Chapter 4

Corporate Environmental Information Disclosure: An innovative policy to promote sustainable production

Chapter 4

Corporate Environmental Information Disclosure: An innovative policy to promote sustainable production

Abdessalem Rabhi, Tomohiro Shishime, Tetsuro Fujitsuka, Hiroo Iino, and Xianbing Liu

1. Introduction

In developing Asia, many companies and business networks have engaged in sustainable production activities because they believe it will give them a competitive advantage, or because they see it as a core part of their business model. However, a large part of this group seems to take such action as a response to growing pressures or incentives from their related stakeholders, in particular investors and governments. In this region, pressure or incentives have been generated mainly from government agencies which have for many years been working to promote corporate sustainable production through traditional policies, such as command and control, and market-based instruments.

This chapter discusses the use of corporate environmental information disclosure (CEID) as a policy option to promote sustainable production in developing Asia.

The CEID approach refers to revealing information about the operational activities and environmental behaviour (products, production process, management procedures) of a company to consumers, investors, government officials, communities and the public at large. Informed stakeholders accordingly make sound decisions and their reactions are translated into incentives for good performers and pressure for poor ones.

Chapter Highlights

This chapter discusses corporate environmental information disclosure (CEID) as a policy option to promote SCP in developing Asia. Corporate environmental reporting and environmental performance rating programmes as CEID initiatives in the region are reviewed and discussed.

- CEID schemes in developing Asia hold promise for promoting environmental performance, but with considerable room for improvement. Accurate corporate environmental reports are scarce and environmental performance rating programmes seem to motivate significant environmental improvement more for companies with poor performance records.
- To promote sustainable production on a more significant scale, CEID policy should be recognised as a complementary policy as part of a policy mix including C&C and market based instruments, not as a standalone policy.
- CEID not only brings companies to compliance, but also helps identify the compliance level of other companies, which enables regulators to strategically select policy tools.
- Enforcement tools should be oriented to those companies which are below compliance, while market-based mechanisms should be oriented for those above compliance as incentives to make even further improvement.

Efforts should be taken in areas such as providing accurate information for stakeholders, empowering stakeholders to generate sufficient pressures/incentives, and encouraging companies to participate in this process, especially SMEs. Multi-stakeholder cooperation at national and multi-national levels is needed.

Thus, CEID has an advantage of enabling concerned social actors to act on corporate environmental management, and bringing them on board, together with government agencies, to generate pressure and incentives for companies to adjust their production activities. CEID also educates companies on their own performance and helps them to identify potential areas of environmental improvement. Investing in the provision of corporate environmental information as a vehicle to make the community and private sector active collaborators in the regulatory process has become a policy option that should be examined to see if it can promote sustainable production on a more significant scale in the region.

Command and control approaches have worked reasonably well for the control of large and highly visible sources of pollution (Anderson 2002). Over time, however, several scholars have pointed out that these regulatory approaches were excessively costly (Dasgupta, Laplante and Maminigi 2001; Tietenberg 1985). Market-based instruments, on the other hand, have added both flexibility and improved cost-effectiveness to emission control policy and also contributed to improved environmental performance (Vincent 1993; Arbelaez et al. 1998). Nevertheless, they have been introduced with varying degree of success (Hahn 1989; Tietenberg 1990).

In developing Asia, as elsewhere in the world, CEID is gradually gaining acceptance both at the company and government level. Indeed, many leading companies are voluntarily revealing information about their operational activities and environmental behaviour to the public at large in annual reports, environmental and safety reports, sustainability reports, and corporate social responsibility (CSR) reports. Some governments also are taking the initiative by driving or supporting programmes that reveal the rating of the environmental performance of companies such as the Program for Pollution Control, Evaluation and Rating (PROPER) of Indonesia, Eco Watch of Philippines, Green Watch of China and the Environmental Rating project in India.

To discuss the option of using CEID as a policy to promote sustainable production in developing Asia, this chapter reviews some of these voluntary and government supported CEID initiatives, and analyses the constraints to using this policy tool in a more effective way.

The remainder of the chapter is organised as follows: Section two reviews the determinant factors of corporate sustainable production which may show the necessity for adding CEID as a policy to promote corporate environmental management. Section three highlights the types of CEID and the channels through which it works. Section four sheds light on the current status of CEID in developing Asia by discussing some voluntary-based and government supported CEID initiatives. Section five analyses the constraints on using CEID as a strategy to promote corporate sustainable production. The last section is reserved for concluding remarks and a number of policy recommendations.

