organizations-applying-for-observer-status.

336. Jonas Ebbeson, *Public Participation*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 22, at 689–702.

337. *Id.* at 684.

international and national, context of decision-making are being integrated."[338]

The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters ("Aarhus Convention")[339] has gone the farthest in this regard by not only obligating States to guarantee such rights to their citizens, but by also providing substantial privileges in the procedures of the treaty's compliance committee to private parties.[340] NGOs are represented on the Compliance Committee and the public may initiate non-compliance procedures against State parties, although they do not participate in decision making.[341]

C. Three Foci for Cooperation: Co-benefits, Sustainable Energy Investment and Green Growth

Finally, we would like to suggest some additional concepts that could guide negotiators in setting the form of the treaty. First, wherever possible, the agreement should leverage co-benefits. Co-benefits exist when objectives of more than one policy can be satisfied with a single measure. The Intergovernmental Panel on Climate Change advising the UNFCCC has pointed out that substantial co-benefits exist when attempting to control conventional air pollution and reduce GHG emissions.[342] Any regional agreement should take optimal advantage of the cost savings from this scientific fact by using integrated assessment modeling to set reduction targets.

Secondly, a transboundary air pollution treaty should concentrate on early adoption of clean energy investment in Asia rather than end-of-the-pipe control. A treaty best promotes sustainable development by using alternative energy investment as a means of preventing long term pollution

338. *Id*.

339. Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, June 25, 1998, 2161 U.N.T.S. 447.

340. Svitlana Kravchenko, *The Aarhus Convention and Innovations in Compliance with Multilateral Environmental Agreements*, 18 COLO. J. INT'L ENVTL. L. & POL'Y 1 (2007).

341. *Id*.

342. Intergovernmental Panel on Climate Change, Fourth Assessment Report on Climate Change, Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change § 11.81 (Cambridge Univ. Press 2007); *see also* Kirk Smith & Evan Haigler, *Co-benefits of Climate Mitigation and Health Protection in Energy Systems: Scoping Methods*, ANN. REV. PUBLIC HEALTH 11, 21 (2008) ("Projects to improve efficiency and/or reduce GHG emissions from energy systems have the strongest co-benefits potential, i.e., ability to mitigate climate change and protect health.").

alongside the adoption of emissions reduction technology in current energy production. Alternative energy should be interpreted to embrace many sectors, including fuel cells and bio-energy for transportation. This will help avoid the entrenchment of polluting technologies that occurs due to the dependence of modern economic development on carbon energy infrastructure. Ideally, the treaty should positively incorporate incentives for clean energy investment in China similar to the Clean Development Mechanism ("CDM") under the Kyoto Protocol. Both Korea and Japan have significant experience in CDM projects in China already, where a well-laid implementing infrastructure exists.[343]

Finally, any agreement should be consistent with the ideal of green growth, namely the creation of economic value through environmentally protective actions. For example, the treaty could enhance intra-country investment and trade in emission reduction technologies and processes and renewable energy by incorporating a commitment to lower barriers to trade and investment in these technologies. Market mechanisms such as regional emissions trading for sulfur dioxide or mutual recognition of renewable energy credits could also be considered.

CONCLUSION

Among the many relevant lessons the Trail Smelter has for environmental governance in Northeast Asia, the first and foremost point is that it used the law to confront the transboundary air pollution problem. However rudimentary the arbitration procedure, the United States and Canada publicly acknowledged the reality of the harm and the need to take action and prevent harm to future generations. In doing so, the countries recognized that the law is the proper tool to realize society's goals for justice and protect the innocent victims of pollution. This is especially true in the case of widely felt public harms based on the consumption of international public goods.

Active prevention through regional commitments not limited to monitoring or technical aid is incumbent on the States of the region to fulfill their obligations under international environmental law to prevent transboundary harm. Whether through the legalization of an existing

343. *See* Craig Hart, Kenji Watanabe, Ka Joon Song & Xiaolin Li, *East Asia Clean Development Mechanism: Engaging East Asian Countries in Sustainable Development and Climate Regulation through CDM*, 20 GEO. INT'L ENVTL. L. REV. 645, 663–65, 669, 676 (2008) (discussing Chinese policies and regulations and projects by Japanese and Korean investors in China).

regional cooperative mechanism or the creation of a new institution, Korea, Japan and China should move beyond diplomatic and scientific *fora* and engage in substantive, precise legal commitments for the prevention of transboundary air pollution. Because of its immense historical influence, we have used the *Trail Smelter* case to introduce some successful regional environmental governance institutions on transboundary air pollution that share the characteristics of legalization. Without attempting to prescribe a particular organizational outcome, we have proposed a normative platform for the negotiation of a new agreement that may address the critical nexus between energy, air pollution and global warming.