

[Teaching Note]



Air Quality Management Policy in South Korea:

Blind Men and the Elephant

This case depicts the policy challenges and strategies of Mi Young Hong, the Director of the Air Pollution Control Department in South Korea's Ministry of the Environment (MOE). Hong encounters various obstacles and opportunities as she design and enforce air quality regulations that directly affect the life and health of citizens. As students read, they will gain a concrete understanding of the possibilities as well as the frustrations that inevitably come with managing a controversial government agency in a political environment.

Why This is a Good Case to Teach

The case illustrates various uncertainties and challenges in different stages of policy processes – problem definition/identification, policy alternatives construction, policy making and implementation. It enables students to learn about different public policy characteristics (particularly protective regulatory policies), the political incentives deriving from the benefits and costs of different policies, and the importance of reliability and consistency of government policies when policy problems involve high levels of uncertainty and conflicts among stakeholders. The case also shows how the conflicting policy priorities and alternatives proposed by different government departments can aggravate confusion among citizens and fail to guide the behavior of target groups in desired ways. Finally, the case suggests the importance of having a long-term, holistic perspective on the broad outcomes of policy designs and implementation related to air quality, due to its unintended and disproportionate effects on certain groups.

This case is ideal for undergraduate and graduate instruction in areas such as public administration, public policy, and political science. Group discussion in the classroom can prompt students to think about the uncertainties involved in overall public policy processes and considerations for successful and responsible policy making.

Instructors can focus discussion on diverse dimensions of this case to supplement and elaborate their main class lessons. Discussion should encourage students to ponder diverse aspects of the policy problem and analyze the various dilemmas that policy makers face in the public policy process. Students can assume different points of views, including that of the general citizenry,

diesel car owners, various sub-sectors of business, and government officials in different departments. The case also illustrates the challenges policy makers face from media coverage, conflicting priorities among government agencies, and competing arguments based on varying levels of evidence – all of which can confuse citizens and legislators and in turn threaten policy failure.

The case allows instructors to emphasize the importance of a long-term view in the design, implementation, and evaluation of public policy. The diverse aspects of the policy problem demonstrate the utility of a holistic approach to achieve policy goals. Following analysis of the various issues and challenges that the case documents, classroom discussion can focus on strategic efforts to develop criteria for making policy decisions that affect various stakeholders in different ways.

Learning Objectives

Instructors can use the case to highlight the following characteristics of air quality policy:

1. Air quality is a **wicked problem** that affects various policy areas, including the environment, health, transportation, industry, and energy. Rittel and Weber (1973: 160) identified 10 characteristics of wicked problems:
 - 1) There is no definitive formulation of a wicked problem.
 - 2) Wicked problems have no “stopping rule” (i.e., no definitive solution).
 - 3) Solutions to wicked problems are not true or false, but good or bad.
 - 4) There is no immediate and no ultimate test of a solution to a wicked problem.
 - 5) Every (attempted) solution to a wicked problem is a “one-shot operation”; the results cannot be readily undone, and there is no opportunity to learn by trial and error.
 - 6) Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into a plan.
 - 7) Every wicked problem is essentially unique.
 - 8) Every wicked problem can be considered a symptom of another problem.
 - 9) Any discrepancy related to a wicked problem can be explained in numerous ways.
 - 10) The planner has no “right to be wrong” (i.e., there is no public tolerance of experiments that fail).
2. Clean air is a **common pool resource**, so effective regulatory enforcement to prevent exploitation (i.e., tragedy of the commons) is essential. Thus, stakeholders and interest groups, such as car industries and oil refineries, often try to thwart efforts to place the issue on the policy agenda and may even capture political actors and, through them, loosen regulations or enforcement efforts.

