



Routledge Contemporary Asia Series

AIR POLLUTION GOVERNANCE IN EAST ASIA

Edited by
Kuei-tien Chou, Koichi Hasegawa,
Dowan Ku and Shu-Fen Kao



Air Pollution Governance in East Asia

Focusing on Taiwan, South Korea, Japan, and Mainland China, the contributors to this book analyze various cases of air pollution within East Asia.

Air pollution in East Asia is a major health risk, which also has damaging impacts on the environment leading to impacts on society, economic growth, and welfare. While existing laws and policies have made progress in alleviating air pollution in each country in the region, the protection of favorable environments and the resolution of transboundary air pollution problems have become major targets of regional cooperation. Combining perspectives from social sciences and science, technology, and society studies, the contributors to this book examine both the technical and socioeconomic-political aspects of these challenges through a range of case studies from around the region.

The book is a valuable read for researchers and policymakers looking at air pollution and transboundary governance challenges within and beyond East Asia.

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1 Cosmopolitan governance to transboundary air pollution in East Asia

Shu-Fen Kao and Kuei-Tien Chou

East Asia suffered 35% of the global burden of mortality from ambient (outdoor) air pollution in 2015, a higher proportion than in any other region.¹ Air pollution in East Asia is not only a major health risk; it also has damaging impacts on the environment, which leads to significant economic and social consequences, dampening economic growth and reducing welfare. Although existing laws and policies have made progress in alleviating air pollution in individual East Asian countries, the protection of vulnerable ecosystems and human environments, together with the resolution of transboundary air pollution problems, has only recently become major targets of regional cooperation.

In common with other complex societal challenges—for example, climate change, genetically modified organisms (GMOs), chemical pollution, avian flu, or bovine spongiform encephalopathy (BSE)—air pollution was initially regarded as a simple environmental problem. Over time, however, perceptions of these issues changed, and they are now seen as hybrid challenges characterized by scientific uncertainty, invisibility, and transboundary risks. Changing perceptions have, in turn, facilitated a paradigm shift in environmental research. The shifting research paradigm has evolved to embrace a trend toward interdisciplinarity in tackling the challenges studied by environmental sociology (Chou, 2015).² Researchers who investigate air pollution and other environmental problems characterized by technological disputes and uncertainty increasingly emphasize interdisciplinary and transdisciplinary integration of research findings (Gross and Heinrichs, 2010). Their research is also increasingly viewed in the context of the risk society and risk governance (Sellke and Renn, 2010).

Social scientists have investigated the processes by which scientific knowledge about air pollution is produced and the contested construction of air pollution risk. Writing on the subject of the risk society, Beck (1986) argued for the emancipation of technology from science and a return to the sort of scientific autonomy envisaged by the Age of Enlightenment. Such an autonomous science would be unencumbered by the interference and deformation introduced by political decision-making. Jasanoff (1990) and Fischer (2000) also emphasized the importance of scientific knowledge in framing environmental regulations, politics and advocacy, as well as the types of scientific knowledge generated by epistemic communities. The intrusion of science into these areas has generated

contested discourse among environmental activists, civil society groups, and policymakers.

Lidskog et al. (2010) proposed different research approaches to the analysis of expertise and technocracy. These authors focused on how experts face up to public challenges, how scientific and local knowledge are produced, and the democratization of expertise. Nowotny (2003) described the deployment of socially robust knowledge to challenge the expertise of mainstream scientists, and Ottinger (2010) examined how civil society can produce scientific knowledge that challenges official scientific discourse or the scientific data released by polluters.

The management of air pollution is now entangled with these issues of contested expertise and competing scientific narratives, and management is further complicated by transboundary risks. On the one hand, the analysis of transboundary risks represents an emerging approach to air pollution risk governance. On the other hand, transboundary air pollution risks can no longer be investigated at the level of individual nations and need to be analyzed in the context of global or regional governance structures (Chou, 2015). *Air Pollution Governance in East Asia* interrogates the risks posed by transboundary air pollution in the context of four East Asian countries and analyzes cosmopolitan governance of such risks in the context of regional traits, political structures, and socioeconomic problems.

