

## **PATHWAYS TO INDUSTRIAL ENVIRONMENTAL IMPROVEMENT IN THE EAST ASIAN NEWLY INDUSTRIALIZING ECONOMIES**

Michael T. Rock

*Department of Economics and Management  
401 Rosemont Ave. Hood College  
Frederick, MD 21701 USA  
Phone: 301-696-3756 Fax: 301-696-3771  
rock@hood.edu*

### **ABSTRACT**

With the possible exception of Singapore, governments in the East Asian newly industrializing economies (NIEs) pursued 'grow first clean-up later' environmental strategies. Once governments in the East Asian NIEs turned to environmental 'clean-up' they did so in highly similar ways. Each enacted landmark environmental legislation, created command and control environmental agencies, and promulgated tough air and water emissions standards. Despite the similarities in 'clean-up' strategies, available evidence suggests that there is wide variability in the performance of these new environmental regulatory agencies. Most analysts attribute differences in performance to differences in 'political will'. In this view, when governments had the 'political will' to impose duties on polluters, polluters invested in pollution control and ambient environmental quality improved. But when governments lacked the 'political will' to impose duties, tough air and water emissions standards were not enforced and ambient air and water quality continued to deteriorate.

But why have some governments among the East Asian NIEs been able to muster the 'political will' to impose duties on industrial polluters while others have not? Unfortunately, there is virtually no research on this important topic. This paper addresses this lacuna by reporting the results of six case studies (Indonesia, Malaysia, Thailand, Singapore, Taiwan, China and China) which focus on the 'politics of industrial pollution' control. Each case study is based on extensive interviews of those involved in pollution management, the collection of data on the effectiveness of pollution management policies, and the integration of both with the limited existing literature on this topic. These case studies along with an introductory and concluding chapter form the basis of a book in progress on this topic.

This summary paper demonstrates that openness to trade and investment and the free flow of new policy ideas regarding the relationship between development and the environment facilitated enactment of landmark environmental legislation, establishment of new environmental agencies, and the setting of tough air and water emissions standards. The paper also demonstrates that the effectiveness of new environmental agencies depended on the 'domestic politics of industrial pollution', the nature of the state, and on the abilities of managers in new environmental agencies to find creative solutions to particular pollution problems that attracted the support of political leaders. How these three factors interacted

largely determined whether or not governments were able to muster the ‘political will’ to impose duties on polluters.

The case studies also suggest that there are multiple political pathways to industrial environmental improvement among the East Asian NIEs. Singapore adopted a semi-authoritarian top-down approach to pollution management. There a strong autonomous state, unencumbered by international or domestic political pressures, with technocratic and pragmatic decision-making structures created a traditional command and control environmental agency in the early stages of its industrial revolution (1970). This agency was empowered to impose duties on polluters and its decisions were integrated with those granting promotional privileges to investors (the Economic Development Board) and those granting promoted firms access to space in the country’s industrial estates (the Jurong Town Corporation). Because of this, Singapore has been able to grow while sustaining OECD levels of ambient air and water quality.

Taiwan, China and Malaysia adopted a more democratic route to better industrial pollution management. In Taiwan, China, democratization spawned an environmental protest movement, increased pressures from an influential overseas Chinese community, and political parties all too willing to blame the ruling party (the KMT) for a deteriorating environment. Faced with these pressures, senior leaders of the ruling party recognized that unless they began cleaning up the environment, they might lose both international and electoral support. This led to investment in an increasingly effective command and control regulatory agency over the objections of those in one of the country’s premier industrial policy agencies (the Industrial Development Board in the Ministry of Economic Affairs). Interestingly enough, over time, even this agency learned how to engage in environmental improvement. It is now engaged with the Industrial Technology Research Institute in a state of the art research project on the energy, materials, water and pollution intensities of Taiwanese industry. It is also subsidizing a domestic environmental goods and services industry that it expects to become export-oriented.

In semi-democratic Malaysia, a rapidly growing water pollution problem from crude oil palm (CPO) mills created fears within government that it might lose support among indigenous rural Malays to opposition political parties. Given the import of rural constituencies and the rural Malay vote to the ruling party’s dominance in Malaysia’s politics, this sparked passage of the Environmental Quality Act of 1974 and creation of a Department of the Environment (DOE) in 1975. Following a highly publicized pollution incident at one CPO mill, the DOE began cracking down on CPO polluters. But the DOE did not just crack down on polluters, it worked with industry leaders and a palm oil research institute to identify economically viable abatement technologies. As these technologies came on stream, the DOE tightened emission standards, ultimately severing the link between CPO production and CPO pollution. This contributed to significant improvement in water quality.

But democratic government or democratization has not always translated into improved environmental outcomes. In Thailand, democratization led to capture of the state by business interests and a proliferation of political parties that spawned fragile and weak coalition governments that have been unable to establish policy cohesion on most issues, including the

environment. When combined with ‘money politics’, the financing by big business of rampant ‘vote-buying’ in the Thai countryside, politicization of core macro-economic agencies, and the use of public office for rent-seeking, successive democratic governments in Thailand have been unable to muster the ‘political will’ to create more effective pollution management policies.