3. Air quality policy is often characterized by *protective regulatory policy*, which involves conflict among groups or coalition of groups, resulting in winners and losers. Instructors can utilize this case to introduce Lowi's (1972) policy typology. While various factors shape policy agendas, explanations focusing on the characteristics of the policy itself can offer significant insights and understanding regarding the policy process.
4. Instructors may also introduce Wilson (1980)'s policy framework of *distributed costs and benefits*. He suggested a fourfold distinction according to the concentration and dispersion of the benefits and costs associated with a policy, which depend on who bears the costs and who benefits. Instructors can facilitate the discussion by asking who the beneficiaries and the cost-bearers are. Benefits from clean air are spread out while the costs are concentrated to relatively identifiable groups at least in the short-term. In other words, the benefits from clean air will be broad and unidentifiable, but the costs are relatively narrowly concentrated to a segment of a society such as workplaces, diesel car owners, and fossil fuel industries in the short-term. Wilson argues that this situation entails *entrepreneurial politics*, in which the organization of beneficiaries is weak while opponents are well organized.
5. This case offers a good example of how *different types of uncertainty* are involved in the policy processes. Air quality management requires considerable efforts not only because it is highly technical in diverse fields (e.g., environment, health, and safety), but also because it involves great uncertainty about their solutions. In this case, there is little consensus on the causes, consequences, and solutions of PM 2.5 concentration. Van Bueren, Klijn, and Koppenjan (2003) identifies three types of uncertainty: (1) Cognitive uncertainty from a lack of scientific knowledge, (2) Strategic uncertainty when many stakeholders with different point of views are implicated, and (3) Institutional uncertainty when policy decisions are made in different places and without appropriate support.
6. Air quality policy entails a high level of *cognitive uncertainty* due to a lack of information and scientific knowledge about problems, solutions, and predictions. The mackerel scandal was one incident that reflects cognitive uncertainty about the causes of worsening air pollution and fine particles (Chung and Yoon 2016). The diverging diagnoses that result from cognitive uncertainty often engenders fragmented policy measures to deal with the multiple causes of a problem. In this case, for example, the government had responded to air quality problems over the years with a series of stopgap measures that lacked rigorous verification based on evidence. In the U.S., by contrast, criteria for monitoring and analyzing air quality have been relatively clear since the Clean Air Act was enacted in 1970 (Fowler 2014). Under the resulting federal-state partnership, states have responsibility to implement air pollution control plans set by the EPA (Fowler 2014).
7. The different views and perspectives that stakeholders and decision-makers hold about a problem such as air pollution can create *strategic uncertainty* regarding policy

alternatives. The controversy surrounding diesel in South Korea led to a debate among government departments about overall energy and tax policy. Conflicts over policy priorities among diverse government authorities can lead in turn to *institutional uncertainty*. Oftentimes, situations characterized by strategic and institutional uncertainty can turn into the “*dialogues of the deaf*” when people with different perceptions do not listen to one another, and their opposing beliefs simply grow stronger. Dialogues of the deaf are particularly likely when the boundaries between science and politics are blurred (Van Eeten 1999).

8. *Air quality policy has important implications for social equity*. Environmental inequality and the disproportionate impacts on the disadvantaged, children, and the elderly need to be considered in both policy design and implementation. Exposure to fine particulate matter (PM_{2.5}) can have significant effects on health, causing diverse diseases related to respiratory and cardiovascular problems to which the disadvantaged, children, and the elderly are particularly vulnerable (World Health Organization 2006; Morello-Frosch 2011). Therefore, it is important for policy makers to consider the adverse effects of PM exposure and the accompanying environmental risks that stem from the biological susceptibility and social vulnerability of the disadvantaged, poor, and elderly.
9. Policy making is often hampered by *short-termism* on the part of decision-makers. Politicians are rarely willing to adopt policies that are politically unpopular or less urgent, in large part because such policies offer few opportunities for credit claiming. Instead, politicians and decision-makers tend to make specific, winnable decisions and pursue goals that are relatively easy to achieve. Many policy problems nevertheless require patient, holistic approaches to address in full. This is especially true for air quality policies designed to reduce concentration rates of fine particulate matter (PM). This policy problem requires a long-term view about PM’s influence on health, energy, and industrial production, as well as support from citizens and collaboration within government. Industrial structure, energy consumption, and related regulatory systems are all intertwined and cannot be changed in a short period of time. Yet politicians and decision-makers prefer short-term measures as they would like to see a dramatic, immediate effect to claim credit within their terms in office.
10. Furthermore, *the transboundary nature* of air pollution limits the effectiveness of nation states’ efforts to address the problem (Shapiro 2016). In the case, air quality policy requires close international cooperation with China and East Asia. This kind of international dialogue inevitably gets complicated by other tensions, and joint decisions tend to be time consuming and uncertain.
11. *The role the media* play in the policy process becomes more important when a high level of uncertainty exists about a policy problem and possible solutions. The relationship between media discourse and public opinion has been studied for a long time, especially regarding the changes in opinions over time and the gap between certain groups (see,

among others, Gamson and Modigliani 1989). The media can have a powerful impact on public opinion by emphasizing the seriousness and immediacy of a policy problem, but it can also fan controversy and deepen uncertainty. Instructors can encourage discussion about the positive and negative impact of media in policy discourse. Media is a double-edged sword in policy processes. It can influence policy by serving as a watchdog or guard dog over government action, or it can serve as a mouthpiece influential elite groups (Donahue et al. 1995).