Bulkeley (2005) indicates that transboundary risks represent, in essence, environmental and technological issues that involve several levels of government, span multiple spatial scales, and diffuse across borders. New research methods are therefore needed to incorporate cross-disciplinary and large-scale issues of scientific uncertainty that attend the analysis and perception of issues such as air pollution and climate change in different countries and regions. In light of the tendency of nations to approach these issues idiosyncratically, there is a need to replace methodological nationalism with methodological cosmopolitanism. The vision and structure of social science research, therefore, need to move beyond traditional analyses framed by national norms and attitudes toward more cross-border approaches and a global vision (Beck and Sznaider, 2006; Beck and Grande, 2010). This major paradigm shift in the field of social science research would also have impacts on political and economic critiques of these issues, and on governance research (Chou, 2015).

The research methodology of *Air Pollution Governance in East Asia* adopts methodological cosmopolitanism to analyze transboundary air pollution risks that affect Japan, South Korea, Taiwan, and China. Within this framework, the contributing authors attempt to understand the characteristics of transboundary air pollution risk encountered by each country. In the chapters that follow, they move beyond the analysis of governance conflicts generated by internal, nation-state political and economic structures to investigate trans-national political, cultural, and geographical affinities that could form the basis of a common governance model.

There are research precedents that support our approach. Chang (1999) coined the concept of “compressed modernity” in their analysis of South Korea’s

exponential economic growth. This growth was based on the rapid adoption of Western models of economic development, which led to social imbalances due to the temporal compression of development and the pursuit of growth through technology. As a result, South Korea suffered a series of major economic disasters in the 1990s. Chou (2000, 2002, 2004) also adopted the concept of a “delayed, hidden high-tech risk society” to analyze the accelerated industrialization that Taiwan initiated in response to the threat of global competition. Taiwan aimed to catch up to other regional powers in terms of scientific and technological development, but the absence of scientific analysis of these developments resulted in tremendous hidden technological risks. Delays in governance and regulation only led to even greater social and political risks.

Han and Shim (2010) used the working hypothesis that techno-industrial development pathways adopted by East Asian countries led to them being vulnerable to a common set of socioeconomic and environmental risks. After analyzing large-scale risk and disaster experiences among East Asian countries, Han and Shim concluded that risks may therefore be “regional.” Furthermore, if transboundary air pollution is one of the deficiencies caused by the rush to modernization (Beck and Grande, 2010), it becomes worthwhile to adopt a perspective of “embedding the regional” in order to explore the transboundary characteristics of air pollutions. In particular, transboundary air pollution could be used as a template for the development of cosmopolitan governance among East Asian countries.

Technological elites and authoritarian technocracies in Taiwan, Japan, Korea, and China have dominated science and technological policy decision-making to put their countries on fast-track industrialization. These attributes have led East Asian countries to imitate the techno-industrial developmental models that led to the industrial and, later, socioeconomic modernization of the West.³ This rush for modernization led to relaxed regulations and a laissez-faire approach to technological risks (Chou, 2015).

The literature reviewed above leads to the conclusion that transboundary air pollution is inevitably a cosmopolitan issue (as constructed by Beck, 2002). Furthermore, controversies centered upon the use of technology and its impacts on nation-states have resulted in what a number of researchers refer to as cosmopolitan risk communities (Beck, 1996, 2009; Zhang, 2015). Regardless of whether the risks center on GMOs, BSE, nuclear accidents, or air pollution, these issues constitute transboundary and cross-border threats, and in this regard, the fates of South Korea, Japan, Taiwan, and China are tightly intertwined. In other words, even if these societies already had a certain degree of cosmopolitanization (Beck and Levy, 2013), the risks would have forced them to develop it further. Our goal is to try to understand the extent to which these East Asian societies have experienced cosmopolitanization to date and to investigate the possibility that they have already produced a cosmopolitanization risk collective (Beck and Levy, 2013). We also investigate whether the existence of risk communities among East Asian states could foster the emergence of transnational actors, activities, networks, institutions, or standards in the government or civil

society (Grande, 2006). Otherwise, they should be seen as latent cosmopolitan risk communities independent of one another, having to deal with the pressures and regulations of hidden cosmopolitan risk governance in their individual countries. If this were the case, would it result in the isolation, fragmentation, and fragility of risk management within individual countries, with the consequence that their respective governances and civil societies would lack the means to develop truly international cooperation and governance of transboundary issues?