2. Determinant factors of corporate sustainable production

In developing Asia, as elsewhere in the world, companies are increasingly engaging in sustainable production activities and taking actions to benefit the environment and society. However, many companies are acting in response to growing pressures and incentives from their stakeholders. Gunningham, Kagan, and Thornton (2003) identified three types of pressures on a company: (i) economic or competitive pressure, (ii) regulatory pressure, and (iii) social or community pressure.

These external factors jointly shape to what extent companies choose to pollute or how often they choose to go beyond compliance. Howard-Grenville, Nash, and Coglianese (2008) added a fourth factor: internal factors or pressures. They argue that the internal attitude and characteristics of a facility, such as the perception and attitude of the manager, organisational identity and culture, and organisational structure, help explain how facilities perceive and deal with environmental problems.

A study conducted by Blanco et al. (2005) about the role of voluntary initiatives in sustainable production noted that the drivers for corporate voluntary initiatives have been very different throughout the Asia-Pacific region. In the industrialised economies, public environmental consciousness, consumer awareness and strength of non-government organisations (NGOs) are all clear drivers. However, in the less industrialised economies, the requirements set by the export markets represent a strong driver.

The econometric exercise in a Chinese case study conducted by Liu Xianbing and Venkatachalam Anbumozhi (2009) indicates a significantly positive effect of the overall level of environmental management of the industrial sector on the environmental management level of an individual company. Companies are likely to mimic the practices of leading companies in the same sector. According to the same study, the general public and industrial associations are not considered as the main driving mechanisms of proactive corporate environmental management in China. Another study conducted by Kansai Research Centre, Institute for Global Environmental Strategies (KRC/IGES) in 2008 on corporate environmental management in Thailand found that foreign and domestic market demands, and gaining a good reputation for the firm are among main driving factors for Thai companies to engage in proactive environmental management activities.

From this background, it is clear that besides government agencies, other stakeholders can also play a significant role in driving companies to take proactive actions and engage in sustainable production. However, their participation level and roles have been neglected in traditional environmental management policies such as command and control and market-based approaches, which focus on regulators as the only significant source of pressure and/ or incentives. Thus, a new multi-stakeholder approach, such as CEID, that links the companies, the government, the community, and the market should be examined to see how it can promote sustainable production to a greater extent (see Box 4.1).

CEID is used as a communicating tool for companies to connect with other actors. It is a reputational incentive that may generate a different pattern of responses than traditional approaches. Under a command and control approach, polluters in the same regulatory class are all required to meet the same standard regardless of cost. The result is generally convergence to the standard and great divergence in marginal cost of abatement across companies. Under market-based tools, polluters will tend toward abatement equivalent to marginal cost, but there will be great divergence in abatement practices. In a pure reputational incentive regime, polluters will abate to the point where the marginal cost of abatement is equal to the expected marginal gain in reputation value. Where reputation has no value, polluters may choose not to abate at all. However, polluters in sectors, communities or markets where reputation has a very high value may choose to abate more under reputational incentives than under either command and control or a market-based policy framework (Afsah et al. 1995).

Box 4.1 Green Prize winner urges Asia to name and shame polluters

Elisea Gillera Gozun, who leads seven environment non-government organisations (NGO) in the Philippines, winner of the 2007 annual Champions of the Earth award, said in an interview with Reuters:

"Asia's environmentally unfriendly firms should be named and shamed into cleaning up their acts, as this is more effective than government regulation in promoting green issues… We react more to that rather than the fear of regulation… Bureaucracy often gets in the way of enforcing environmental standards and many firms do not take threats of closure very seriously… government regulation is not a real threat, and it's not something that firms fear."

Elisea Gillera Gozun cited an example of a textile firm in Manila which had discharged untreated water into the city's Malabon-Navotas river in the 1990s, and was shamed into cleaning up the effluent after the government named it as one of the "dirty dozen" responsible for polluting the river.

"The children of the family that owned the textile firm were so ashamed by this that they refused to go to school… They said 'We are so embarrassed because now our classmates are saying we are rich, we are making money, but we are polluting the river'… That's what woke the family up. They cleaned up their act, and now serve as a leader in the community."

