

Regulating the Oil Palm Boom: Assessing the Effectiveness of Environmental Governance Approaches to Agro-industrial Pollution in Indonesia

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The large environmental impacts associated with agro-industrial development in Indonesia are both striking and increasingly important, especially with increased demand for biofuels and the rapid extension of oil palm plantations. Recently, Indonesia has also seen a series of transformations in the regulatory regime for pollution control with decentralization and a shift towards new environmental policy instruments. This article considers the effectiveness of these new approaches, including the widely influential International Organization for Standardizations (ISO) 14001 series for environmental management systems and the Roundtable on Sustainable Palm Oil (RSPO) certification system. Despite the turn towards these new governance approaches, the underlying problems that have undermined bureaucratic regulation in the past continue to haunt attempts to make the sector more sustainable. Efforts to mitigate the increasingly large-scale pollution associated with agro-industrial development will need to be better crafted and combined to suit the characteristics of the industry concerned and to address the wider socio-economic and political realities within which problems are embedded and where any policy tool must be applied.

INTRODUCTION

The rise of agro-industrial pollution from plantations in Indonesia has emerged amidst a series of transformations in the regulatory regime for pollution control. Governance reforms have encompassed decentralization of key areas of authority and responsibility pertinent to environmental

This research was undertaken under the INSELA Research Project on Environmental Law and Administration in Indonesia at the Van Vollenhoven Institute, Leiden University, and at the Australian National University under an Australian Research Council grant entitled "Oil Palm and Agrarian Transition on the Indonesian and Malaysian Frontiers." Thanks to Adriaan Bedner, Benjamin van Rooij, and Piers Gillespie for their comments on earlier versions of this article.

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management to locally elected subnational levels of government. There has also been a shift towards more flexible, performance-based, and cooperative mechanisms and policy tools that reflects the wider popularity of market-based policy instruments or “new environmental policy instruments” (NEPI) (Jordan et al. 2003), such as the widely influential International Organization for Standardizations (ISO) 14001 series for environmental management systems and the Roundtable on Sustainable Palm Oil (RSPO) certification system. These later approaches are based on the notion that self-regulation by corporations together with market incentives can lead to effective environmental management while minimizing external state-sponsored enforcement mechanisms (Falkner 2003).

The popularity of these “softer and more flexible” approaches depends upon “the theoretical assumption of a greater effectiveness and efficiency of new environmental policy instruments” as compared to traditional command and control approaches, an assumption that remains untested (Tews, Busch, and Jorgens 2002: 16). Through a discussion of the agro-industry sector in North Sumatra, the historical center of Indonesian agro-industry, this article will consider the following questions. First, why has bureaucratic regulation largely been seen to have failed in this context? Second, how effective has the shift from regulatory to NEPI governance approaches been? Third, what conclusions can we draw regarding policy to mitigate the large-scale pollution and other environmental impacts associated with the sector?

We examine the reasons for the intractable problems faced by bureaucratic regulation in this area, arguing that the underlying problems of underdeveloped state capacity and political accountability of state officials continue to undermine regulatory approaches after decentralization. We also study the effectiveness of self-regulatory approaches in the agro-industrial sector, discussing why self-regulatory approaches are unlikely to work on their own. We conclude that, given the encompassing set of problems facing attempts to mitigate the large-scale pollution issues associated with the sector, policy needs to be better crafted to suit the characteristics of the industries concerned, and policy tools need to be combined and integrated in order to address the wider socio-economic realities within which problems are embedded and where any policy tool must be applied.

Following a brief account of our research methodology, we will introduce the plantation sector context before considering the dynamics leading to pollution problems in the rubber and oil palm industries. The next section will then consider state policy for dealing with the problems and the causes of the difficulties facing bureaucratic regulation in this area. We then consider the effectiveness of the shift from regulatory to governance approaches, first considering decentralization and then the application of compliance-orientated approaches to achieving sustainability.

Using qualitative research approaches, this article sets out to understand the complex socio-legal processes shaping the workings of regulatory regime(s) for pollution control affecting agro-industrial development in

Indonesia. To begin, the researchers carried out over twenty semistructured and open-ended interviews with key provincial and district officials and members of provincial and district legislatures in North Sumatra. Using the second author's established networks within the province derived from long-term engagement with this issue, the researchers interviewed factory managers and key industry association personnel during field visits to several oil palm and rubber factories. To explore the perspectives of local communities living around rubber and oil palm factories, the researchers carried out a series of visits to highly polluted sites to find representatives of affected groups and to provide them with the opportunity to identify key problems and to articulate their concerns. This purposive sampling approach provided a contextualized analysis of agro-industrial problems from different perspectives, allowing for the emergence of a more nuanced and contextualized understanding of causality and of the processes shaping attempts to ameliorate the outcomes. The research also involved analyzing key texts, including laws, newspaper articles, and agency reports. Following from this field work, the authors participated in plenary sessions and roundtable discussions at the annual meeting of the RSPO. The authors deepened their emergent understandings through informal discussions with nongovernmental organization (NGO) representatives and company directors regarding key aspects of the RSPO process.

RUBBER AND OIL PALM IN INDONESIA

From the nineteenth century through the twentieth century, Sumatra experienced a rubber boom, as the tropical forests that once covered large areas of the island were converted into plantations. In addition to the commercial plantation sector, smallholders integrated rubber cultivation into swidden agricultural systems. Since the 1980s the relative price of palm oil has surpassed that of rubber. Consequently, smallholders and large plantations began to shift to oil palm production. In some respects this oil palm boom has replicated the earlier rubber boom. By 2000, the total area of oil palm increased to about 3.2 million hectares, before increasing to 6.6 million hectares, effectively doubling within ten years (Dirjen Perkebunan 2001, 2007). From 2006, the government has developed new policies allocating large areas of land to investors interested in planting new crops to boost biofuel production. Prior to the sharp economic downturn of 2008–2009, the market drove this oil palm boom, as the price of crude palm oil increased 88 percent from US\$570 per metric ton at the beginning of 2007 to over US\$1440 per metric ton in early March 2008.

Plantations opened most of this forest through systematic burning; consequently, the incidence of forest fire is closely associated with oil palm development (Gellert 1998; Wakker 1999). In many areas of Indonesia, oil palm development has often involved encroachment into sensitive conservation

forests. The plantation sector has also led to air pollution and the accumulation of effluent in rivers, problems that continue to affect the quality of life of local communities in areas with established plantation industries. With large-scale greenhouse gas (GHG) emissions from land use change and deforestation associated with the opening of oil palm plantations, Indonesia ranks third behind only the United States and China in total GHG emissions.¹ As the Indonesian government has announced plans to double the area of land planted with oil palm by 2011 by bringing another seven million hectares of land under cultivation, oil palm expansion has emerged as a critical environmental and political issue (World Bank, DFID, and PEACE 2007).