The structures of risk governance that are unique to East Asia must be understood from the perspective of contemporary technocracy and regulatory science. Based on the operational experiences of regulatory science in western industrial countries, Jasanoff (2005) believed that contemporary technological affairs are dominated by technological bureaucracies. Such bureaucracies exert an invisible, sometimes monopolized domination over technological affairs in some countries, a state of affairs that disrupts democratic decision-making and generates substantial disputes. Facing all types of technological risks, modern societies have gradually evolved from being passive victims of technology to being able to provide mature reflections upon and critiques of alternative pathways toward sustainable development (Nowotny et al., 2001). In particular, some societies have developed robust responses to technologically mediated impacts on the environment, ethics, and health, and have deployed socially robust knowledge (SRK) to monitor and challenge questionable actions by governments (Jasanoff, 2003; Nowotny and Leroy, 2009; Delvenne, 2010). During this process, if citizens can break away from their passivity and systematically develop their risk knowledge, then they may grasp the opportunity to break through the monopoly of authoritative politics to shape a technological democracy.

Using the cosmopolitan theoretical framework, *Air Pollution Governance in East Asia* examines air pollution and risk governance in four East Asian countries: Japan, Taiwan, South Korea, and China. Contributors to this edited work employ perspectives derived from interdisciplinary social sciences, particularly environmental sociology, political science, and STS (Science, Technology and Society) to analyze cases of air pollution in this region. "Air pollution" is not merely a technical problem. It is embedded in complex social-political-economic structures within and among countries. On the one hand, the four East Asian countries considered in this volume have long histories of State Developmentalism, are largely dependent on the brown economy system for growth, have traditions of authoritarian expert politics. These characteristics have delayed meaningful governance of air pollution. On the other hand, because air pollution is a transboundary issue and systemic risk, it requires cosmopolitan risk governance among East Asian countries. Given the fact that governance in these countries takes place within nation-specific political and economic contexts, there exists a dilemma of how cosmopolitan governance can be achieved. Furthermore, scientific uncertainty over the attribution of pollution resulted in China being scapegoated and allowed the other three countries to shrink away from reflecting

on their own domestic sources of air pollution from manufacturing, energy-intensive industries, and automobiles.

To sum up, the objectives of *Air Pollution Governance in East Asia* are as follows: First, we plan to conceptualize and construct East Asian perspectives on air pollution governance by exploring various cases studies in this region, as well as discussing how the existing fossil fuel-based economy can evolve toward a more sustainable, less carbon-intensive one. Second, we aim to characterize the politicization of air pollution in each country and examine how transnational initiatives to monitor air pollutants are hindered by diplomatic tensions over security and other issues between Taiwan, Japan, South Korea, and China. Third, in addition to identifying the victims of air pollution at different scales (e.g., individual, neighborhood, national, international), the macrostructures of the polluters and pollution will also be investigated. Fourth, via case studies, contributors to this volume demonstrate the contested construction of air pollution risk controversies and discuss how the framing, scientific methodologies, and conflicts of interests between different camps hamper risk governance. Finally, we seek to provide suggestions for better governance models for the risks posed by air pollution, using lessons learned from East Asian experiences.

Following the introductory chapter, the book is structured into four parts: “Air Pollution Politics in East Asia,” “Regional and Transboundary Air Politics,” “National Air Pollution Battles,” and “Contested Risk Constructions of Air Pollution.” Part I deals with the politicization of air pollution in Korea and Taiwan. In Chapter 2, Kim and Ku’s chapter explores how particulate matter (PM) has become a politicized issue in South Korea. The authors illustrate specific aspects of contestation between social forces on the PM issue, and they go on to argue that prevailing populist responses to PM reflect a failure of environmental politics. This chapter analyzes air pollution politics by drawing on research into the relationship between the capitalist state and environmental imperatives. The authors conclude that in South Korea, policy innovation has been limited by its export-oriented fossil-fuel-based capitalist economy with its established connections between policy elites and industries.