Source: Article is available at: http://www.javno.com/en-economy/green-prize-winner-urges-asia-to-shame-polluters_36261 (Last accessed 17 December 2009)

3. CEID as a strategy to promote corporate sustainable production

3.1 Definition and types of CEID

CEID refers to the dissemination of information relating to the operational activities and environmental behaviour of companies (products, production process, and management procedures) to their related stakeholders and the public at large. Depending on the way information is conveyed, CEID can be classified into three types.

- Type 1: Certification of products, processes or management procedures by independent agencies: Examples include eco-labelling and green labelling certification, which are oriented towards products, and International Organization for Standardization (ISO14001) certification and Eco-Management and Audit Scheme (EMAS), which are oriented toward an environmental management system.
- Type 2: Self-certification, without fixed criteria or independent outside review: For example, many companies evaluate their environmental performance according to several criteria and their own internal goals, and are disseminating their results in annual environmental reports, such as CSR reports.
- Type 3: Provision of raw data, without interpretation or judgement, sometimes in the form of life cycle analysis: Examples include the Toxic Release Inventory (TRI) programme implemented in the U.S., and the Pollutant Release and Transfer Register (PRTR) programme implemented in Japan.

Environmental performance rating programmes such as PROPER in Indonesia, Green Watch in China, and a green rating project in India, have traits of both type 1 and type

3. The information is interpreted through ratings and refers to firms or plants rather than products, and the rating is carried out by a government or NGO (Lopez et al. 2004). Regardless of the type, all CEID programmes have the same functional mechanism to influence corporate environmental behaviour.

3.2 Functional mechanisms of CEID

Tietenberg (1995) identified seven channels through which CEID may motivate improved corporate environmental performances. To simplify the exposition in this chapter, these channels are grouped into five broader categories.

- Output market pressures such as pressure generated by individual or group purchasers;
- Input market pressures such as the pressure generated by investors who provide capital as financial inputs;
- Formal regulatory pressures generated by government institutional regulation;
- Informal regulatory pressure generated by communities, industry associations, NGOs, legislation, media, etc.;
- Firm's internal pressures generated by managers, employees, etc.

Output market channel

Giving clear, straightforward information on the environmental performance of a company or about the environmental effects and qualities of its products, and how to use and dispose of them helps consumers to make informed buying choices. For example, eco-labelling certification is one of many ways to provide product information on environmental performance and has the added advantage of having the information affixed to the products. Forest certification, discussed in chapter 8 of this White Paper, is an example of eco-labelling that identifies products with wood materials sourced from forests managed according to a set of minimum sustainability standards. Carbon labelling is other example of a new initiative to communicate with consumers how much a product contributes to the reduction of greenhouse gases (see Box 4.2). Some organisations, such as GoodGuide,[1] are also committed to providing information on the health, environmental, and social impacts of products and companies that people need to make better decisions. Through the GoodGuide website, users can search for information on over 70,000 food products, toys, personal care and household products. They can also create their own lists of favourite products, or products to avoid, and then publish these lists on a blog or website.

The environmental awareness of some consumers has reached a critical level, where their purchasing behaviour has become sensitive to the environmental characteristics of the products and services they purchase. Thus, CEID could either reduce or enhance their demand for a company's output, depending on whether the company is practicing relatively sustainably or unsustainably. Depending on the environmental preference of consumers, market demand can be adversely affected by a negative reputation. Boycotting environmentally damaging products or products of poor environmentally performing companies represents a pressure on these companies to change their production behaviour. This output market pressure is amplified when environmental considerations form a part of the consumption decisions of large-volume purchasers, such as government offices (e.g., public timber procurement policies discussed in chapter 8) or big chain stores.

Box 4.2 Thai "Carbon reduction label" to enhance consumer decisions to help offset CO_2 emissions

Thai Carbon Reduction Label

Thailand Greenhouse Gas Management Organization (TGO) is a public organisation working in cooperation with Thailand Environment Institute (TEI) to establish a "Carbon Reduction Label" scheme. This provides a measure, expressed as "carbon dioxide equivalent," of how much a product contributes to the reduction of greenhouse gas emissions across its life cycle. Such a label has been in use in many countries, for example, France, the UK, Sweden, the U.S. and Japan. With the Carbon Reduction Label, TGO foresees the opportunity to motivate producers to emit less greenhouse gases by using more efficient processes which will meet consumers' choices. This new system is planned to enable consumers to identify goods manufactured with a minimal release of greenhouse gases into the atmosphere.