Where governments are less strong and autonomous, subject to patron-client ties, and less prone to public/international pressures (China and Indonesia), effective pollution management policies depended on the ability of innovative managers in weak environmental regulatory agencies to craft targeted approaches to pollution management that also attracted important political support. Innovative managers in BAPEDAL, Indonesia’s environmental impact management agency devised a unique public disclosure program (PROPER) for getting large industrial water polluters to ‘voluntarily’ reduce their water emissions. This program also attracted the support of the president. Similarly, following a highly publicized pollution incident, the mayor of one of the country’s largest cities, Semarang, created his own environmental regulatory agency and empowered it to monitor and enforce locally developed emissions standards. In China, innovative managers in the Urban Division of the State Environmental Protection Administration (SEPA) developed a simple rating, ranking, and public disclosure scheme for reporting on the environmental performance of the country’s major cities. Over time, this program attracted the attention of mayors of those cities. But effective implementation of the program also required city level environmental agencies and representatives from SEPA to devise an implementation program that was consistent with a bargaining model of policy implementation used by city governments in China to implement new policies.

Taken together, these case studies demonstrate that the ‘politics of pollution management’ in the East Asian NIEs is vibrant, complex, and dependent on the ability of political leaders to see why improved pollution management might be in their political interests. But it is also dependent on the ability of innovative managers in relatively new environmental agencies to craft targeted and piecemeal approaches to pollution management that attracts and sustains the support of important political leaders.

## **1. INTRODUCTION**

Prior to the financial/currency crises now affecting most of the East Asian newly industrializing economies (NIEs), this group of economies was at the leading edge of the development processes of shared growth, urbanization, industrialization and globalization.<sup>1</sup> For the last thirty-years, the East Asian NIEs grew much faster than their counterparts in the rest of the world (World Bank, 1993). Rapid growth was accompanied by rapid declines in the incidence of poverty, illiteracy, and infant mortality and by low inequality of incomes (Campos and Root, 1996). It was also accompanied by rapid urbanization that contributed to the rise of the region’s mega-cities—Bangkok, Jakarta, Seoul, and Shanghai—which dominate the social,

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<sup>1</sup> The East Asian NIEs include South Korea, Hong Kong, Taiwan, China and China in Northeast Asia and Singapore, Indonesia, Malaysia and Thailand in Southeast Asia.

political, environmental, and economic landscapes of the East Asian NIEs. All of this occurred in tandem with significant industrialization and rising openness to the world economy. Because of this, the East Asian NIEs are more industrialized, diversified and integrated into the global economy than their counterparts elsewhere (World Bank, 1996).

These long-term developments are of world historic importance. They demonstrate that, under the right circumstances, there can be little trade-off between growth, equity, poverty reduction, meeting basic human needs, and integration into the global economy. In several instances (South Korea, Taiwan, China, Thailand and, perhaps Indonesia), they also demonstrate that shared growth/global integration can be accompanied by an expansion of human rights, human freedoms and democratic rule. But clearly all is not well in the East Asian NIEs. The current financial/currency crises affecting most of these economies have exacted a high human toll and highlighted severe weaknesses in economic management. Several of these economies suffer from substantial human rights violations, a weak press, and the absence of or attenuated democratic rule. Except for Singapore, each of these political economies is also plagued by endemic corruption and rent seeking (Khan and Jomo, 2000). Despite improvements in some ambient environmental quality indicators in some cities in some of the East Asian NIEs—particularly in Singapore, Taiwan, China, Malaysia, South Korea—these economies face daunting environmental challenges that are likely to get significantly worse before they get better (Rock, Angel and Feridhanusetyawan, 2000). High energy and toxic intensities of economic activity along with air pollution from mobile sources and households has resulted in cities in this region having some of the poorest air quality in the world (Lohani, 1998). Low rates of treatment of sewage and nearly indiscriminate dumping of industrial wastes into surface and ground water has seriously undermined the quality of both. High levels of air and water pollution exact a large human health cost and undermine the livability of the region's mega-cities (World Bank, 1992; World Bank, 1997a; and World Bank, 1997b). They have also earned the economies in the Asia region the unenviable reputation of being among the most polluted on earth (Lohani, 1998).

## **2. RESPONSES OF GOVERNMENTS TO DETERIORATING URBAN ENVIRONMENTS**

How have governments in the East Asian NIEs responded to the deteriorating urban environments and rising pollution loads that attended their post-1960 high-speed urban industrial growth? Have most, if not all governments, simply followed the 'grow first clean up later' environmental strategies adopted by countries in the OECD in an earlier period? Is this why environments are so 'dirty' and polluted? Or did some clean up pollution as growth occurred? Once governments responded to industrial pollution, how did they do so? Did they just follow practices established elsewhere in the OECD, including Japan? Or did they draw on their own institutions of growth to devise unique strategies for controlling and reducing industrial pollution? How effective have environmental policies been in reversing the decline in urban environmental quality? Finally, why has there been so much variation in governmental responses to deteriorating environments?