In Chapter 3, Lee proposes an explanation rooted in political ecology for why PMs have received greater attention and become more politicized than other air pollutants. Using “state-nature” theory and “methodological cosmopolitanism,” Lee explains that PMs were politicized by a state-led “framing strategy” (composed of centralization and territorialization strategies). The result, according to Lee, was that fundamental countermeasures against PMs were established at a far from satisfactory level. Furthermore, it is difficult to come up with solutions to PM pollution via cooperation with neighboring countries. Lee argues that a cosmopolitan framing strategy must be developed that resists inadequate state-level framing strategies. Additionally, Lee believes that inter-urban solidarity against PMs must be encouraged among East Asian states before the fundamental root causes of PM pollution can be tackled.

Part II consists of three case studies, each of which deals with regional transboundary air politics. In Chapter 4, Jobin and his colleagues introduced

the notions of “air politics” and “air diplomacy” to address the issue of transboundary air pollutants blowing from China to Taiwan, and their influence on Taiwan’s domestic politics. The authors first describe academic discussions on air pollution that have taken place between Taiwanese and Chinese scholars. Despite the radical asymmetry of power between the two sides of the Formosa strait, these meetings have been conducted smoothly for a decade. But transboundary air pollutants remain a taboo within these discussions. Given the crucial importance of China to Taiwan’s domestic politics, the China factor should logically play an important role in domestic air politics. Nevertheless, as the authors show in the second part of the chapter, domestic anti-pollution activists have emphasized the air pollution burden imposed by heavy industries in south and central Taiwan. Although air pollution has been a significant concern, in particular during local elections, Jobin and colleagues found that transboundary pollutants from China played only a marginal role in the outcome of the 2018 local and municipal elections.

Chapters 5 and 6 explore power asymmetries among countries in the East Asian region, and how such asymmetries are interwoven with the challenges of transboundary air pollution governance. In Chapter 5, Lee and Paik illustrate how asymmetric power barriers have seriously hampered negotiations between China and South Korea. They introduce the concept of “atmospheric politics” to study efforts by governments, regional epistemic communities, and policymakers to frame transboundary air pollution governance in the context of transnational and multilateral frameworks of cooperation or conflict resolution. Asuka, in Chapter 6, documents the historical development of air pollution governance in Japan. As in Lee and Paik’s chapter, Asuka emphasizes how transnational initiatives to monitor air pollutants in East Asia have been hindered by diplomatic tensions between Japan, South Korea, and China centered on issues unrelated to air pollution.

Part III engages in the analysis of air pollution policy battles. Chapter 7 by Chou and Walther reveals that air quality and improvements in Taiwan have been unequally distributed. Highly polluted areas in Taiwan have experienced less improvement in air quality than those with less ambient air pollution. The areas with high PM2.5 pollution are more likely to be in low-income agricultural counties and cities, and these areas overlap with zones of low education and high crude death rates. Chou and Walther propose that Taiwanese government policies should be targeted and differentiated in accordance with local social and economic conditions to achieve a just and more equitable transition to improved air quality. They conclude that a philosophy of “just transition” can help to uncover key issues in developmentalism and injustices embedded in Taiwan’s neoliberalism. An emphasis on just transition may also force the Taiwanese government to confront the inequality perpetuated by the neoliberal model of economic development. The authors emphasize that policies and actions to secure a just transition may constitute the next phase of environmental governance that post-developmental states need to undertake.

In Chapter 8, Chou and her colleagues analyze China's 2017 "Coal-to-Gas Switch" campaign. They find that despite its eco-friendly aspirations, China's authoritarian government has not always made sound and sustainable policies. The major goal of the step Coal-to-Gas Switch campaign was to decommission all small coal-fired boilers and to replace them with natural gas in the Beijing–Tianjin–Hebei region. To force individuals' cooperation, the Chinese government formulated a discourse focused on the presumed responsibility of individual owners to abandon coal-fired boilers. However, the campaign was only able to achieve short-term successes in achieving its blue-sky vision. By pinning its hopes for reducing PM2.5 concentrations on the dumping coal burners, the Coal-to-Gas-Switch campaign led to insufficient heating for many households in the northern provinces. Unusually cold winter temperatures then forced Beijing to slow down the campaign. The authors conclude that although the Chinese government has made up its mind to improve air quality, individualizing responsibility for air pollution abatement has led to unsustainable policies.