12. As seen in Figure 5, media attention to air quality in South Korea has increased dramatically since 2013. However, the media rarely addressed the gap between popular perceptions and objective data, thereby failing to serve as an informant, critic, or mediator in air quality policy debates. Despite increasing public concerns, for example, OECD data showed that actual concentration rates of fine particle matter in South Korea decreased since the early 2000s, and the percentage of population and the mean population exposed to PM_{2.5} were relatively stable since 1998 despite a slight increase in recent years (see Figures 6A and 6B). An experimental study of the perceptions of global warming shows, however, that controversy in the media decreases news consumers' assessments of scientific certainty but that this uncertainty can be mitigated when consumers are offered basic scientific context (Corbett and Durfee 2004).
13. *Citizens* can be an important agent in shaping government policies. In the case of air quality policy, support from citizen is particularly essential, since many clean air efforts require substantial changes in lifestyle in the long term.
14. Instructors can encourage students to propose short-term, mid-term, and long-term objectives of air quality policy and measures to achieve them in the short-term, mid-term, and long-term. **Short-term policy interventions** within 1-2 years include applying rotation systems for vehicles and workplaces, strengthening the monitoring for the places for the vulnerable, converting diesel to Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) vehicles, and establishing air filter systems in public spaces.

Although the time frame is still short, **interventions with medium time frame** include setting up a reduction target, controlling old diesel vehicles, providing special care for the vulnerable, and strengthening the international cooperation with China to deal with hazardous particles. **Policy interventions to take effect in the long-term** include using environment-friendly energy, replacing old facilities or equipment, and controlling emissions from diverse pollution sources, but these take time to see visible effects to the current constituents. In addition, government can induce people to use more public transportation and reduce reliance on their cars, as many countries with advanced environmental policy do.

15. Another fruitful discussion can be made with a question of how to ensure policy success. First, compliance is a big challenge in policy implementation in any policy area. Although legitimate enforcement actions should follow in cases of non-compliance, a multitude of barriers plague the implementation of air quality policy. Because air quality policy usually spans diverse policy areas, such as environment, health, transportation, industry, and energy, successful implementation is challenging. Policy measures without effective enforcement risk becoming seen as token gestures by the public.

Effective enforcement depends on the credibility of government, i.e., the regulator, as well as responsible action by the regulated or target group. Effective enforcement requires improved monitoring and assessing whether target groups are meeting their responsibilities as well as ensuring that the results do not disproportionately harm the disadvantaged, children, and the elderly (Konisky 2009). Enforcement may be either voluntary or mandatory but cooperation and partnership through continuing open conversation with target groups and other stakeholders is essential. Compiling accurate data and sharing it with stakeholders, along with improving compliance with enforcement instruments through rewards and punishments, are equally important contributors to effective enforcement.

Discussion Questions

Class discussion may cover the following topics in order to help students consider various issues involved in air quality policy as well as alternatives or strategies that are relevant and practical to address this policy issue in different ways.

Assuming that students are all familiar with the case, instructors can plan the discussion around a scheduled time distribution or delve into one or two topics according to the class's specific learning objectives.

Sample time distribution (90 minutes discussion)

- Topic 1: General Strategy – 10 minutes
- Topic 2: Policy Problems – 15 minutes
- Topic 3: Partnership and Support – 15 minutes
- Topic 4: Conflicting Perspectives – 15 minutes
- Topic 5: Policy Impact – 20 minutes
- Topic 6: Closing – 15 minutes

Topic 1: General Strategy

The discussion can begin with identifying key decision makers. The case features three levels of decision makers: (1) The President, (2) Legislators, and (3) Staff/Executives in charge of air quality such as Director Hong in MOE.

- What issues and challenges do the decision makers face in dealing with air pollution?
- Why is it so difficult to achieve the intended goal of improved air quality?
- What kinds of uncertainty appear in this case?

Topic 2: Policy Problems

Instructors can next ask students about the defining characteristics of air pollution as a policy problem. Citizens want government action but may not comply with them if the policy measures cause confusion and a huge burden.