Unfortunately, there are too few good answers to these questions. To begin with, there are relatively few studies on industrial pollution management in the East Asian NIEs, and of those that do exist, most are largely descriptive and/or highly critical. Several trace the evolution of environmental law and regulations (O'Connor, 1994) and analyze the sources of weak

industrial pollution management systems (World Bank, 1993, 1994a and 1994b). Others examine the reasons for and environmental consequences of governments' apparent 'grow first clean up later environmental' strategies (Chun-Chieh, 1994; Smil, 1993; Eder, 1996; Bello and Rosenfeld, 1990; Komin, 1989). Still others describe popular responses to growing urban environmental stress (Cribb, 1990 and Lee and Ho 1999).

Of those studies that attempt to assess the effectiveness of industrial pollution management in the East Asian NIEs, findings are mixed. Neither Panayotou (1999) nor Spofford (1995) found much evidence that environmental policies in China had much impact on the behavior of polluters or on ambient environmental quality, yet Wang and Wheeler (1994) concluded that water emissions charges in China have had significant impact on industrial water emissions. Similarly, even though the World Bank (1994) has generally concluded that Indonesia's environmental management agency, BAPEDAL, has had little impact, it credits two of its innovative programs—a Clean Rivers Program (World Bank, 1994: 133) and a public disclosure program, PROPER (Afsah and Vincent, 2000)—with making a difference. More recently, Aden and Rock (1999) have demonstrated how a nascent city level environmental management agency in Indonesia used a limited monitoring and enforcement program to get manufacturing plants to begin to invest in pollution abatement. Aden, Kyu-Hong and Rock (1998) have also shown how the actions of a much tougher monitoring and enforcement program in Korea led manufacturing plants there to make significant investments in pollution abatement. And Vincent, Ali and Rahman (2000) have demonstrated how the Department of the Environment in Malaysia successfully worked with an industrial policy agency, the Palm Oil Research Institute of Malaysia, to effectively break the link between water pollution from crude palm oil processing mills and palm oil production.

### **3. TAKING ANOTHER LOOK AT POLLUTION MANAGEMENT: CONCEPTUAL FRAMEWORK**

These limited examples of recent 'success' suggest that it might be particularly fruitful to take another and different look at the evolution of industrial pollution management in the East Asian NIEs. But this begs a larger question, what kind of conceptual framework should be used to shed more insight into the evolution of environmental regulatory policies, particularly those affecting industrial pollution management, in the East Asian NIEs? Because there is no readily apparent and simple answer to this question, in the end adoption of a framework first used by Haggard (1990) to examine the evolution of economic policy in the East Asian and Latin American NIEs seems most appropriate.

His focus was on explaining why the NIEs chose different development strategies and why those strategies persisted and shifted over time (Haggard, 1990: 23). The focus here is on explaining why a number of the East Asian NIEs—China, Taiwan, China, Indonesia, Singapore, Malaysia and Thailand—chose different industrial pollution management strategies and why those strategies persisted and changed over time. He cautioned against imputing too much purposiveness and design to economic strategies that emerged, at least in part, by default, trial and error and compromise and took years to crystallize (Haggard, 1990: 23). Trial and error was also an important element in pollution management in each of the East Asian NIEs. Although it is possible to impute purposiveness, at least to environmental management agencies in our cases, pollution management in each was also subject to compromise and plagued by more or less

inconsistency, particularly in Thailand, China and Indonesia. He argued that strategies, which consist of packages of policies, might usefully be disaggregated because different policies involve different cleavages and conflicts (Haggard, 1990: 23). Much the same can be said for industrial pollution management in the East Asian NIEs. While attempts to build comprehensive command and control pollution management agencies with capabilities to enforce tough emissions standards have not worked in all the NIEs—particularly China, Indonesia, and Thailand—and took time before they worked in others—Korea, Taiwan, China, Singapore, and Malaysia—more focused policies have been quite successful. Turning to explanations of economic policy change in the NIEs, Haggard (1990: 28) argues that four distinct and overlapping processes affect policy change. They include the evolution of international market and political pressures, developments in domestic politics, the evolution of the structure and institutions of the state, and the development and spread of ideas. The same could well be said about the evolution of industrial pollution management policy in the East Asian NIEs.

#### **A. International Pressures for Cleaner Environments]**

International market pressures, particularly commodity price shocks and political events, such as wars, that sever access to markets, were seen by Haggard as spawning import substitution industrialization efforts in each of the NIEs (Haggard, 1990: 29-31). There is growing evidence that each of the East Asian NIEs is facing mounting international environmental market pressures that are provoking environmental policy responses. Sometimes new environmental market access requirements take the form of environmental certification—such as ISO 14000 certification and eco-labeling of products for sale in OECD markets (Roht-Arriaza, 1995). Sometimes they take the form of international environmental supply chain requirements by multi-national buying groups such as when The GAP imposes wastewater recycling requirements on their developing country suppliers (Interviews in Singapore, 1996). Sometimes environmental shocks simply reflect negative reactions of buying publics and stock markets to ‘bad’ environmental news of individual products and firms in the East Asian NIEs (World Bank, 2000: 60-63). Because the economies of the East Asian NIEs are so open to trade and investment, it is not surprising that public officials, in ministries of industry, science and technology institutes and national standards agencies, are worried that these pressures may limit abilities to export (Rock, 1996). Nor is it surprising that private sector officials in peak business associations and in leading companies in the East Asian NIEs have similar fears.