In Chapter 9, Horihata employs a social-history approach to analyze the Pollution Health Damage Compensation Law enacted in Japan. Using data from interviews and questionnaires, together with an analysis of the Tokyo Air Pollution Litigation, which was itself a response to the Yokkaichi Pollution Lawsuit, Horihata explored how different policy camps attempted to cope with the changing nature of pollution risks. Among other things, the source of Tokyo's air pollution has changed from factory soot to automobile exhaust and compensation for pollution-associated medical expenses has been discontinued. The Tokyo Air Pollution Lawsuit, which demanded clarification of the responsibility of automobile manufacturers and compensation for medical expenses, was settled, but the political response thereafter was ineffective, and the manufacturers' responsibility for the pollution was obscured. This case study confirms that the politics of risk in Japan emphasize the non-decline of economic activities over the health of citizens.

Part IV, "Contested Risk Constructions of Air Pollution," includes case studies from South Korea, Taiwan, and Hong Kong. In Chapter 10, Kim points out that the Korean government has pursued air-pollution-control strategies that have varied from assigning individual responsibility to seeking international cooperation. In addition to developing international cooperation on transboundary air pollution and collaboration with industries to reduce domestic sources of particulate matter, the Korean government has promoted individual responsibility for reducing particulate matter emissions among its citizens. This individualized responsibility has reaped some reduction of particulate matter emissions through emergency measures, such as restricting the operation of old diesel vehicles, and by encouraging environmentally friendly behaviors among citizens.

Kim argues that because of an institutional culture that assigns primary responsibility for air pollution mitigation to the Ministry of Environment for Korea (MOEK), the role of the private sector in reducing particulate matter remains unclear and nascent at best. Most measures proposed for industry have

been recommendations without regulatory teeth. By contrast, state-owned power plants and individually operated diesel vehicles have been tightly monitored and regulated. Kim concludes that if it is to tackle particulate matter pollution successfully, the Korean government must pay much more attention to carbon-intensive industries, which is the country's highest energy user and biggest emitter of air pollutants.

In Chapter 11, Tu analyzes the role played by scientific research in political controversies over pollution and concludes that more scientific studies did not necessarily contribute to solutions in Taiwan. Polluters may exploit scientific uncertainty to manipulate and obstruct policy decisions. Tu argues that the effective incorporation of scientific knowledge into policy formulation demands a careful examination of how questions are framed, methodologies designed, research applied, and conflicts of interests in scientific knowledge generation resolved.

In Chapter 12, Wong proposes that the use of regulations and public health advisories to manage Hong Kong's air pollution requires the rethinking and improved identification of the sources of air pollution. She presents a grounded and neutral overview of the double exposure Hong Kong residents to transboundary air pollution and local emissions. Issues such as the increase of local emissions, relaxation of regulations, non-compliance with WHO standards, and future challenges all demand that regulations and policies be rethought. Finally, Wong provides recommendations for improved assessment methods and adaptive solutions that could increase the effectiveness of air pollution controls. She also proposes measures to formulate better advice to the government, with the ultimate goal of making government more responsive to local air pollution problems, and to encourage preventative and mitigative actions to maximize the quality of life.

Air Pollution Governance in East Asia views air pollution through an interdisciplinary lens, incorporating perspectives derived from political science, environmental sociology, geography, and economics. Subdisciplines covered across these domains include political and science communications, political economy, environmental, health, and economic policies, international relations, economic development, and law. This interdisciplinary breadth prevents *Air Pollution Governance in East Asia* from fitting neatly into the boundaries of a single discipline. One could argue, though, that this is a consequence of the complexity of the air pollution challenge.