Sirithan Pairojboriboon, director of TGO, views this system as a way to allow Thai consumers to directly participate in environmental management and influence production behaviour. He expects "more producers of consumer goods to apply for the labels so that they could be seen as promoting an image of environmental protection." He also anticipates that "products carrying the carbon labels will enjoy greater export sales, since the European Union has geared up for the enforcement of new environmental regulations requiring imported products to have a carbon label."

The Carbon Reduction Label has drawn attention from members of the Thai industrial sector. As of 27 March 2009, 34 producers have applied to register their products. Currently 25 products from nine product categories are registered. They include dried food, cement, artificial wood, rice bags, condoms, floor tiles, ceramic tiles, cooking oil, and milk cartons.

Sources: http://www.bangkokpost.com/life/family/14194/carbon-reduction-labels-arrive (Accessed 4 December 2009); http://www.bangkokpost.com/190808_News/19Aug2008_news12.php (Accessed 2 December 2009)

Input market channel

In the capital market, CEID schemes provide an important channel to inform investors and financial institutions about the environmental performance of companies. Socially Responsible Investors (SRI) with strong environmental preferences and financial institutions are looking to responsibly invest their resources. The ranks of these SRIs are growing through developed and developing countries and many organisations are dedicated to promoting their practices. Social Investment Forum[2] in the U.S., the European Sustainable Investment Forum (EuroSIF)[3] in the E.U., and the Associate for Sustainable and Responsible Investment in Asia (AsRIA)[4] are examples of organisations

that provide insightful, up-to-date, and accessible information on the development of SRI, and are the platform for different sectors within the community to exchange information and perspectives on SRI, and to take good practices forward. In this regard, the United Nations Environment Programme (UNEP) launched its Principles for Responsible Investment[5] that provide a framework to help investors incorporate environmental, social, and governance (ESG) factors into the investment process. Furthermore, the Equator Principles Financial Institutions (EPFI) have adopted the "Equator Principles"[6] as a financial industry benchmark for determining, assessing and managing social and environmental risks in project financing. SRIs screen companies for high standards in environmental performance as they develop their investment strategy. Available information about the environmental performance of a company can attract attention or cause investors to shift away from potential investment. Poor environmentally performing companies will find it difficult to attract these SRIs and/or raise funds unless they improve their environmental performance (Box 4.3).

Box 4.3 Involvement of stakeholders in the input market to promote green credits

In India, financial institutions are increasingly promoting green credit. In this regard, many financial and insurance firms are beginning to insist on comprehensive environmental audits to limit the environmental risk in their project financing. Many other financial institutions have created special departments to examine the environmental implications of their lending policies.

In China, on 12 July 2007, the State Environmental Protection Administration (SEPA),[7] the People's Bank of China and the China Banking Regulatory Commission (CBRC) jointly issued a policy called "Notes on Reducing Loan Risk by Enforcing Environmental Protection Policies and Regulations," promoting a green credit policy to all enterprises in the country. Soon after that, the Notice on the Prevention and Control of Loan Risk from High Pollution and Energy Consumption Enterprises was released by CBRC. Moreover, some commercial banks also declared their own requirements with regard to green credit. For example, the Industrial and Commercial Bank of China proposed the establishment of a one-vote veto system: once an enterprise does not comply with environmental policy, it is may not receive loans. Enterprises' environmental compliance is now considered a prerequisite to obtain loans. Enterprises that implement better environmental protection policies may receive preferential financial support from the banking sector.

Source: IGES 2008

Formal regulatory channel

Formal regulators need environmental information to set regulations and design market-based instruments. They attempt to collect information through Environmental Impact Assessment (EIA) programmes, environmental monitoring plans, real time monitoring systems, and remote sensing. The information gathered allows authorities to set priorities and eventually make more informed choices on policy instruments. It is in this sense that CEID is a prerequisite for regulation, as some poor performing companies have clear incentives to withhold some kinds of information. In the absence or lack of needed information, regulators adopt stricter performance standards on all companies independently of their environmental performance level, and/or use inappropriate market-based instruments which can be both costly and time consuming. However, in several cases, CEID has provided competitive incentives for superior performers to identify

themselves, hence helping the regulators identify poor performers. In this case, the limited inspection and enforcement budget of environmental agencies can be applied towards poor performers, thereby increasing the expected cost of non-compliance through the increased probability of inspection and enforcement.