How have governments and private sectors reacted to these new international environmental market pressures? Governments in each of our case study economies are busy developing ISO 14000 certification programs and eco-labeling programs. In the private sector, peak business associations and leading companies are hard at work creating local Business Councils for Sustainable Development and supporting business oriented environmental NGOs such as the Thailand Environment Institute in Thailand. While it is too early to tell whether these international environmental market pressures will actually ultimately affect behavior, or whether efforts by governments and private sectors to overcome those pressures matter, there is little doubt that public and private officials are worried that the pressures might matter. At least one recent study (Aden and Rock, 1999) confirms that these worries have been translated into manufacturing plant level investments in abatement expenditures.<sup>2</sup>

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<sup>2</sup>Aden and Rock (1999: 367) show that environmental market pressures affect the plant level pollution abatement

But international environmental market pressures are not viewed in entirely negative terms by policy-makers in the East Asian NIEs. They are also seen as providing opportunities. As public officials in several of the NIEs stated in recent interviews, firms in their economies learned how to meet the price, quality, and on time delivery requirements of international buyers, because of this they can learn how to meet new environmental requirements more quickly than firms elsewhere. This ability might even give the export-oriented firms of the East Asian NIEs at least a short-term competitive advantage. Public officials in at least one East Asian NIE—Taiwan, China—have gone a step further by recognizing, prior to the recent financial/currency crises, that the demand for environmental goods and services in Southeast Asia is likely to grow quite fast over the next quarter century. Because of this, they are promoting, with selective incentives, the creation of a domestic environmental goods and services industry. They have also established explicit quantitative export targets by country by year for this new industry. Openness to trade and investment alongside late industrialization also opens the possibility that firms in the East Asian NIEs can take advantage of newer and cleaner technologies imported from Japan and the industrialized West. There is already some evidence of this in the pulp and paper industry (Wheeler and Martin, 1992).

As with economic policy change, international environmental political pressures also appear to be rising and provoking responses by governments in the East Asian NIEs. Preparations for international conferences—such as the Stockholm Environmental Summit in 1972, the Brundtland Commission in 1987, and the United Nations Conference on the Environment and Development in Rio in 1992—required governments to produce position papers outlining the relationship between the environment and development in their economies. Preparation of these papers attracted the attention of political elites in the East Asian NIEs and created a political space for those in and out of government who wanted to see more environmentally friendly pollution management policies. International treaties such as the Montreal Protocol, the Convention on International Trade in Endangered Species and the Kyoto Protocol require governments in this region to work out their own positions on these treaties and decide whether to sign them. Sometimes, as in Taiwan, China, economies that are not permitted to be signatories to these treaties have taken independent action to demonstrate that they too are good environmental citizens in the community of nations. Sometimes multilateral economic agencies such as Asia Pacific Economic Commission (APEC) also force reluctant governments to reconsider environmental policies.

As Jessica Mathews (1997) so eloquently demonstrates, the growth, spread, and development of international civil society adds to these more formalized international environmental political pressures. International NGOs regularly lobby governments in the East Asian NIEs and international organizations working in those economies to save particular species, protect forests rich in bio-diversity, and to ‘green’ bilateral and multi-lateral agreements. These pressures have, in more than one instance, led governments in the East Asian NIEs to respond. Governments in the East Asian NIEs, like their counterparts in the rest of the world, have also had to contend with the more recent efforts by environmental NGOs in developed and developing countries to ‘green’ the WTO, the IMF, and the World Bank. Pressures from international aid donors also affect domestic environmental policies by requiring environmental impact assessments for large infrastructure projects, by providing loans for environmental capacity building, and by integrating the environment into all aspects of lending. Occasionally,

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expenditures in a sample of manufacturing plants in Indonesia.

as in BAPEDAL's PROPER Program, donor support can make a critical difference (Afsah and Vincent, 2000). Sometimes international political pressures can exert more profound influences on domestic environmental policy. In at least one case—Taiwan, China—loss of international recognition and pressure from overseas Chinese, particularly in the U.S., ultimately helped push a reluctant government to recognize that it might be able to use significantly improved environmental practices and performance to burnish its international credentials.

## **B. Domestic Pressures for Cleaner Environments**

But, as Haggard (1990: 43) says about economic policy change, it is not likely that international pressures by themselves will always prove sufficient to bring about policy change. This is also true about environmental policy change. Much depends on the way governments, domestic firms, and other actors in civil society respond to those pressures. What conditions those responses? To begin with, as O'Connor (1994: 5) and others (Hettige, Mani, and Wheeler, 1998 and World Development, 1992) have argued, the relationship between the environment and development (as manifest by rising per capita incomes) exhibits a consistent inverted Kuznets U pattern. Environmental quality initially worsens as incomes per capita increase, but past some point, this worsening reaches a peak and then declines as environmental quality improves. The worsening in environmental quality attending initial increases in per capita incomes reflects both shifts in the composition of output from less to more pollution intensive activities (chemical intensive agriculture, industry, and within industry a shift to more pollution intensive industries) and the lack of effective environmental regulation. But as incomes continue to increase, the composition of output begins to shift again, this time to less pollution intensive activities (services) that reduce the burden of economic activity on the environment.