As discussed by Lee and Paik (2020, and Chapter 5 of this book), asymmetric power relations remain a serious problem among East Asian countries. This asymmetry is not just seen in power relationships among governments but in the type and degree of domestic pressure exerted by citizens. For example, South Koreans may urge their government to settle with China over the problem of air pollution (including transboundary PM) while Chinese citizens complain about domestic pollution in China but follow Chinese state media in arguing that South Korea generates its own pollution (Lee and Paik, 2020: 133). The difference in political regimes—authoritarian in the case of China but democratic

in the case of South Korea, Taiwan, and Japan—contributes to the nurturing of different popular reactions and expressions of green nationalism. For these and other reasons, it is imperative to improve our understanding of dynamic interactions between contested constructions of air-pollution risk within and between East Asian countries. Such improved understanding is needed for the successful resolution of transboundary air pollution problems in this region. *Air Pollution Governance in East Asia* aims to broaden this understanding.

To solve its transboundary problems, it is critical in East Asia to establish a robust epistemic community that nurtures a common understanding of the scientific complexity of transboundary air pollution. This community should provide recommendations for improved regional governance of transboundary pollution that are based on scientific knowledge and expertise. Additionally, because asymmetric power relationships hinder cooperation, more egalitarian relationships among East Asian must be established before they can successfully tackle transboundary air pollution problems together. Achieving such cosmopolitan, egalitarian, and cooperative governance will be challenging. However, the contributors to *Air Pollution Governance in East Asia* are attempting to establish a basis for cosmopolitan cooperation and to understand the barriers to such cooperation. We believe that the new empirical findings offered in the chapters of this book will provide readers with fresh understanding of the complexities of transboundary air pollution in East Asia.

Notes

- 1 Source: www.ccacoalition.org/en/content/air-pollution-measures-asia-and-pacific (2021.01.13 access).
- 2 As Chou (2015) pointed out that there was a strong body of research that touched on this development, such as works by Yearley (2010), Levidow (2001), Reusswig (2010) research on the impact of acid rain and climate change on environmental sociology, and Wynne and Dressel's (2001) analysis of the transboundary risks of BSE. Tindall (1995), Schrecker (1995), and Gross and Heinrichs (2010) also discussed the interdisciplinary trends and challenges in environmental sociology.
- 3 However, beginning in 2000, authoritarian expert politics under the increasing trend toward technological democracy, has been faced with fierce challenges from an increasingly robust civil society (Chou, 2009). Whether it be the compressed modernity or stagnation resulting from the rush for modernization (Chang, 2010), or the hidden and delayed technological risk society (Chou, 2000, 2009), both explanations point to the antagonism between the government and civil society; and the reality is that over the long term, a more fragile risk and regulatory culture have developed in East Asia, as compared to western industrialized societies (Chou, 2015).

References

- Beck, Ulrich. (1986). Risikogesellschaft. In U. Beck (Ed.), *Auf dem Weg in einen andere Moderne*. Frankfurt: Suhrkamp.
- Beck, Ulrich. (1996). World Risk Society as Cosmopolitan Society? Ecological Questions in a Framework of Manufactured Uncertainties. *Theory, Culture & Society* 13 (4): 1–32.