Informal regulatory channel

In many cases, communities, NGOs, and respected civil society organisations are well aware of environmental risks but may not have adequate information to identify the precise pollution sources, pollutants, their health effects or levels of exposure. In such situations, CEID will fill the gap and may catalyse their action. With the appropriate information at hand, the general public, local communities and NGOs can impose costs on firms by mobilising people in their economic roles—as consumers, investors and workers, to take personal and collective actions against badly performing companies.

They can also call for and execute boycotts or use environmental class action suits as a means of influencing the environmental performance of companies. Furthermore, they can provide political support to environmental authorities to force powerful companies to comply with environmental standards and to initiate action against those causing environmental damages (Box 4.4). With the current limited capacity of the government to inspect enterprises, complaints from local communities will help agencies to prioritise the inspections.

Box 4.4 Empowered informal regulators' actions against polluting companies

Local community concerns have played a major role in bringing truant industries in line. With more than 10,000 special interest groups in the environmental and developmental sector, India's increasingly strident green movement has caused several facility relocations and closures. These include relocation of a $176 million nylon manufacturing joint venture of DuPont and a local company from Goa, and the abandonment of a $714 million integrated steel project, and closure of a Coca-Cola bottling plant in southern India, among several others.

NGOs also act as whistle blowers and watch dogs in initiating actions against organisations and individuals causing environmental damage and participate in policy making and gathering opinions from the public.

Increasing awareness has led citizens to approach courts to settle environmental disputes. Indian courts have been looking more sympathetically at these cases and have from time to time passed directions and judgments to reduce environmental damages. In one instance, India's Supreme Court served closure notices to over 9,000 polluting industrial units in the capital city of Delhi and ordered their relocation. In another judgment, the Court ordered the immediate closure of 59 industries located in the southern state of Tamil Nadu, for not installing the required effluent treatment plants. In the western state of Gujarat, the High Court threatened over 250 chemical units with closure for discharging toxic effluents into a nearby river, while about 232 units were placed on a watch list.

Source: IGES 2008

Firm's internal channel

CEID is beneficial to companies as well. It may provide new information to top managers about their company's performance, and options for improving it. CEID also works through internal benchmarking because it requires data collection and reporting in standardised formats on a regular basis. Because diverse groups scrutinise the environmental data, public disclosure strengthens the culture of environmental data collection in addition to disciplining the system of environmental data collection within an organisation.

Consequently, it becomes possible for a company to observe the rates of environmental improvement relative to its historical baseline and undertake appropriate measures for continual improvement. As information on environmental performance of companies becomes publicly available, comparative analysis and environmental benchmarking are feasible. Since companies compete with their public image and reputation, CEID creates dynamic incentives for environmental improvement. Blackman et al. (2004) surveyed managers of companies participating in an environmental rating programme in Indonesia, and found that the determinant means by which the programme spurs abatement was by improving managerial information.

4. CEID initiatives in developing Asia

In developing Asia, CEID schemes are gradually gaining acceptance at company and government levels. Many companies are using corporate environmental reports to communicate details about their environmental performance with their related stakeholders, whereas governments are establishing or supporting environmental performance rating programmes, such as in the Indonesian, Chinese, and Indian cases described below. Both schemes provide information on the environmental performance of an entire company, not only on one product, and are discussed below.

4.1 Corporate environmental reports

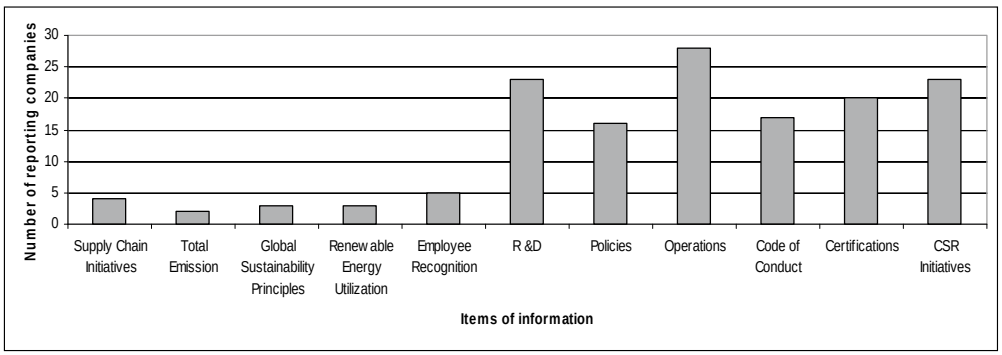
Corporate environmental reports (CER) are publicly available, stand-alone reports issued voluntarily by companies on their environmental activities. Factors driving companies to publish such reports vary across companies and across countries. While companies in Hong Kong identified attracting Socially Responsibly Investors (SRI) as the main factor for corporate environmental reporting, companies in Malaysia also cited meeting the demand for transparency and accountability as a main factor (Environmental and Social Development Department East Asia and Pacific Region, World Bank 2006). In China, social factors were recognised as the main factors followed by market, political and regulatory factors, respectively (Liu 2009).