Experiences in the East Asian NIEs are largely consistent with this broad pattern. There is little doubt that the early structural shifts in the composition of production in the economies of the East Asian NIEs contributed to rising portions of inverted U environmental Kuznets curves for a number of air and water pollutants. During Korea's post 1965 high growth era, energy consumption increased two times faster than it did for other upper middle income countries, Thailand experienced a similar development (O'Connor, 1994: 25-26). In addition, the rapid growth of the textile sector in Thailand between 1980 and 1989 contributed to an almost equally rapid increase in water pollution (O'Connor, 1994: 26). More recently, structural shifts in the composition of industry in the East Asian NIEs have contributed to rising toxic intensities of production (Brandon and Ramankutty, 1992). These increases in energy and toxic intensities and shift toward water pollution intensive production contributed, no doubt, to declining environmental quality of both air and water. More recent changes in the composition of economic activity in the higher income NIEs (Korea, Taiwan, China and Singapore) have contributed to less pollution intensive activities. Thus, after rising between 1964 and 1981, pollution intensities of industrial activity in Taiwan declined partly because of shifts in the composition of industrial output (O'Connor, 1994: 21). Given this broad composition of output pattern it is not particularly surprising that ambient air and water quality in the higher income East Asian NIEs (Singapore, Taiwan, China and Korea) is noticeably better than it is in the lower income East Asian NIEs (China, Indonesia, Malaysia and Thailand).

This inverted U Kuznets pattern tends to be reinforced by the evolution of domestic politics attending high-speed and broad-based economic growth in the East Asian NIEs. Chief among these is the emergence of an educated urban middle class and democratization. In the



early stages of development, when incomes per capita are low, most of the population employed in agriculture, and the incidence of poverty high, political leaders tend to be more concerned with economic development, poverty alleviation, and food security than with the environment. Lack of official interest in the environment can be reinforced by the lack of popular pressures for a cleaner environment, by authoritarian predilections of governments that control or repress independent organizations in civil society (Mackie and MacIntyre, 1994, Crouch, 1996, Girling, 1981, Wade, 1990, and Haggard, 1990) and by closed door interactions between government and business that focus on economic growth, employment, and export earnings. But as per capita incomes continued to rise, as education deepened and spread, and as a greater sense of well-being developed, particularly within emerging urban middle classes, concern for the environment rose. Public opinion surveys now routinely demonstrate, as a recent World Bank report on Indonesia states, that there is no need to convince people that environmental problems are serious (World Bank, 1994: 177). There is also evidence, particularly from China, South Korea, and from Taiwan, but also from Thailand, Malaysia and Indonesia that in response to deteriorating local environments, individuals, unorganized communities, and popular groups in civil society successfully pressed for local remedies (Cribb, 1990 and Lee and So, 1999). Most often this results in polluters compensating those affected by their polluting activities.

In most of the East Asian NIEs, large urban middle classes resulted from the rapid growth that was so high on the agenda of authoritarian governments. But as economic well-being and educational status continued to improve, urban middle classes began clamoring for more political freedoms. In several of the East Asian NIEs—Korea, Taiwan, China, Thailand, and now, perhaps, Indonesia—authoritarian governments responded by permitting what appear to be stable transitions to democratic rule. In Korea and Taiwan, China, the transition to and consolidation of democratic rule was accompanied by development of substantial environmental protest movements (Tang and Tang, 1997 and 1999, and Eder, 1996 and Lee and So, 1999). While initially focused on resolving local environmental problems, over time these protest movements developed into national environmental NGOs that built substantial membership bases, undertook studies, published results, lobbied local government officials, legislatures and executives, and supported particular candidates and parties for political office (Tang and Tang, 1999). Democratization also resulted in a freer press that reported environmental accidents, lamented the generally poor environmental quality, and clamored for a cleaner environment. In most instances, Thailand is a notable exception, this combination along with celebrated pollution incidents was sufficient to get reluctant governments to enact landmark environmental legislation, establish increasingly tough ambient and emission standards, and to begin building increasingly competent command and control environmental agencies.

While broader support for this pattern can be found in the literature on democracy and the environment, democratization or the lack of it has not always been a sure guarantee of improved environmental outcomes in the East Asian NIEs (Payne, 1995 and Congleton, 1992). Democratization in Thailand has not been followed, as in Korea and Taiwan, China either by the creation of a tough and competent command and control environmental agency or by improvement in ambient environmental quality. This outcome appears to reflect the elite nature of Thailand's democratic transition that gave business a large voice in policy outcomes and organized groups in civil society a small voice (Karl, 1990 and Rock, 1995). This outcome is also consistent with at least some of the literature on the relationship between democracy and the environment that suggests democracies might not be particularly hospitable to better environmental outcomes (Achterberg, 1996 and Fiorono, 1989). A more democratic Philippines

with an active and vociferous NGO movement has been similarly slow to respond to a deteriorating environment. On the other hand, less democratic Malaysia has been able to effectively sever the link between pollution from crude oil palm mills and the production and export of palm oil (Vincent, Ali and Rahman, 2000). Distinctly authoritarian Indonesia has also been credited with significant innovation in pollution management (World Bank, 2000). Similarly, Singapore's nominally democratic government built an effective command and control environmental agency quite early and because of this ambient environmental quality there has mirrored that in the OECD for some time. This variation in environmental strategies suggests that environmental outcomes may depend less on regime type than on the nature of the state, its institutions, as well as with the relationship of each to civil society.