- What are the reasons why business lobbies tend to dominate debates about air quality policy?
- Who speaks for the public interest in those debates, and why are they having difficulty getting a hearing?
- Why do citizens remain skeptical of government actions to address air quality?
- Who are the primary beneficiaries and cost-bearers of the air quality policy measures discussed in the case? What might change the dynamics among them?
- What might the government do to increase compliance from the cost-bearers?

Instructors may present the following two-by-two matrix regarding this case and ask students to fill the box.

For example, by implementing regulations for diesel-powered cars:

	Widely distributed		Narrowly focused	
	Benefits	Costs	Benefits	Costs
Car owners who do not use diesel	x			
Citizens who already purchased diesel cars	x			x
Industries using alternative energy			x	
Mass transportation industries		x		
Diesel-powered industries				x
Diesel car companies				x
Oil refineries				x
Coal-burning power plants				x
(Add more)				

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Topic 3: Partnership and Support

This part of the discussion can explore different perspectives on the same problem. Instructors can present Figure 4 to show the different stakeholders featured in the case, and then ask students:

- Discuss the different points of view of citizens, diesel car owners, businessmen, and government officials in different departments.
- Why might legislators be skeptical of air quality policies?
- Why and how might Director Hong expand the APCD's influence?
- How and by whom might the government adjust its priorities among contradictory policy alternatives?

Topic 4: Conflicting Perspectives

- What are some reasons why the MOE and the MOTIE are in conflict on the same issue?
- How might the government resolve its own internal policy conflicts? For example:
 - Whose strategies or approaches make more sense to you, Director Hong (MOE) or Director Kwon (MOTIE)? How would you defend each one's preferred approach?
 - Do you think that an integrated department or agency would be better suited to addressing the problem than separate agencies? Why or why not? In other words, what advantages and challenges do fragmented or integrated departments have in dealing with air pollution?
 - Why might Director Hong have sought to build partnerships?

Topic 5: Policy Impact

Instructors can encourage students to explore different ways to evaluate the impact of air quality policy, including in terms of effectiveness as well as distributive equity. In doing so, instructor may refer to Figure 5 and Figures 6A-6B, and engage students in discussing the role of the media in policy processes, including the upsides and downsides of media discourse.

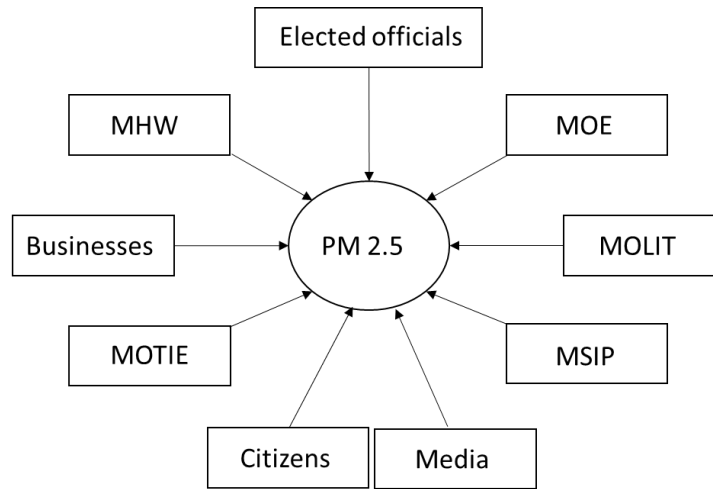
- Which demographic and socioeconomic groups can be regarded as vulnerable populations when the government regulates air quality? How might the policy affect each of them?
- Is it possible to achieve effective AND equitable regulatory enforcement?

- How might government deal effectively with non-compliance by regulated entities?
- What are some different ways to assess the impact of environmental regulations?
- What roles should popular perceptions and expert data each play in evaluations of policy impacts?
- What roles can the media play in the policy process?
- How might the government engage the media effectively to communicate policy-relevant data?

Topic 6: Closing

Discussion of this case can wrap up by developing criteria or critical considerations for making policy decisions that impact various stakeholders in different ways.

- How would you assess Director Hong's proposals to the Minister of the MOE for next year? In particular, what do you think of her three priorities for next year and her roadmap for the future?
- If you were the Minister of the MOE, which of Hong's proposals would appeal most to you? Why?
- How might policy advocates, analysts, or civil servants motivate elected officials to pursue policy interventions that aim for long-term impacts?