On the positive side, evidence shows that some CERs have helped reduce emissions, increase company eco-efficiency, or boost competitiveness (Arimura, Hibiki, and Katayama 2007). They also helped companies avoid more costly regulation and saved governments some regulatory expenses (Schmidheiny, Chase, and De Simone 1997), but in practice, they have several weaknesses that are obstacles in the drive for better environmental performance on a significant scale in developing Asia.

For example, it is difficult to compare the environmental performance of different companies, or to track their performances over time based only on their CERs because these reports are not standardised, and report different types of data. Some reports

simply state the environmental commitment of a company and its goals for improvement without significant data, interpretation, or clearly specified steps being taken. Others offer a wealth of data, but it is often focused on product safety, hazardous waste or other compliance information taken from mandatory reports to the government rather than environmental performance variables that would give a fuller picture of the company (Utting 2002). Figure 4.1 shows some of the environmental information items reported by 30 selected Indian companies from different sectors (20 in chemical industry, six in automobiles and four in food and beverage) in their CERs. It shows how companies are more willing to disclose subjective environmental information such as the company's own policies, spending on research and development, certifications obtained, and CSR activities, but that they are reluctant to share information on actual performance, such as pollutant emissions, renewable energy utilisation, and global sustainability principles.

Figure 4.1 Sample of the information reported by selected Indian companies in their environmental reports of 2007



Source: Figure produced by authors based on data from IGES 2008.

Furthermore, CERs do not guarantee that companies really have good environmental records. For example, Unilever received an award from the Association of Chartered Certified Accountants (ACCA) for its environmental reporting despite the fact the company did not mention a mercury poisoning accident in India that occurred in the same year (Doane 2005).

With the emergence of the Global Reporting Initiative (GRI) guidelines and other NGO oriented initiatives like the Carbon Disclosure Project, companies are under pressure to provide verifiable, accurate quantitative data about the size of their social, economic and environmental imprint. These guidelines outline the core content for consistent reporting and are relevant to all organisations regardless of size, sector, or location, which make it possible to compare the environmental performances between companies, and to track their performance over time. However, in developing Asia, the number of companies participating in these initiatives is still very limited. They are mainly large firms or subsidiaries of multinational companies. Table 4.1 shows the number of participating companies in GRI in selected Asian countries and the rest of the world. Although the number of participating Asian companies in GRI has increased over time, the number is still small and accounts for only 15.4% of the total number of participating companies around the world.

Table 4.1 Trend of companies participating in GRI in selected Asian countries and the rest of the world

	Origin of companies participating in GRI initiative					
	China	India	Japan	South Korea	Asia	All countries
1999	0	0	1	0	1	10
2000	0	0	7	0	7	45
2001	1	1	23	0	26	123
2002	4	4	17	0	27	140
2003	1	1	14	2	20	175
2004	3	5	20	4	33	290
2005	4	3	20	7	38	379
2006	5	6	18	14	51	519
2007	8	8	23	29	84	699
2008	15	20	51	40	163	1059

Source: Table produced by authors based on data from GRI website http://www.globalreporting.org/GRIReports/GRIReportsList/[8]

4.2 Environmental performance rating and disclosure programmes

Since the Rio conference in 1992, environmental performance rating and public disclosure schemes have been established in several countries of developing Asia. These include the Program for Pollution Control, Evaluation, and Rating (PROPER) of Indonesia, Eco Watch of Philippines, Green Watch of China, and Environmental Rating Project in India, among others. They are similar government driven or government supported programmes allowing the government to set up an environmental grading system to categorise the environmental performance of companies by checking their degree of compliance with environmental regulations. First, selected companies are rated from best to worst using different colours depending on their compliance to regulatory standards, and then this rating is publicly disclosed. The underlying idea is that shame may be a strong motivator for companies to improve their environmental performance.