From the early decades of the twentieth century, the rubber production system also led to a large amount of waste, with much of this ending up in rivers.² Large rubber plantations developed “latex concentrated” and “ribbed smoked sheet” (RSS) rubber processing factories. Mishandling of chemicals by these factories affects waterways, leading to widely reported problems, such as fish toxicity, and affecting human health. Production from “crumb rubber factories” (CRFs) leads to pollution on a wider scale. It is widely known that smallholders add contaminants to increase the weight of their product. This ensures that CRFs have to clean up dirty rubber by using a lengthy cleaning and milling processes, even blending processed dirty rubber with clean rubber to reach the lowest grade (SIR 20) (Zen 1999).³ Because this process involves very high water consumption, it creates a large amount of liquid and solid waste. As CRFs generally lack effective wastewater treatment systems and have no other place to dump solid waste, CRFs discharge effluent and solid wastes into rivers. For this reason almost all CRFs associated with smallholders are situated along rivers.

In contrast to the rubber blocks produced by farmers, oil palm fruit must be processed within forty-eight hours after being picked. As factories need to be located alongside water sources, large numbers of oil palm factories have opened along small rivers running through the rural landscape where they deposit most of this waste. Consequently, as this rapid agro-industrial development has extended into the countryside on such a large scale, so has the classic problem of externalities.

Crude palm oil (CPO) production produces large amounts of waste. Many factories have a capacity of sixty tons of fresh fruit bunches (FFB) per hour and produce 1,200 cubic meters of effluent per day of liquid waste. This level of liquid waste produces a biological oxygen demand (BOD) of 25,000 mg/L, a pollution load (15,000 kg BOD/day) equivalent to the sewerage produced by a city of 75,000 people (Pamin, Tobing, and Darmosarkoro 1999). By 2007, Indonesia had 487 CPO factories with a capacity twenty-five million tons of fresh fruit bunches (FFB) per hour (Dirjen Perkebunan 2008), a dramatic increase over ten years earlier when 204 CPO processing factories amounted to a capacity of 8,074 ton FFB/hour (Dirjen Perkebunan 1998).⁴ The processing of oil palm fruit also creates a large amount of solid waste,

including empty fruit bunch (EFB), mesocarp fiber, and palm oil shells. Large plantations usually choose to burn EFBs and mesocarp fiber rather than utilize it. Given the scale involved, this leads to noxious odors and smoke pollution over wide areas. While some state companies employ the shells of oil palm fruits to fill roads around the plantation, most factories use the shells for internal combustion for powering their boiling stations, producing an enormous amount of black smoke and dust.

MITIGATING THE POLLUTION ISSUES ASSOCIATED WITH PALM OIL AND RUBBER INDUSTRY: BUREAUCRATIC REGULATION

Indonesian policymakers have developed a comprehensive and intricate legal framework that provides for traditional, prescriptive forms of bureaucratic regulation or “command and control” approaches. Regulators have elaborated this framework over the twenty years since these environmental laws were first put in place. This regulatory regime has had positive effects, especially in asserting the illegitimacy and indeed illegality of flagrant practices of pollution. Key shortfalls remain, however.⁵ To date, regulatory enforcement has yet to ensure effective compliance. Indeed, it is relatively unknown for a factory to be closed for infringing these laws.⁶

Spatial planning and Environmental Impact Assessment (EIA) processes aim to ensure that environmental principles are applied to the planning process and to identify and address the anticipated environmental effects of activities. Spatial planning legislation provides that environmental and conservation principles need to be taken into account before forest and peat areas are allocated for conversion to plantations; one example requires areas of peat beyond three meters in depth to be set aside to protect hydrology and prevent flooding and the destruction of special ecological features characteristic of such areas. Yet, conversion of forest land to oil palm has long formed a key element of regional development strategies with economic interests tending to overwhelm environmental considerations. In the absence of effective cross-sectoral coordination, large-scale changes to spatial plans have facilitated the widespread conversion of forests, including areas of deep peat that should be protected under the spatial planning law.⁷ Further, if spatial planning principles were applied to agro-industrial development, industrial areas would also be separate from residential areas.

In the case of rubber factories, these regulatory approaches arrived long after the advent of rubber factories. Consequently, the government never effectively applied to these rubber factories the anticipatory principles found in spatial planning and environmental assessment procedures. Prior to the advent of an effective zoning system, cities grew to encompass previously isolated CRFs, despite the noxious odors that rubber processing inevitably produces. Furthermore, rather than undertake an EIA (or AMDAL in Indonesian), industries that were already in operation when the legislation was

passed were able to delay compliance with this regulation. CRFs argued that they would be forced to close if the regulations were applied because they lacked the space for developing wastewater plants, effectively causing them to relocate to comply with the regulation. They also claimed that they lacked the capital to develop effective environmental management facilities (Zen 1999). Because the factories were labor-intensive industries, management asserted, their closure would affect a large number of people.

Indonesia's EIA law provides for EIA commissions to be set up to evaluate Environmental Impact Statements (EISs). A key challenge for the operation of these commissions has involved finding personnel with the required knowledge and commitment to evaluate the environmental issues, people free of conflicts of interests, rather than those with interests in furthering careers or livelihoods.⁸ When, in the past, development-oriented government agencies have chosen NGO representatives to sit on EIA commissions, they have tend to choose representatives who will acquiesce to proposals. It is an open secret among environmental agency (*Bapedalda*) officials that the proponents typically pay "independent" consultants or EIA commission members to ensure the result they need (Zen, McCarthy, and Barlow 2005).

Rather than ensuring "that environmental considerations are explicitly addressed and incorporated into the development decision making process" (International Association for Impact Assessment 1999), it has often been remarked that EIA too readily just becomes a series of procedural and reporting hoops through which a proponent has to jump (*Kompas* 2008b). A consultant with long experience in the field agreed with this observation, arguing that the EIA report often functions as a formality to fulfill the license requirements necessitated by regulations. Comparing the contents of EIA documents produced by different factories, he argued, demonstrates that frequently the documents are almost the same, even though the factory location is completely different in terms of environmental characteristics, pointing to the practice of consultants "cutting and pasting" to reapply the same format to new sites.⁹ Elsewhere in the developing world this "cook-book" approach to EIA has often ensured that the environmental assessment process fails to achieve its potential benefits (Petts 1999: 5).

As discussed below, rather than performing a substantive environmental function, these EIA documents form a key part of the defensive strategies of industries facing environmental inspections. When inspectors come to the factory, the factory operators show the waste treatment facilities and the EIA documents, which—together with payments—are used to satisfy the inspectors that the form, if not the substance, of environmental regulations is being met.