Note: Ministry of Environment (MOE); Ministry of Land, Infrastructure and Transport (MOLIT); Ministry of Science and ICT (MSIP); Ministry of Trade, Industry, and Energy (MOTIE); Ministry of Health and Welfare (MHW)

Figure 4. Diverse stakeholders and perspectives on the policy problem

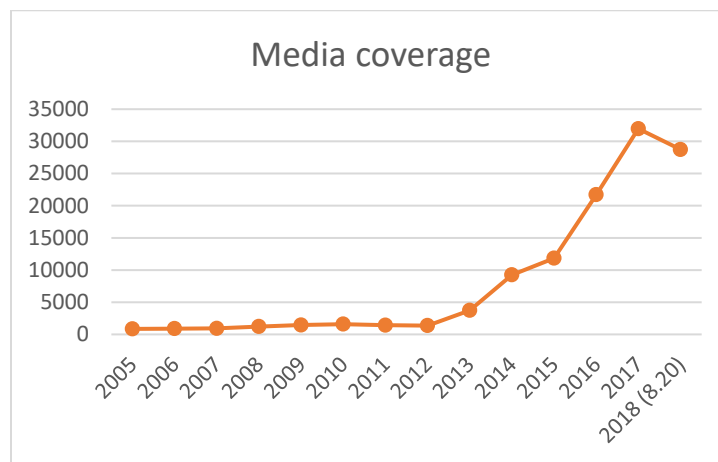


Figure 5. The number of media articles about PM (Searched and downloaded from <https://www.bigkinds.or.kr> provided by Korea Press Foundation)

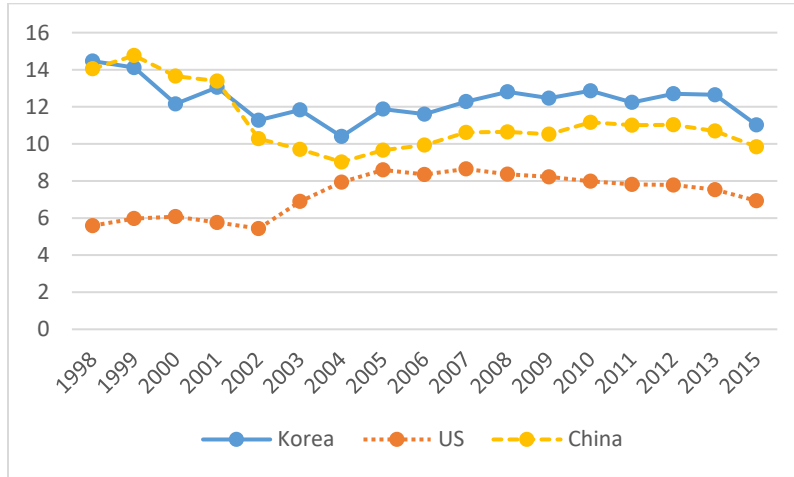


Figure 6A. The percentage of population exposure to PM2.5
(The Economic Consequences of Outdoor Air Pollution. OECD. June 9, 2016)

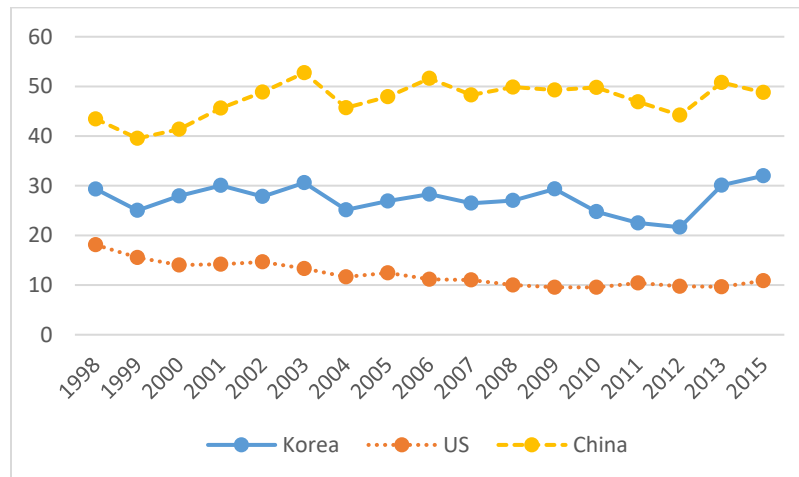


Figure 6B. The mean population exposure to PM2.5 (Data from the OECD Stats
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