To shed light on the effectiveness and function of environmental performance ratings in developing Asia, rating programmes implemented in Indonesia, China, and India are discussed below.

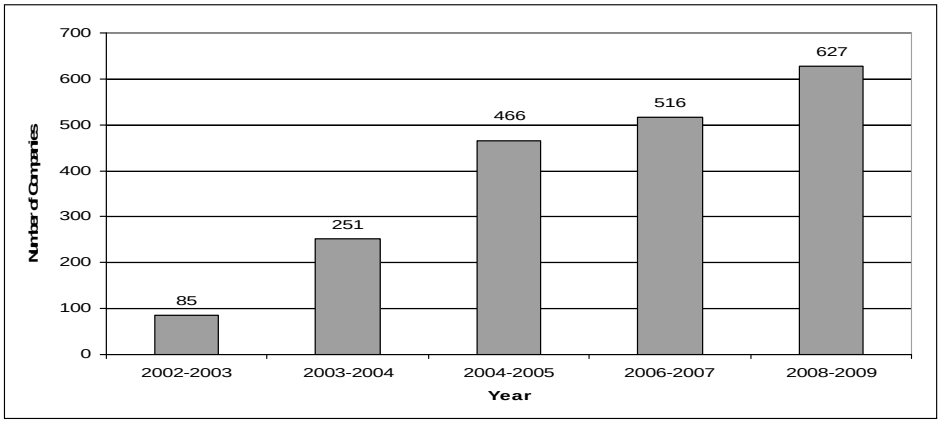
PROPER in Indonesia

In June 1995, Environmental Protection Agency in Indonesia (BAPEDAL)[9] launched PROPER, where information was interpreted through each company's performance rating in wastewater treatment compliance. Companies were ranked in a colour-coding scheme that was easy for the public to understand (gold and green for the best performers beyond compliance, blue for basic compliant firms, black and red for those not in compliance with wastewater standards).

The ranking information was released to the public at a formal press conference and posted on the internet; good performers were praised publicly and poor performers were given time to clean up before public disclosure. In addition, for each participating company, Indonesia's environmental agency issued a one-page report on environmental performance, which served as an information resource for the company's managers and environmental engineers.

PROPER is widely recognised as a successful, cost-effective programme for reducing pollution, with reductions of over 40% in a trial group of 187 companies between December 1995 and July 1997, and increasing overall performance by around 34% (World Bank 2006). The total estimated reductions in pollution concentration for 44 noncompliant firms (40% of the noncompliant firms that were rated in the programme) were approximately 32% for biochemical oxygen demand (BOD) and chemical oxygen demand (COD) (Lopez et al. 2004). However, due to the financial crisis in Indonesia, PROPER fell into "hibernation" in 1998. It was restarted in 2002, with company participation increasing from 85 in 2002-2003 to 627 in 2008-2009 (Figure 4.2), and the focus extended to compliance with air emissions and hazardous waste controls, not only wastewater compliance. The new colour coding format included two new categories, and companies are rated from best to worst as follows: gold, green, blue, blue minus, red, red minus, and black.

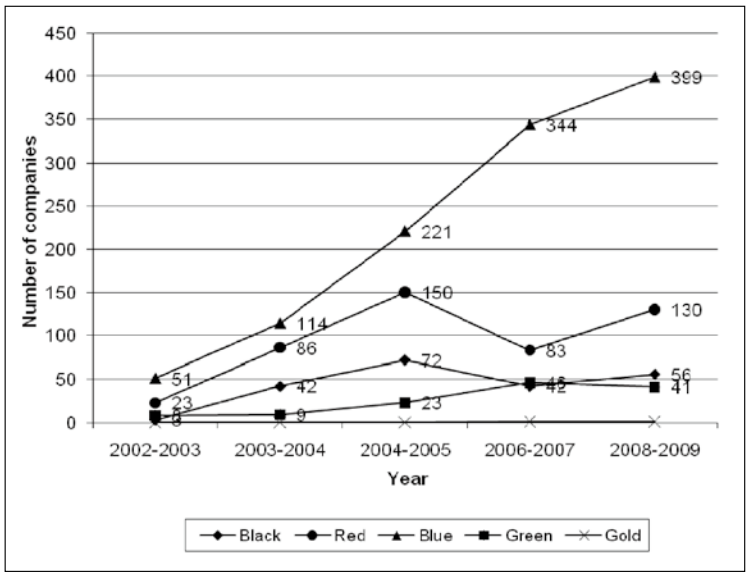
Figure 4.2 Increase in the number of companies participating in PROPER from 2002-2009