### **C. The State and Clean-Up of the Environment**

There is little doubt that the actions of states loom large in industrial pollution management. The task, correcting market failures or internalizing externalities, is one that by nature falls to the public sector. Hence it is not surprising that virtually all of the East Asian NIEs launched their environmental improvement strategies by passing landmark environmental legislation, building more or less effective public sector command and control environmental agencies, setting emission and ambient standards, and granting new environmental agencies the legal authorities and tools for monitoring and enforcement. O'Connor (1994) and the World Bank (1994a, 1994b, 1994c and 1997) describe this process in some detail for each of the East Asian NIEs. In each instance, each of these steps took time and in several instances they were propelled forward by celebrated pollution incidents. This is similar to what happened within the OECD a generation earlier (Lovie and Weiss, 1997).

But government strategies for environmental improvement in the East Asian NIEs went well beyond creation of public sector command and control environmental agencies. In Singapore, creation of a tough command and control environmental agency went hand in hand with integration of the environmental actions of the Ministry of the Environment with the promotional activities of the Economic Development Board and the industrial siting and infrastructure activities of the Jurong Town Corporation. In this way, Singapore effectively integrated environmental considerations into the broader institutions of industrial policy. Just the opposite happened in Taiwan. There the government deliberately by-passed important industrial policy agencies such as the Industrial Development Board (IDB) in the Ministry of Economic Affairs while creating a tough command and control environmental agency and granting it sufficient authority and a range of policy instruments to effectively monitor and enforce emissions standards. This forced several of Taiwan's premier institutions of industrial policy, including the IDB and the Industrial Technology Research Institute to develop their own unique industrial environmental improvement strategies. In several other instances—Indonesia and China—effective environmental responses to industrial pollution were less dependent on creation of landmark legislation and comprehensive command and control environmental agencies. Because of this, pollution management successes in these economies were more limited—cutting waste water emissions from large plants along major rivers in Indonesia, and improving environmental quality in some of China's largest cities. In each instance, these limited successes depended on the ability of environmental managers in relatively weak environmental agencies to craft innovative solutions to particular environmental problems that also attracted the attention and support of political leaders and/or those in more powerful economic agencies. Finally, in

one instance—Thailand—effective industrial pollution management, even limited and targeted industrial pollution successes have proved elusive.

Given these differences in governmental responses to accumulating industrial pollution, it becomes important to ask why some states among the East Asia NIEs appear to be so much better at industrial pollution management than others and why state responses look so different? As already indicated, some of these differences reflect differences in the domestic politics of industrial pollution management. But they also undoubtedly reflect differing state capacities to attack rising industrial pollution loads. Haggard (1990: 44-45) argues that three characteristics of the state bear on the abilities of states to affect economic policy, and it should be added, environmental policy change. To begin with, state actors must have some degree of insulation from pressure groups in civil society that might impede the abilities of states to enact politically sensitive policies. Since environmental policy change, like economic policy change, is likely to be both politically sensitive to and opposed by business interests that gain from the status quo, some degree of insulation from business is likely to be particularly important to successful industrial pollution management. Second, effective state action is likely to be easier where states have more cohesive, technocratic and pragmatic decision-making structures. Where state decision making is subject to patron client ties or interest group pressures, effective state action becomes more difficult. Finally, effective state action is likely to be facilitated and/or constrained by the range of policy instruments open to policy-makers. Where states are able to be innovative enough to expand the range of policy instruments, they are likely to be more successful. These three characteristics of states—autonomy from those who are most likely to be opposed to environmental improvement, cohesiveness of decision-making structures within the state, and the range of policy instruments available to state managers also help define differences in national policy styles. As Vogel (1986) and van Waarden (1986) argue in another context, differences in national policy styles help explain why state responses to environmental improvement look so different.

How do governments in the East Asian NIEs compare along these dimensions? The governments of Singapore, and to a lesser degree, Taiwan, China are at one end of the spectrum. Governments in both tend to have substantial autonomy from business interests, relatively cohesive, technocratic and pragmatic decision-making structures, and demonstrated abilities to develop innovative policy instruments to tackle pressing development problems (Huff, 1995 and Wade, 1990). The government in Thailand is at the other end of the spectrum. Following democratization, the Thai government has been deeply penetrated by business interests (Rock, 2000). This has severely compromised the state's autonomy for independent policy action, particularly actions that do not serve business interests. Multiple parties in ruling coalitions in Thailand's parliamentary democracy along with 'money politics, rampant vote buying, and 'division of spoils' following each election cycle has undermined the limited cohesiveness of decision-making structures within the Thai state, particularly in core economic agencies, that existed prior to democratization (Rock, 2000). This meant that technocrats in such state organizations as the National Economic and Social Development Board who might have led an environmental improvement strategy from within the bureaucracy were undercut. And policy-makers in Thailand's environmental agency have not been particularly adept at expanding the range of environmental policy instruments available to it. Thus it is not particularly surprising that Thailand, unlike its counterparts in the rest of the East Asian NIEs does not have even one moderately successful pollution management success story.