The traditional regulatory approach involves, via an inspection procedure, ascertaining whether specific technical standards for air, water and noise pollution, odor, and land degradation, have been met by operators and, where violations occur, setting in motion a process of sanctioning. A key problem here is that, as EIA commissions only evaluate a particular pro-

posed development, after a permit is granted the EIA commission is no longer concerned with the implementation of the management plans to minimize waste set out in the EIA report. While the local government environmental agency, Bapedalda (now renamed the *Badan Lingkungan Hidup Daerah* or BLHD), has a key role in the licensing (through the EIA process), the power to rescind the operating license is with the sectoral agencies that issued the license. In the plantation sector, both the Departments of Industry and Trade (*Dinas Perindustrian dan Perdagangan*) and the Plantation Agency (*Dinas Perkebunan*) have key licensing responsibilities.¹⁰ According to an agreement between the Industry and Trade Agency and the Plantation Agency, the Plantation Agency is the consent authority for rubber and palm oil plantations and latex factories while the Industry and Trade Agency has primary responsibility for Palm Oil Mills (POMs) and CRFs.¹¹ These sectoral agencies have a primary interest in supporting development. They enjoy a high level of discretionary authority regarding how regulations are implemented, and they do not necessarily give appropriate consideration to environmental concerns when granting permits and licenses or in setting the conditions attached to them (cf. Young 1999).

To ensure that environmental decision-making processes are better informed and decisions more socially and environmentally acceptable, international practice promotes democratization of EIA decision making through public participation processes. In line with international EIA principles, during the post-1998 political reforms, lawmakers amended EIA processes by improving participation processes and making it mandatory to provide EIA information.¹² Yet, proponents tend to view public participation in the EIA as an additional cost for obtaining consent for a proposal. While participating NGOs and officials who support the project proponent readily obtain information, the wider public enjoys only limited access (World Bank 2005). In operational terms, there are no effective mechanisms to ensure that the public can obtain information regarding a project proposal for an industrial activity. Too often proponents and the relevant consent authorities seem to fear that economic goals cannot be achieved if there is effective public scrutiny, and they effectively obstruct the legal or administrative channels that are formally available (Young 1999). Consequently, social control over the implementation of EIA processes remains particularly weak.

Depending on the nature of the case, violating firms face administrative, civil, or criminal litigation.¹³ Officials appointed by the Attorney General's Department or directly by the districts and municipalities can carry out these investigatory functions. While these civil investigators have powers to inspect and look into pollution cases without first obtaining permission from the owners, the main difficulty remains that the total number of investigating officials is very small, and not all districts and municipalities have recruited such investigators.¹⁴ Further, as in other sectors, large factories have considerable political and economic leverage, and bribery and intimidation of

regional officials attempting to enforce environmental regulations is not unknown (Nicholson 2005; Lucas and Djati 2007).

As an alternative to relying on the regulatory state, individuals harmed by pollution can sue businesses for compensation for harm done, in the process creating incentives for businesses to internalize environmental costs and invest in pollution control.¹⁵ This approach depends upon the capacity of victims of pollution to pursue justice through civil litigation. As elsewhere in the world, justice is extremely expensive, and access to court is beyond the reach of people of low socio-economic status—those typically most affected by pollution. In addition to these financial hurdles, potential litigants face the challenge of providing consistent scientific evidence about the pollution-related damages and their causes. When cases come to court, they can fail for a variety of reasons including paucity and inconsistency of evidence. For instance, an official noted that one case failed because the government agency bringing the case could not prove that the pollution was from a particular factory rather than factories further upstream. Furthermore, the officials concerned had failed to follow strict legal protocols in gathering evidence.¹⁶

To overcome the barriers victims of pollution face in bringing cases to court, Article 39 of the Environmental Law (UU LH No. 23/1997) incorporated the principle of strict liability whereby the burden of proof should lie with the company responsible for the waste rather than with the people who suffer the impact. As there are no implementing regulations in this respect, the principle has never been operationalized (Nicholson 2005).¹⁷ Accordingly, although legislation gives basic rights to people affected by pollution, this does not readily translate into effective procedural rights. To be sure, there has been a marked increase in the successful use of litigation as a means of enforcing environmental rights since the end of the authoritarian New Order. Nevertheless, problems with the “substantive legal framework, the institutional resources of litigants, the independence of the judiciary and the wider socio-political context,” as well as with corruption, continue to make it difficult for local victims of pollution to use environmental law to process a claim for compensation or remedial action (Nicholson 2005: 269).

To minimize the costs of pollution control, as noted earlier, a firm may engage in corruption, a pervasive problem closely linked to the institutional context in which regulatory practices are embedded. For instance, the complex web of laws pertaining to the environment obscures the rights and obligations of proponents and the public, creating a lack of clarity. This uncertainty potentially increases the perception of difficulty and cost, thereby enhancing the opportunity for officials “to exert illegitimate discretion and favoritism in making their decisions” (Young 1999: 175). Further, the implementation of regulations characteristically depends on the discretion of low-level officials from regulatory agencies. Officials working at the “shop floor” need to cooperate closely with industry and over time develop close relations

with their “clientele.” In the course of business, officials may well negotiate compliance rather than strictly enforce the law. As interviews with industry managers engaged in hosting official inspections revealed, during negotiations behind closed doors, officials and their industry clients tend to come to arrangements involving exchanges of money and favors. As far as government agencies are then “captured” by industry interests, this constitutes a significant obstacle to law enforcement. As a Regional Plantation Office (*Dinas Perkebunan*) official noted, unless they have the status of civil investigators, officials wishing to inspect a factory do not even have automatic access, but rather need to ask permission before entering a factory to monitor pollution problems. As he observed, factories can refuse access or delay access to a convenient time. In gaining access to factories, it is important for officials to maintain good working relations with factory managers so that things can go smoothly. This dependence can make it difficult for inspectors to recommend harsh actions. Although collusive relations can take subtle forms, they often take a more blatant form. In the course of this research, the authors heard several unconfirmed allegations of senior staff in government agencies both in the province and in district/municipal governments taking bribes and misusing public funds. As we will discuss later, this problem has continued with regional autonomy, where the operation of district-level social fields continues to distort law enforcement. As a result, local people are cynical about government efforts to mitigate pollution.

Government agencies require considerable political commitment and support to deal with pollution problems. Yet, for a number of reasons, a political bias affects government agencies, leading them to avoid policies that may affect the competitiveness of industry and lead to political problems. Polluting industries create a lot of jobs. Interviewed workers living around CRFs and POMs and dependent upon factories for their livelihood stated that they were prepared to stand up for their factories, even though the factory clearly produced significant environmental problems. If a government agency were to act against a factory, the factory can mobilize staff to sign petitions and demonstrate outside government offices. Where rubber and palm oil industries cultivate political leverage through financial and political connections to specific government actors and elected officials, they can also threaten to withdraw their political investments. Furthermore, local industries such as POMs and CRFs contribute to local government revenue, referred to as PAD (*Pendapat Asli Daerah*), and local government has an interest in their continued profitability. Moreover, local governments are eager to attract new industries and are afraid to discourage investors in any way. All these considerations mean that government agencies are reluctant to act against industries even though the legal norms, including specific sanctions for transgressions, “are complete.”¹⁸ These disincentives for agencies considering the application of sanctions remain strong after regional autonomy, as district and municipal governments continue to be reluctant to demand that new factories have expensive pollution treatment facilities. If

regional government demands tighter pollution management, investment costs will increase, and the fear is that this will discourage investment in a district.¹⁹