- Beck, Ulrich. (2002). The Cosmopolitan Society and Its Enemies. *Theory, Culture & Society* 19 (1–2): 17–44.
- Beck, Ulrich. (2009). Critical Theory of World Risk Society: A Cosmopolitan Vision. *Constellations* 16 (1): 3–22.
- Beck, Ulrich and Grande, Edgar. (2010). Varieties of Second Modernity: The Cosmopolitan Turn in Social and Political Theory and Research. *British Journal of Sociology* 61 (3): 409–443. London: LSE.
- Beck, Ulrich and Levy, Daniel. (2013). Cosmopolitanized Nations: Re-imagining Collectivity in World Risk Society. *Theory, Culture & Society* 30 (2): 3–31.
- Beck, Ulrich and Sznajder, Natan. (2006). Unpacking Cosmopolitanism for the Social Sciences: A Research Agenda. *British Journal of Sociology* 57 (1): 1–23.
- Bulkeley, Harriet. (2005). Reconfiguring Environmental Governance: Towards a Politics of Scales and Networks. *Political Geography* 24 (8): 875–902.
- Chang, Kyung-Sup. (1999). Compressed Modernity and its Discontents: South Korean Society in Transition. *Economy and Society* 281: 30–55.
- Chang, Kyung-Sup. (2010). The Second Modern Condition? Compressed Modernity as Internalized Reflexive Cosmopolitization. *The British Journal of Sociology* 61 (3): 444–464.
- Chou, Kuei-tien. (2000). Bio-industry and Social Risk—Delayed High-tech Risk Society. *Taiwan: A Radical Quarterly in Social Studies* 39: 239–283.
- Chou, Kuei-tien. (2002). The Theoretical and Practical Gap of Glocalizational Risk Delayed High-tech Risk Society. *Taiwan: A Radical Quarterly in Social Studies* 45: 69–122.
- Chou, Kuei-tien. (2004). Monopolistic Scientific Rationality and Submerged Ecological and Social Rationality—A Discussion of Risk Culture Between Local Public, Scientists, and the State. *Taiwan: A Radical Quarterly in Social Studies* 56: 1–63.
- Chou, Kuei-tien. (2009). Reflexive Risk Governance in Newly Industrialized Countries. *Development and Society* 43 (1): 57–90.
- Chou, Kuei-tien. (2015). *Cosmopolitan Approach of Trans-boundary Risk Governance in East Asia*. Singapore: World Congress of Risk Analysis.
- Delvenne, Pierre. (2010). Parliamentary Technology Assessment Institutions as Indications of Reflexive Modernization. In *Society for Social Studies of Science Annual Meeting with JSSTS*. Tokyo: University of Tokyo Press.
- Fischer, Frank. (2000). *Citizens, Experts, and the Environment: The Politics of Local Knowledge*. Durham, NC: Duke University Press.
- Grande, Edgar. (2006). Cosmopolitan Political Science. *The British Journal of Sociology* 57 (1): 87–111.
- Gross, Matthias and Heinrichs, Harald. (2010). Moving Ahead: Environmental Sociology's Contribution to Inter-and Transdisciplinary Research. In M. Gross and H. Heinrichs (Eds.), *Environmental Sociology: European Perspectives and Interdisciplinary Challenges* (pp. 347–351). Dordrecht, Heidelberg, London, and New York: Springer.
- Han, Sang-Jin and Shim, Young-Hee. (2010). Redefining Second Modernity for East Asia: A Critical Assessment. *British Journal of Sociology* 61 (3): 465–489.
- Jasanoff, Sheila. (1990). *The Fifth Branch: Science Adviser as Policymakers*. Cambridge, MA: Harvard University Press.
- Jasanoff, Sheila. (2003). Technologies of Humility: Citizen Participation in Governing Science. *Minerva* 41 (3): 223–244.