Governments in Malaysia, Indonesia, and China fall between these polar opposites.

In Indonesia and Malaysia, as in Thailand, pervasive patron-client ties between government and business support rent-seeking behaviors and apparently narrowly circumscribe governments' policy-making autonomy (MacIntyre, 1994 and Crouch, 1996). Because of these patron client ties and consensual decision-making styles, decision-making structures in both states also appear less coherent, technocratic and pragmatic and they are more open to manipulation by particular business interests than in Singapore and Taiwan, China. One might expect this combination, as in Thailand, to block successful implementation of policies designed to curb industrial pollution. Yet some improvement is noticeable in both. The question is why? In Indonesia, improved outcomes, at least in the polluting behavior of the largest factories along the country's major rivers, appear to be the result of the innovative actions of environmental policy-makers within the interstices of the state who also had strong ties to President Suharto (Interviews with senior officials in BAPEDAL, 1996). In this instance, as in many others, state policy is more coherent than conventional wisdom suggests (Rock, 1999). As Liddle (1991) has argued, this is because President Suharto has often been both willing and able to transcend narrow patron-client interests to support important policy changes. In this instance, he did so by sanctioning the use of public disclosure of the environmental performance of major water polluters. By so doing, he signaled to business interests that they had better start addressing the pollution associated with their manufacturing plants. At the same time, because consensus within government regarding the environment had not been reached, the president was apparently not willing to sanction the development of a more effective and comprehensive command and control environmental agency. This meant that a number of donor-funded institution and capacity building projects in BAPEDAL, the country's environmental impact management agency, met with extremely limited success.

In Malaysia, reduction in water pollution from the country's crude palm oil (CPO) mills was spear-headed by political concern within the dominant political party—the United Malay National Organization (UMNO) in the governing coalition—that failure to take action against CPO mills might undermine rural Malay support for UMNO. This was important because UMNO faced a growing challenge for support of the rural Malay vote (Crouch, 1996). Malaysia successfully attacked the growing pollution load associated with crude palm oil mills by empowering a nascent environmental agency to crack down on polluters. But the environmental agency in Malaysia did not just simply crack down on polluters even though it had the authority to do so. It used a highly publicized environmental accident to accelerate its enforcement actions and it timed its enforcement actions and toughening of emission standards to developments within an industrial policy agency, the Palm Oil Research Institute of Malaysia, that showed that tighter emissions standards could be met at reasonable cost (Vincent, Ali and Rahman, 2000). For its part, a weak environmental agency in China devised and implemented a unique city level environmental rating, ranking and public disclosure program that ultimately captured the attention of political elites (mayors) in the country's major cities. Once mayors started asking why their city ranked lower than others, how their city could improve its ranking, and what this might cost, city level environmental managers started working with powerful economic agencies in cities to answer these questions. By doing this they learned how to take advantage of China's bargaining model of policy implementation (Walder, 1992 and Lampton, 1992). And they linked these efforts to an environmental target responsibility system that required mayors and provincial governors to sign environmental responsibility contracts with those immediately above them in China's bureaucratic hierarchy. Over time, this combination proved effective in slowing the rate

of environmental deterioration on some environmental indicators while fostering significant improvements in environmental quality on other environmental indicators.

#### **D. The Role of Ideas**

Without what Haggard (1990: 45) refers to as a more or less coherent framework of policy relevant knowledge, or ideas, it is doubtful that international and domestic pressures to clean up the environment would have been sufficient to get states in the East Asian NIEs to act. Nor would the more autonomous states with more coherent decision-making structures been likely to take action to improve environmental outcomes. This suggests that a shift in ideas regarding the relationship between the environment and development (economic growth) probably played some role in movements toward a cleaner environment in the East Asian NIEs. For most of human history and for much of the world, including the East Asian NIEs, the dominant idea regarding the relationship between growth and the environment is embodied in the phrase ‘grow first clean up later’. This phrase reflects the idea that neither poor people nor poor (developing) economies can afford to invest in the environment. Economists have given credence to this view with talk about a clean environment being a luxury ‘good’ or, at least, subject to a high-income elasticity of demand. There is little doubt that, until recently, political leaders and policy-makers in developing countries and international organizations thought and acted this way. Because of this, it is not surprising that most developing economies, including the East Asian NIEs more or less followed the ‘grow first clean up’ later environmental strategies adopted a generation earlier by countries within the OECD. Nor is it surprising that most donor organizations, including the World Bank were so slow to respond to the concerns of the environmental community (Wade, 1999).

But it is also true that there have been significant shifts in what can only be seen as a more or less coherent framework of policy relevant knowledge regarding economic growth and the environment. The Brundtland Commission’s definition of sustainable development struck such a responsive cord with economists, policy-makers, international organizations and aid donors that policy communities in each now more or less think about development in these terms (Brundtland, 1987). The growing body of empirical research on environmental Kuznets curves (Hettige, Mani, and Wheeler, 1998, World Bank, 1992), on the human health costs of environmental degradation, and on cost effective industrial pollution management policies have reinforced this tendency (World Bank, 2000). Because of this, there is now substantial evidence in each of the East Asian NIEs that political leaders and those responsible for economic policy who used to complain that environmental agencies might slow growth now complain that they are not doing enough to improve the environment.