Despite the profitability of oil palm and rubber production, in addition to the threat of harsh sanctions, enterprises will need considerable incentives if they are to invest in pollution mitigation, incentives that Indonesia's traditional regulatory approaches have yet to provide. For instance, according to one industry source, if financiers invest in just a POM, they will see their capital investment returned in two to three years, and henceforth the POM will generate lucrative earnings. Given the high volume of liquid wastes (see above), POMs require large wastewater treatment facilities, involving considerable investments. According to an engineer from one factory interviewed during this research, cleaner production increases the efficiency of palm oil extraction in the production process while reducing the amount of wastewater. However, he said, speaking of his factory, "the management is economical (*hemat*), they consider investing in the technology for better waste management as extravagant, while from our perspective [i.e. that of an engineer] it would increase efficiency."²⁰ In other words, companies tend to see waste treatment as an external cost and do not wish to internalize it. Up to now, regulations have failed to compel them to change this attitude. Smoke stack technology that reduces the impact of smoke emissions from POMs is also available, but POMs have considered this too expensive to purchase and to maintain, especially if this does not clearly add economic value to production.²¹

PROBLEMS RELATING TO DECENTRALIZING ENVIRONMENTAL MONITORING AND CONTROL FUNCTIONS

During the 1990s, the shift in perspective towards governance has entailed reworking the role of the state. Generally, this has involved decentralization, which, as one commentator argued, has become "the *sine qua non* of public sector reform in developing countries" (Edmiston 2002: 221–34). The assumption here is that if authority is delegated to local agencies that are locally accountable, this will result in responsiveness to local concerns and priorities. It is envisaged that local agencies are more responsive to local concerns and priorities, provided that they are held accountable by local constituencies.²² Further, they are closer to the problem, compared with a central government agency with limited staff and resources, and hence they may have more local capacity to deal with the issue. In theory at least then, it has been asserted by those supporting decentralization that these changes will increase democracy and lead to greater participation, effectiveness, and responsiveness for local government (Frerks and Otto 1996; EPIQ Technical Advisory Group 2001).

In Indonesia, the major framework law on decentralization (UU No. 22/1999; later UU No. 32/2004) specified that the management for environ-

mental concerns is the primary responsibility of the autonomous districts/municipalities.²³ The laws provided districts and municipal governments with extensive discretionary powers, while the central government only retained powers over setting policy, guidelines, and standards. In effect, the districts and municipal governments now have most of the responsibilities for environmental management and monitoring. In 1999, a new regulation (PP No. 27/99; later PP No. 38/2007) granted districts/municipalities the key responsibilities for evaluating EIA reports. Subsequently, a *Bupati* or city mayor can arrange their own EIA evaluation of a project within their administrative boundary.²⁴ The Provincial Environmental Impact Agency (*Bapedalda* or *Badan Pengendalian Lingkungan Hidup Daerah*) is now responsible merely for environmental problems with impacts across more than one district.²⁵

The delegation of authority to district offices offers some advantages. After the establishment of the Environmental Control Agency at the provincial level (*Bapedalda*) in 1998, this agency faced significant problems carrying out its mandate due to the lack of staff and resources it had relative to the size of its jurisdiction. In comparison, after regional autonomy, in time each district will have staff dedicated to environmental problems. Moreover, in theory at least, following regional autonomy, the district government can make decisions in the community interest directly without waiting for directions from above and without working through a long bureaucracy.

During the transition to regional autonomy, several problems have emerged.²⁶ First, the decentralization process has left the respective areas of authority of different agencies unclear. A second set of problems arose when districts set up new *Bapedalda* agencies. In some cases district and municipal governments have often given responsibility for environmental protection functions to officials with insufficient status. When lower-echelon officials have responsibilities in environmental areas, they are unable to coordinate or to control the heads of other agencies with higher-echelon status. In other cases district governments have delegated responsibility to inappropriate agencies with different priorities, which can lead to sectoral conflicts of interest. The problem is that these agencies are project-oriented rather than interested in mitigating environmental issues.²⁷ Alternatively, if environmental functions are delegated to an existing district agency (*dinas*), this agency may lack coordinating capacity and hence will tend to deal with a narrow set of problems, such as treating waste, rather than working to ensure environmental management is treated as a whole-government issue.²⁸ Third, district and municipal governments are often incapable of providing proper resources and qualified staff to new local agencies. Although there are now training programs, the capacity of designated district civil servants to carry out investigations is still weak, and civil servants at this level lack the required training. Fourth, funding presents an exacting challenge for many districts. As a consequence, *Bapedalda* in districts/municipalities often lack funding for projects or programs and even perhaps sufficient funding for salaries. In some cases, the district governments seemed to be more interested in raising

revenue than in waste mitigation.²⁹ According to Rubber Industry Association of Indonesia (*Gapindo*) officials, those implementing the pollution regulations just come to the factory and ask for payment without making an effort to help the factory to manage or to clean up the problem.³⁰

Finally, while, in theory, regional autonomy should lead to greater responsiveness to the needs and aspirations of local communities, the issue of holding elected officials accountable remains unresolved. Factory managers interviewed during this research complained that they now receive more frequent visits from the police, district politicians, journalists, and NGOs, all seeking payments. In order to accommodate business interests while not alienating other constituencies, regional parliaments tend to carefully balance the consequences of appearing either too responsive to local business interests or of acting in accordance with the complaints of local pollution victims.

Manor (1999) has argued that four crucial elements are necessary for decentralization experiments to succeed: decentralized authorities need to have sufficient powers, resources, and administrative capacities to accomplish development objectives, and effective accountability mechanisms need to be in place to ensure that elected politicians are held responsible to local constituencies. As we have seen with respect to environmental management and pollution mitigation, many significant challenges exist in these areas. District governments tend to lack the financial resources to accomplish relevant tasks. In the context of endemic budgetary problems, many district-level environmental-related activities tend to be aimed at generating revenue from every source rather than solving critical pollution problems. With respect to the powers devolved to district authorities, there is a lack of clarity regarding the division of authority between local decentralized agencies and agencies of the provincial and central governments. Furthermore, decentralized agencies still need to develop administrative capacity—supported by appropriate funding and training—to carry out delegated functions.