- Jasanoff, Sheila. (2005). Judgment under Siege: The Three-body Problem of Expert Legitimacy. In P. Weingart and S. Maasen (Eds.), *Democratization of Expertise? Exploring Novel Forms of Scientific Advice in Political Decision-making*, Sociology of the Sciences Yearbook (pp. 209–224). Dordrecht: Kluwer.
- Lee, Taedong and Paik, Wooyeal. (2020). Asymmetric Barriers in Atmospheric Politics of Transboundary Air Pollution: A Case of Particulate Matter (PM) Cooperation between China and South Korea. *International Environment Agreements* 20: 123–140.
- Levidow, Les. (2001). Genetically Modified Crops: What Transboundary Harmonization in Europe? In J. Linnerooth-Bayer, R. E. Lofstedt, and G. Sjøstedt (Eds.), *Transboundary Risk Management* (pp. 59–90). London: Earthscan.
- Lidskog, Rolf, Soneryd, Linda, and Uggla, Ylva. (2010). *Transboundary Risk Governance*. London: Earthscan.
- Nowotny, Helga. (2003). Democratizing Expertise and Socially Robust Knowledge. *Science and Public Policy* 30 (3): 151–156.
- Nowotny, Helga and Leroy, Pieter. (2009). Helga Nowotny: An Itinerary between Sociology of Knowledge and Public Debate-Interview by Pieter Leroy. *Natures Sciences Sociétés* 17 (1): 57–64.
- Nowotny, Helga, Scott, Peter B., and Gibbons, Michael T. (2001). The Co-evolution of Society and Science. In *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty* (pp. 30–49). Cambridge: Polity Press.
- Ottinger, Gwen. (2010). Buckets of Resistance: Standards and the Effectiveness of Citizen Science. *Science Technology Human Values* 35 (2): 244–270.
- Reusswig, Fritz. (2010). The New Climate Change Discourse: A Challenge for Environmental Sociology. In M. Gross and H. Heinrichs (Eds.), *Environmental Sociology: European Perspectives and Interdisciplinary Challenges* (pp. 39–57). Dordrecht, Heidelberg, London, and New York: Springer.
- Schrecker, Ted. (1995). Environmentalism and the Politics of Invisibility. In M. D. Mehta and E. Ouellet (Eds.), *Environmental Sociology Theory and Practice* (pp. 203–217). Toronto: Captus Press.
- Sellke, Piet and Renn, Ortwin. (2010). Risk, Society and Environmental Policy: Risk Governance in a Complex World. In M. Gross and H. Heinrichs (Eds.), *Environmental Sociology: European Perspectives and Interdisciplinary Challenges* (pp. 295–322). Dordrecht, Heidelberg, London, and New York: Springer.
- Tindall, David B. (1995). What is Environmental Sociology? An Inquiry into the Paradigmatic Status of Environmental Sociology. In M. D. Mehta and E. Ouellet (Eds.), *Environmental Sociology Theory and Practice* (pp. 203–217). Toronto: Captus Press.
- Wynne, Brian and Dressel, Kerstin. (2001). Cultures of Uncertainty-Transboundary Risks and BSE in Europe. In J. Linnerooth-Bayer, R. E. Lofstedt, and G. Sjøstedt (Eds.), *Transboundary Risk Management* (pp. 121–154). London: Earthscan.
- Yearley, Steven. (2010). Understanding Responses to the Environmental and Ethical Aspects of Innovative Technologies: The Case of Synthetic Biology in Europe. In M. Gross and H. Heinrichs (Eds.), *Environmental Sociology: European Perspectives and Interdisciplinary Challenges* (pp. 97–108). Dordrecht, Heidelberg, London, and New York: Springer.
- Zhang, Joy Yueyue. (2015). Cosmopolitan Risk Community and China's Climate Governance. *European Journal of Social Theory* 18 (3): 327–342.



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Part I

Air pollution politics in East Asia



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2 Politics of air pollution

How fine dust has become a politicized issue in Korea

Minjae Kim and Dowan Ku

2.1 Introduction

Air pollution, especially the type involving fine dust, has become one of the most urgent environmental and political issues in South Korea (henceforth, Korea) over the past several years. At the end of 2013, almost every major media outlet began to fully cover this fine dust issue. Since then, fine dust has become the most salient environmental and health issue in Korea, and also one of the most important political agendas in the 2017 presidential and the 2018 local elections.

General air quality, however, has gradually improved in Korea after air quality policies were set and implemented beginning in the 1960s; furthermore, clean fuel-related and other regulations were introduced in preparation for international sports events in the late 1980s and again at the beginning of the 2000s. The first comprehensive air quality control program in the Seoul metropolitan area started in 2004. This plan significantly lowered the concentration of fine dust over the next decade.

In contrast to the lowering of air-quality indexes, public risk perception of fine dust has risen. Even though these environmental problems drew political responses from the government, countermeasures could not relieve the public discontent. According to Gallup Korea (2014, 2019), 57% of people felt “very uncomfortable with fine dust” in 2019 compared to 45% in 2014. Air pollution, specifically fine dust, has been an important political issue since the mid-2010s. How did this situation occur?

This chapter explores how fine dust became a politicized issue in Korea. We analyze the following research questions.

First, how did the fine dust issue become politicized? We review the history of air pollution and air quality policies from the 1970s to the 2010s in Korea. We also present some noteworthy events and issues related to this politicization process in recent years.

Second, what kinds of policies have been suggested to deal with fine dust and by whom? In other words, what policies have been implemented amid the contestation of social forces? In terms of pollution sources, the issue of “dust from China” versus “Korean domestic emissions” has formed the axis of the air