#### **4. Toward a Political Economy of Environmental Improvement**

Because each of the East Asian NIEs is relatively open to foreign trade and investment, governments and private sectors in each has been subject to growing international economic and political pressures to clean-up the environment. A relatively free flow of policy relevant ideas within the political economies of the East Asian NIEs has meant that political leaders, policy-makers, researchers in universities and in think-tanks are more or less familiar with the shift in ideas regarding the relationship between development and the environment. Both of these developments have made it easier for governments in the East Asian NIEs to embark on

industrial environmental improvement strategies. But differences in the domestic politics of industrial pollution management and in the capabilities of states to design and implement effective industrial pollution management programs appear to account for both differences in strategies employed and in outcomes.

In Singapore, a strong autonomous state with a coherent, technocratic and pragmatic decision-making structure launched the earliest and most successful industrial pollution management program in East Asia. This began in 1969 when the Prime Minister communicated his concern about the environment to the public and the bureaucracy by creating an Anti-Pollution Unit in his office. He followed this with creation of a Ministry of the Environment in 1970. He then left it to the bureaucracy to figure out how to successfully integrate environmental considerations into the broader institutions of industrial policy. Pragmatism by senior officials in the new Ministry of the Environment (ENV) proved particularly important to this endeavor. Senior individuals in the ENV knew, particularly in the early days, that they could not be too hard on polluters; that they had to win the confidences of their counterparts in the EDB that granted promotional privileges and in the JTC that sited promoted firms and provided them with infrastructure. They also knew that they were expected to make a difference. They resolved these problems by traveling abroad to identify international best pollution control practices, compiling and distributing lists of suppliers of pollution control equipment to promoted firms, by setting emissions standards on the basis of international best practice not entailing excessive cost, by giving polluters ample time to clean-up, and by developing operating procedures that involved both the EDB and the JTC in environmental decision-making.

Even though the Taiwanese state, particularly prior to democratization, was relatively autonomous and characterized by a relatively coherent, technocratic and pragmatic decision-making structure, the policy-making environment in Taiwan, following democratization, was quite different than that in Singapore. With political liberalization, the government of Taiwan faced a hostile press, a growing environmental protest movement, and opposition political parties anxious to blame the government and the KMT for the country's deteriorating environment (Tang and Tang, 1997). Yet within government, a strong, autonomous industrial policy implementation agency, the Industrial Development Board of the Ministry of Economic Affairs, was opposed to environmental clean-up fearing it would slow growth at a time when Taiwan's industry was being 'hollowed out' by rising wage rates and an appreciating currency. At this point, the leadership of the KMT appeared to be trapped between escalating public demands to clean up the environment and a growing reluctance within the interstices of the state's economic agencies to clean up. The senior leadership of the KMT appears to have concluded that the ability of the KMT to compete in future elections in democratic Taiwan depended, at least in part on some environmental clean-up. Given the unwillingness of the IDB to go along, the government responded by creating a powerful command and control environmental agency and completely by-passing the IDB. Because of this, neither the IDB nor representatives of industry were permitted to participate in the many expert panels used by the Taiwanese Environmental Protection Administration to set ambient and emissions standards. This ultimately forced both to develop their own unique industrial environmental improvement strategies.

In Indonesia, Malaysia, and China where states had less autonomy from groups in civil society, particularly business groups, and where decision-making structures were more or less riddled with patron client ties, innovative actors in relatively weak environmental agencies developed partial, incomplete, and narrowly targeted approaches to industrial pollution management. Indonesia relied on an innovative public disclosure campaign to get large factories

along the country's major rivers to abate their water pollution. This occurred within the context of an otherwise moribund industrial pollution management agency and it required the approval of the country's president. In Malaysia, a relatively weak environmental agency took advantage of a celebrated environmental accident and fears within government that it might lose support of rural Malays unless it took action against the polluting activities crude palm oil mills to successfully attack the growing pollution load associated with crude palm oils. For its part, a weak environmental agency in China devised a unique and effective city level environmental rating, ranking and public disclosure program that ultimately attracted the attention of political leaders (mayors) within cities.

These differences suggest multiple political pathways to improved environmental outcomes. The growth of urban middle classes and transitions to democratic rule in several of the East Asian NIEs, most notably, Taiwan, China (and South Korea) provided one political pathway to improved environmental outcomes (Tang and Tang, 1997 and 1999 and Eder, 1996). Commitment of political elites, such as Lee Kwan Yew in Singapore, to a cleaner environment in combination with a coherent, technically competent, and autonomous bureaucracy provided another political pathway to improved environmental outcomes. Where state's had less autonomy, consensus regarding the environment within government was lacking, and decision-making structures subject to rent-seeking, a pathway for limited environmental clean-up was open to policy innovators in environmental agencies who devised targeted solutions to particular environmental problems that attracted the attention and support of political leaders.

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