To be sure, enhanced public scrutiny, the quality of leadership within local environmental authorities, availability of technical expertise, and high levels of engagement from developers can raise the standard of environmental governance, especially in key urban centers where such competencies can be found. Over time legal-administrative problems may be addressed by, among other things, a clear elucidation of responsibilities and areas of authority of different agencies and the provision of authority over environmental affairs in autonomous districts/municipalities to appropriate institutions. Particularly in rural contexts, however, “persistent political, institutional and resource related constraints” (World Bank 2005: 5) continue to undermine state capacity in the absence of transparency and accountability mechanisms that might improve the governance standards under decentralization. It seems unrealistic to expect regional autonomy reforms to overcome all these accumulated problems in the short term. As one official noted during the

course of this research, “regional autonomy is not a magic drug for all illnesses in the region: it all depends on the circumstances in the region.”³¹

NEW REGULATORY APPROACHES TO MITIGATING THE POLLUTION ISSUES
ASSOCIATED WITH AGRO-INDUSTRIAL DEVELOPMENT

Given the problems associated with traditional bureaucratic regulation and the fashion for neoliberal market-based approaches, over the last twenty years policymakers have increasingly turned to using other policy instruments to provide incentives for achieving environmental standards. In contrast to compulsory instruments that permit no room for private discretion, governments may apply a range of “mixed instruments” involving varying levels of state and private provision. The state may also promote “voluntary instruments” and “incentive tools” that involve much less state involvement (Howlett and Ramesh 1995). Business interests have vigorously promoted self-regulatory approaches to environmental management, a process that came to fruition when corporate and legal experts from around the world drafted the global Environmental Management System or ISO 14000 series (Falkner 2003). With market-based approaches, the underlying assumption is that environmental governance can emerge as a natural outcome of the market process: if markets regulate themselves, producers will incorporate environmental concerns into their activities wherever consumers value environmental sustainability. In other words, the price mechanism can establish the optimal level of investment in environmental protection efforts (Falkner 2003; Rondinelli and Vastag 2000).

Frustrated by the failure of legal instruments to work on their own, policymakers in Indonesia’s State Ministry of the Environment have also turned to alternative policy tools, including market mechanisms, social controls, and out-of-court settlements.³² Consequently, there have been some attempts at promoting self-regulation in this area. For instance, in the early 1990s the government introduced a series of policies that aimed to clean up the dirty rubber problem. At that time the State Ministry for Environment had a Clean River Program (*Prokasih*) that aimed to reduce pollution loads in river by 50 percent in two years. Under *Prokasih*, factories had to sign agreements with the local government authority to comply with government regulations on wastewater effluent standards. To support *Prokasih* and to implement the national standards policy, the Indonesian Rubber Processors and Traders Association (*Gapkindo*) initiated a new clean rubber program.³³ Under this program CRFs entered into agreements with *Gapkindo* to stop purchasing contaminated rubber coagula from smallholders. If factories failed to comply, *Gapkindo* would give three written warnings and then request the sectoral agency to cancel the operating license of the noncompliant factory.

This policy was based on the premise that if no one buys dirty rubber, then no one would produce it. The premise was supported by the fact that CRFs

monopolize the marketing of smallholder rubber. As only raw rubber can be sold to CRFs, their refusal to take dirty rubber would force farmers to sell only clean rubber. *Gapkindo* supported the program because along with cleaning up the environment, removing the contamination practices of smallholders would improve the physical and chemical quality of rubber. Raising the quality of rubber exports would also increase the export earnings from the rubber industry.

While in theory the logic of this approach was correct, in reality it proved to be more complicated. The first problem was that rubber factories had excess capacity and competed to buy rubber from smallholders. If one factory did not comply, others would follow suit. This classic collective action problem became the obstacle to implementing a demand-driven approach to solving the problem. Second, *Gapkindo* depends upon CRFs for its funding, and it was not in *Gapkindo*'s interests to shut down noncompliant CRFs. *Gapkindo* is an association of processors and traders, not an enforcement agency, and to succeed this program would need the support of effective bureaucratic regulation. Third, the clean rubber program did not attempt to solve the problem of dirty rubber at the farm level: farmers being paid according to the weight of rubber produced rather than its quality continued to produce dirty rubber. Due to the failure of this policy, the clean rubber program closed in 1996. Henceforth, the policies regarding clean rubber existed only on paper: they could not be implemented because of the problems upstream in the rubber production process.

Indonesia has also witnessed the application of another key self-regulation approach: certification. Certification aims to enable the market to control and to select products that comply with quality assurance and waste management, and at the same time it offers greater incentives for industries to meet environmental policy objectives. In a global market, products bearing the appropriate stamp of certification—such as the ISO or the RSPO—gain access to a wider market because, at a time of greater environmental interest among consumers, consumers may choose oil palm and rubber products that are known to be produced in accordance with sustainability criteria.

Given that the reputation and ultimately the share price of transnational corporations can be affected by public campaigns against their products, public relations considerations provide considerable incentives for corporate actors to sign up for and to implement voluntary schemes such as RSPO. For instance, in 2008 Greenpeace engaged in a high-profile campaign against Unilever. Greenpeace held Unilever to be the world's single largest buyer of oil palm products, arguing that Unilever suppliers were destroying orangutan habitat and clearing Indonesia's peat lands and rain forests, significantly contributing to greenhouse gas emissions (Greenpeace 2007, 2008). In buyer-driven supply chains such as oil palm where suppliers wish to market their products to companies such as Unilever, the RSPO chain of custody requirements that attempt to ensure that all actors in the supply chain comply with

RSPO principles and criteria has placed pressure on Unilever's Indonesian oil palm producers to comply with RSPO (*Jakarta Post* 2008).

Certification schemes such as RSPO build on earlier experience with environmental management systems (EMS), which are simply systems designed for moving information around an organization to help a business make decisions that reduce its impact on the environment. In other words, by allowing a business to "evaluate its environmental performance against policy, objective and performance targets," an EMS facilitates self-regulation within the company (Melnyk, Sroufe, and Calantone 2003: 333). We may readily assume that a good EMS, if well implemented, will reduce negative environmental impacts. However, a certified EMS only ensures that a firm or plant meets "a process standard rather than a technical standard" (Welch and Schreurs 2005: 78). A company's EMS can meet ISO 14001 certification standards as long as it at least constitutes a system for identifying and complying with existing regulatory standards. While there is a great deal of discussion of "going beyond compliance," there are no sanctions for failing to show improvement: a certified EMS does not offer a guarantee that environmental outcomes are better than regulatory standards or indeed that the certified organization complies with a plant's or a firm's voluntary goals (Welch and Schreurs 2005; Rondinelli and Vastag 2000). In other words, the ISO process certifies that a company's environmental management system meets baseline standards for an environmental management system process; it does not set out to verify the actual environmental performance of a plant or company beyond that of meeting existing regulatory standards.³⁴ Consequently, a certification system such as the ISO (or indeed RSPO) may only provide a limited means of ensuring environmental improvement has actually occurred.

A key challenge is that of scale. ISO 9000 required standardization in handling wastes and processing of raw rubber beginning from tapping latex in the field, through transportation and the processing of unrefined rubber in the CRF, and including the system of delivery to consumer countries. In a similar fashion, ISO certification for oil palm (and later RSPO certification) requires standardization from the beginning of FFB harvest, through transportation, the processing of CPO, and delivery to the consumer. Consequently, effective implementation of ISO and RSPO processes requires a coherent management system. The most viable application of certification is on large estates where all activities (company policy, planning, implementation, internal audit and corrective actions, documentation, and continual improvement) are under the control of single company management. If various certification processes are integrated, they can be implemented in the same management system without significant additional staff. As smallholding sources of unrefined rubber and fresh fruit bunches depend on thousands of small-scale growers that are not under a single management system, it is very difficult for smallholders to meet ISO or RSPO standards. For certification to succeed, CRFs and POMs buying from smallholders have to compel their suppliers to contract to a

quality assurance system capable of meeting the requirements for ISO and/or RSPO.³⁵ In this context, partnership between smallholders and CRFs or POMs is seen as a key to creating a clean production system in the future. A system of making smallholders comply with this standard would add considerably to Indonesia's ability to reach global standards for trade. At present, ISO 14000, ISO 9000 series, and latterly RSPO criteria can only be applied to large rubber or palm oil estates, although moves are afoot to test the application of RSPO criteria to smallholders.

RSPO is still developing an independent auditing capacity to ensure an external means of verification that companies enlisted with the RSPO meet the RSPO standards and criteria but in a consistent manner and not just for a one-time audit. Developing an external auditing process and ensuring that environmental criteria are met raises all the issues of compliance to environmental norms that state regulatory process have failed to address.

In 2008, the first shipment of RSPO-certified sustainable palm oil arrived in Europe from Southeast Asia. In 2009, Musim Mas Group Plantations "became the first company in Indonesia to demonstrate that some of its plantations comply with the Roundtable for Sustainable Palm Oil (RSPO) Principles and Criteria" (World Wildlife Fund 2009). At present, however, the RSPO certification process does not guarantee sustainability. This became clear in 2008 when Unilever admitted to Greenpeace that it was unable to trace the origin of palm oil supplied by firms operating in Indonesia (Greenpeace 2008). Greenpeace leveled an accusation against Unilever that through RSPO they were "green washing their brand," effectively reframing their activities in such a way to legitimate their model of development (cf. Lemos and Agrawal 2006: 313). Nonetheless, with global buyers from 140 countries asking for certification, the controversy clearly provided greater cause for suppliers to become more rigorous in the application of RSPO criteria and standards (mongabay.com 2008; *New Straits Times* 2008)

As certification depends on a company's commitment to abide by certification rules rather than to merely comply with compulsory government policies, it is a form of self-regulation that relies on peer and market pressure and on management incentives to be effective.³⁶ As other research indicates, participation in voluntary international management standards (such as the ISO series) can facilitate uptake of environmental management practices (Delmas and Montiel 2008). To date, however, the RSPO scheme has a highly uneven uptake. Large corporate Malaysian actors have more rapidly adjusted to the demands of importing countries (such as the European Union) that insist on some kind of guarantee that the palm oil comes from plantations and mills with sustainable practices and demand some sort of certification for market access. Due to years of involvement in certification and ten years of audits under ISO 14001, these corporations are better placed to deal with pressures to conform with local laws and regulations, concerns with the environment, occupational health and safety, workers' rights issues,

and issues affecting local communities, together with problems associated with the agronomy and the ecology of oil palm plantations and milling (*New Straits Times* 2008). At this early stage, however, it remains unclear whether, as one study of the impact of ISO processes on industry found, application of the criteria will lead to the real reform of practices rather than merely improvements that remain primarily technical and administrative in nature (Boiral 2007). In a similar fashion to *Gapkindo*, RSPO is ultimately an association of producers; it remains to be seen whether RSPO will prove more successful in regulating its own members.

As with many other market-focused instruments, certification relies upon the internalization of environmental preferences by key stakeholders, particularly consumers (Lemos and Agrawal 2006). Some estimates suggest that China imports almost 50 percent of global oil palm production, with India also increasing its consumption (Ethical Corporation 2008). As both these markets do not ask for sustainable palm oil, small- and medium-sized Indonesian producers who focus on marketing their products to India and China may remain free from the incentives affecting suppliers to Unilever and the European market. Most have only observer status in the RSPO, choosing to avoid the expensive and troublesome RSPO certification processes.³⁷ Given that RSPO accreditation is so expensive at this stage—“in the range of five to 10 percent of the company’s CPO (crude palm oil) production cost”—the costs of developing, documenting, and certifying EMSs discourages small- and medium-sized companies from seeking certification, especially in developing countries’ markets, such as Indonesia, India, and China, where there are neither environmentally aware consumers nor vigorous regulators (*New Straits Times* 2008). This may yet lead to a market segmentation between a class of “clean” well-capitalized producers who seek to address RSPO criteria and thereby obtain a premium for selling certified products to developed markets, while the majority of “dirty” producers continue to sell uncertified product to developing markets outside of the RSPO framework at a lower price.

There is now such a loose network of institutions and actors involved in regulating Indonesia’s agro-industrial sector that the fragmentation in governance arrangements associated with decentralization, and now the shift to performance-based approaches under the umbrella of producer-led organizations, such as RSPO, has heightened the legal complexity of state and “voluntary” industry regulations. The concern is that these networks and rather disconnected arrangements will fail to provide the policy coherence required to ensure consistent outcomes, with large numbers of actors slipping through the cracks. The question is whether Indonesian regulators, by building on RSPO criteria and indicators that normatively provide for greater transparency and oversight by government and third parties (including communities), can integrate existing laws with RSPO criteria and standards to develop some implementation capacity and thereby use RSPO to improve district environmental regimes.

Another concern is that these certification processes can also be used by industries to protect themselves from more stringent standards (Delmas and Montiel 2008). For instance, some companies use the strategy of obtaining ISO 9000 and ISO 14000 series certification for one aspect of their overall operations, but then, in their public relations statements, they claim ISO certification for their whole operation. In the case of rubber production, one company (PTP III) obtained ISO 14000 for glove manufacturing. At the same time this company was operating ten CPO factories with a total capacity of 480 FFB/hr producing as much as 480 m³/hr. For some time, none of these factories have followed the ISO 14000 series. However, it is likely that these certification schemes may well pave the way for the next generation of more stringent and rigorous standards (*ibid.*). Further, as noted earlier, the effectiveness of provisions currently being developed for decertifying a company that becomes lax in its environmental practices remains uncertain. In addition, the degree to which the aims of the ISO 14001 series (let alone the more recent RSPO process) has been reached remains relatively under-explored, partly because environmental information is extremely difficult to obtain (Melynk, Sroufe, and Calantone 2003).

Rather than trying to impose post facto responses to environmental problems, another often-discussed policy alternative involves restructuring outmoded forms of industrialism (Eckersley 1995). Such managerial approaches, known as “ecological modernization,” seek to integrate environmental goals into corporate strategy by developing systematic environmental management strategies as part of production processes: for instance, by taking externalities from one economic production process and using them as raw material inputs for another (Andersen and Massa 2000). In the case of oil palm, integrating waste treatment for all type of wastes from a POM could provide significant benefits for plantations and reduce the social and environmental costs of pollution. Simple technological innovation can create various secondary products. If a plantation manager is committed, the cost to the community could be minimized. There are several uses of palm oil waste. For instance, plantations can channel liquid waste (known as Palm Oil Mill Effluent or POME) into cultivation areas in a process of waste use known as “land application.” While land application increases the productivity of oil palm while reducing the use of fertilizers, it involves relatively high investment costs and needs to be carried out carefully. Alternatively, POME processing involving an anaerobic system can also produce biogas, which can substitute for diesel oil (Schuchardt et al. 2001). Additionally, charcoal can be produced from the shell of oil palm fruits for export. Finally, plantation laborers can mix compost from EFBs with liquid waste to produce compost with very high nutrient content that can substitute for conventional fertilizers used, for instance, in vegetable production (*ibid.*).

These technologies are expensive, however. For example, the German technology for using fresh POME for composting EFBs would cost Rp2 billion (approx. US\$180,000). According to an official in the Plantation

Agency, when this method was discussed with companies involved in oil palm production, companies lacked enthusiasm about moving ahead with this technology due to the expense involved.³⁸ Factories may be particularly reluctant to make the initial investment in waste treatment companies unless such an investment fits in with a wider corporate strategy to take up industry standards as a means of gaining wider market access.

Consequently, better environmental outcomes are more likely to emerge through application of a range of policy instruments involving varying levels of state, donor agency, and private provision that aim to deal with the embedded nature of this problem. In the case of the rubber industry, this would involve ensuring the production of clean rubber at the smallholder level, with a range of policies to pass on higher market prices for clean rubber right down the supply chain, along with government regulation to ban reinvestment by rubber factories in machinery to process dirty rubber, and in the long run ensuring that only machines for clean processing can be used.

CONCLUSION

In examining the logic underlying the series of transformations in the regulatory regime in Indonesia, we have discussed the intractable and pervasive institutional problems that weaken traditional bureaucratic regulation. These include the dependence on investment and taxes from industry and the collusive patterns of interaction between polluting industries and local level agencies. Consequently, in the absence of regulatory deterrence, oil palm and rubber industries long continued to externalize their environmental costs and avoid investing in pollution control at the expense of the health and well-being of surrounding populations and the global climate.

In theory, decentralization should make implementing agencies more responsive to the needs of local communities and improve the provision of services, including to those communities impacted by pollution. However, the shift represented by decentralization presents its own set of problems, particularly the difficulty of building the capacity of district governments. The challenge also remains of making local government more responsive to local stakeholders by strengthening the lines of responsibility and accountability in relation to policy implementation and monitoring. Legal regimes are currently being improved (Nurhuda 2009). Further reforms are required to provide a clearer elucidation of the responsibilities and areas of authority of the agencies working at different levels of government. Regional laws need to ensure that authority over environmental affairs in autonomous districts and municipalities is provided to appropriate institutions headed by suitably qualified officials who have sufficient status and funding.

Performance-based approaches that involve assessing production processes by a firm against sustainability criteria and making access to particular markets conditional upon adherence to certified standards in the production

process and the minimization of waste can provide significant incentives for improvement. However, certification processes face a major limitation because they are voluntary instruments, and many producers may not sign up for them, particularly those supplying the large developing markets where there is no consumer pressure for certified agro-industrial products. Given the size of the agro-industrial sector in Indonesia, even for suppliers who do sign up for these schemes, the challenge remains of providing effective external mechanisms for ensuring the environmental performance of firms meet the prescribed standards. This will require, for instance, the involvement of auditors, regulators, and third parties such as local communities.

The application of technologies that utilize economically valuable wastes offers further possibilities for pollution control. However, these also depend on the commitment of factories and involve considerable investments. Larger producers may be able to meet initial compliance costs and thereby obtain greater benefits through subscribing to new performance-based mechanisms and the technologies that support them. Smaller factories, however, may be unable or unwilling to develop coherent management systems and make the initial investments. Solving these deep-rooted problems would require technical and financial incentives from policy organizations, buyers, factories, and NGOs that aim at increasing smallholder incomes and providing incentives for cleaner production, and introducing appropriate technology at the farm level, as well as organizing smallholders. Introducing supporting state regulatory regimes that incorporate the norms and criteria of voluntary regulatory regimes such as RSPO may help to institutionalize the standards prescribed by international regimes (such as RSPO and ISO) within the local context. Further, RSPO norms and criteria could be used in a fashion similar to that of Performance Ranking Evaluation Program (PROPER)-type programs, which use a firm's concern about its reputation to further ramp up pressure to comply with environmental standards.³⁹

We conclude that policymakers need to avoid the temptation of valorizing either market or state regulatory approaches to environmental problems. In the case of oil palm, solutions need to be crafted that combine different policy instruments to face the specific problems associated with certain sectors of the industry. Despite the intractable problems facing bureaucratic regulation, the attempt to implement environmental regulations should not be abandoned because, as we have seen, voluntary, market-oriented, and decentralized governance approaches are unlikely to succeed individually. Given the constraints facing these alternatives, legal instruments need to be sharpened to ensure that companies who operate in the shadow of the law are required to improve pollution mitigation systems. The state remains a key vehicle for the supply of public goods and the pursuit of collective interest in the environment. Encompassing forms of public participation in decision making and enforcement can assist compliance-oriented approaches.

The Unilever case demonstrates that NGO coalitions are able to work across national boundaries. Their capacity to identify the forum in which

transnational market chains are most vulnerable may assist in bringing pressures to bear on actors to implement “voluntary” RSPO criteria and indicators. As Indonesian policymakers have realized that the country’s lucrative oil palm exports will be subject to international opprobrium unless they meet RSPO standards, NGO coalitions mobilizing around the noncompliance of companies to RSPO criteria and indicators are beginning to affect state policy in the face of the threat of international boycotts to products containing Indonesian oil palm.⁴⁰ In this sense, public and civil society organization participation in decision making and enforcement will remain critical.

As studies in developed countries also show, regulation—rather than a system of hierarchically imposed and uniformly enforced rules—primarily functions as a mechanism that interacts with market and civil society pressures to generate environmental improvement (Kagan, Thornton, and Gunningham 2003). Consequently, bureaucratic regulation and governance approaches, including the application of market instruments, need to be mutually supportive (Eckersley 1995; Aalders 1999). Taken together, they may yet provide hybrid forms of regulation that build upon the reality that no single agency, actor, or institution possesses the capacity to address “the multiple facets, interdependencies, and scales of environmental problems” (Lemos and Agrawal 2006: 311). In the absence of state capacity to implement the required strategies, carefully combined hybrid forms of regulation may be the only approach for supporting better outcomes for rural environments.⁴¹ It remains unclear, however, to what degree such approaches can prevent large groups of suppliers and producers from continuing to externalize environmental costs. In a fragmented and highly politicized policy context, the problem remains that loose networks of institutions and actors may fail to provide the policy coherence required to ensure consistent outcomes. By mixing policy tools and providing for continual improvement as the state seeks to respond to outside criticism, incremental improvements that involve integrating these approaches may move the state to enhance its capacity for improving policy and implementation over time.

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NOTES

1. In particular the opening of wetlands for oil palm plantations is associated with peat oxidation and fires causes large-scale methane and carbon emissions (Parish 2008). The extension of oil palm into peat lands is associated with the limited availability of mineral land for large-scale plantation in Sumatra and the failure to apply spatial planning criteria before granting location permits in these areas (ibid.).
2. Press reports frequently discuss this ongoing problem. See, for instance, *Sinar Harapan* (2002), *Suara Pembaruan* (1999a, 1999b, 2001).
3. Based on the technical specified rubber (TSR) standard, Indonesia has developed Standard Indonesian Rubber (SIR). In Indonesia, crumb rubber is given an SIR grade on the basis of its physical and chemical properties including dirt content, ash content, nitrogen content, volatile matter, plasticity retention index, and Wallace plasticity.
4. This has included the growth of private CPO factories without plantation areas that have more severe impacts on the environment due to the limited area available for wastewater treatment and the inability of these mills to channel their wastewater for land application. While a regulation (UU Perkebunan No. 18/2004) forbids the development of factories without plantation areas, the companies have been able to collaborate with KUD and farmer organizations to avoid closure.
5. For an earlier discussion, see Warren and Elston (1994).
6. According to Ministry of Environment figures for 2008, seventy industries faced administrative sanctions for pollution related problems. Although one industry lost its license and another was forced to suspend its activities, no factories were closed. Civil litigation was brought against a further ten cases, while another thirty-three businesses with industrial licenses faced criminal litigation, with only five cases culminating in jail sentences (Nurhuda 2009).
7. With a shortage of dry land areas unimpeded by smallholder land rights, and with the opportunity of offsetting the cost of developing peat lands against “the valuable commercial swamp timber species extracted before land clearing,” developers have been prepared to open plantations in the complimentary lands allocated by the state in less fertile peat lands (GEC Malaysia Peat-Portal 2001).
8. To overcome this problem, in 2008 the State Ministry for the Environment drafted a new directive setting out the organizational requirements and expertise required for district EIA commissions to gain official accreditation to evaluate development proposals. See *Kompas* (2008a).
9. On occasion, he argued, this is demonstrated for instance when, in the course of developing the EIA, consultants forget to change the layout to reflect a new factory design. Consultants writing EIA reports have been known to forget to change the name of the factory on the EIA document that they are using as a template for a new EIA report (Interview, Environmental Consultant, Medan, Indonesia (May 2001)).
10. The Plantation Agency (*Dinas Perkebunan*) has been shifted between the Ministry of Agriculture and the Ministry of Forestry under successive cabinets. Industries must also report the results of their self-monitoring activities every six months in accordance with the monitoring and management plans set out in the original Environmental Impact Statement (EIS).
11. Interview, *Dinas Perindustrian*, Medan, Indonesia (June 2001).
12. E.g., Government Regulation (PP) No. 27 (1999).
13. See Sections 25–29, 31–39, of the Environmental Law (UU LH No. 23/1997).
14. Source: field notes.

15. Alternatively, cases can be handled outside court through mediation. See Sections 25–29 of the Environmental LAW (UU LH No. 23/1997). For a discussion of the role of mediation in environmental disputes, see Nicholson (2005).
16. Interview, *Dinas Perindustrian*, Medan, Indonesia (March 2002).
17. To overcome this problem, in the process of revising the Environmental Law (UU LH No. 23/97) lawmakers are considering the powers of civil investigators, criminal sanctions, and the responsibilities of the consent authority, as well as revising provisions regarding transboundary pollution in order to overcome the territorial and administrative constraints that have worked against pollution control (Hasibuan 2009; Nurhuda 2009).
18. Interview, *Dinas Perindustrian*, Medan, Indonesia (May 2001).
19. Ibid.
20. Interview, engineer, POM, Labuhan Batu, Indonesia (March 2002).
21. Interview, *Dinas Perkebunan*, Medan, Indonesia (June 2001).
22. See Manor (1999) and Lemos and Agrawal (2006).
23. This framework law was replaced in 2004 by UU No. 32/2004 (with a new implementing regulation PP No. 38/2007). The new laws set out very similar environmental responsibilities for district governments.
24. If environmental impacts potentially concern more than one district, the AMDAL commission is now coordinated at the provincial level; whereas, if potential impacts are limited to a single district, the commission is coordinated at the district level (See Kepmen Men LH No. 40, 41, and 42 of 2000). The national government coordinates commissions for applications for large projects with national implications. The final decision for issuing an AMDAL rests with the relevant sectoral minister and local government, either the governor or *Bupati* (head of district government).
25. See PP No. 25/2000. In early 2002, *Bapedalda* ceased to exist as a separate agency, and the state minister for the environment took over the *Bapedalda* functions.
26. For further discussion, see Warren and McCarthy (2008) and Resosudarmo (2006).
27. Interview with *Bapedalda*, Sumatra Utara, Indonesia (March 2002).
28. Interview, LH official (June 2001).
29. Interview, *Bapedalda* Head, Deli-Serdang, Indonesia (May 2001).
30. Interview with Gapindo, Medan, Indonesia (June 2001).
31. Interview, LH section, Tebing Tinggi, Indonesia (June 2001).
32. Interview, LH official, Medan, Indonesia (March 2002).
33. Government regulations (such as PP No. 15/1991 regarding national standards) prohibited the export of lowest quality rubber (SIR 50).
34. A certification process (such as RSPO's) involves a three-stage process: first, the development of standards and criteria for certification; second, an accreditation process that ensures that the actors carrying out the accreditation are competent and credible; and, third, a certification process involving a physical audit, the preparation of audit reports and peer review of the reports under an auditing system that is seen to ensure that the standards have been met (RSPO 2007a, 2007b; *New Straits Times* 2008).
35. ISO standards are documented agreements of technical specifications that companies use as guidelines to ensure that materials and products fit their purpose. In the early 1990s, ISO developed an environmental management standard (ISO 14000 series). The ISO 9000 series was designed for quality management that would enhance firms' ability to attain and measure improvements in performance and to facilitate trade and remove trade barriers (Nash and Ehrenfeld 1996).

36. ISO certification involves a three-month preparatory period under a consultancy company and an external audit every three years. The advantage of having ISO certification is that it gives a company guaranteed market access because importers don't need to test every shipment (Standard National Indonesia (SNI) adopts ISO standards).
37. Interview with participants, RSPO annual meeting, Bali, Indonesia (December 2008).
38. Interview, *Dinas Perkebunan*, Medan, Indonesia (April 2002).
39. The PROPER program rated the compliance status of the polluters and publicly disclosed these ratings, in effect using a firm's concern about its reputation to pressure it to improve performance. See Lucas and Djati (2000).
40. In Jambi the provincial government has asked oil palm companies to begin to meet RSPO criteria and even discussed creating a provincial team to monitor company compliance. The provincial government also sees RSPO as an opportunity to apply pressure on companies to clean up river pollution and to enhance the bargaining position and knowledge of farmers. Interview with provincial NGO, Jambi, Indonesia (March 2009).
41. For a related discussion, see Gunningham et al. (1998).

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