Source: PROPER 2008-2009 report

The increase of participating companies over time demonstrates how seriously the companies perceived PROPER ratings; interestingly, the programme seems to motivate more significant emissions reductions for plants with poorer performance records, but not among those with better performance. This was the case for the programme between 1995 and 1998 (Blackman et al. 2004), and also after 2002 as depicted in Figure 4.3. While the number of companies rated blue (blue and blue minus) has increased from 51 in 2002-2003 to 399 in 2008-2009, only one company was rated gold in 2008.

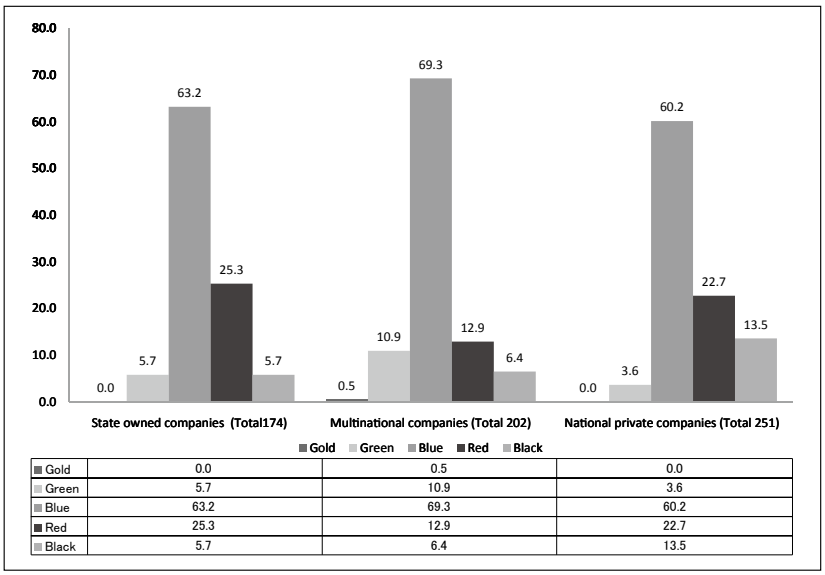
Figure 4.3 Number and rating change of companies covered by PROPER from 2002-2009



Source: PROPER 2008-2009 report

Furthermore, although there have been solid increases in the compliance levels of all types of companies, there is a remarkable performance improvement difference between companies with different ownership (state owned companies, multinational companies, or domestic private companies), as well as differences across industrial sectors (such as sugar, paper, plywood, textile, and rubber). In terms of ownership, multinationals proved to be better performers (Figure 4.4), possibly due to greater reputational risk.

Figure 4.4 PROPER rating of companies in 2009 by ownership



	State owned companies (Total174)	Multinational companies (Total 202)	National private companies (Total 251)
Gold	0.0	0.5	0.0
Green	5.7	10.9	3.6
Blue	63.2	69.3	60.2
Red	25.3	12.9	22.7
Black	5.7	6.4	13.5

Source: PROPER 2008-2009 report

The existing literature on public disclosure and related topics has focused on the sources of pressure to improve environmental performance that are external to the firms. However, a study carried by Blackman et al. (2004) about PROPER functioning between 1995-1998 showed that the most important means by which PROPER encouraged emissions reductions is enhancing company owners' and managers' information about their own company's emissions and abatement opportunities—the environmental audit effect.

The majority (60%) of the respondents to the survey indicated that the critical means by which PROPER ratings spur improved performance is providing information to plant managers and owners about their own plant's emissions and abatement opportunities via the one-page performance reports issued by Indonesia's environmental agency.

This is not to say that the survey respondents did not perceive factors external to the firm to be important. Some 36% of the respondents viewed that bad PROPER ratings increased pressure from communities living around the factories, and around a quarter of the respondents viewed the PROPER rating as resulting in increased pressure from the media.

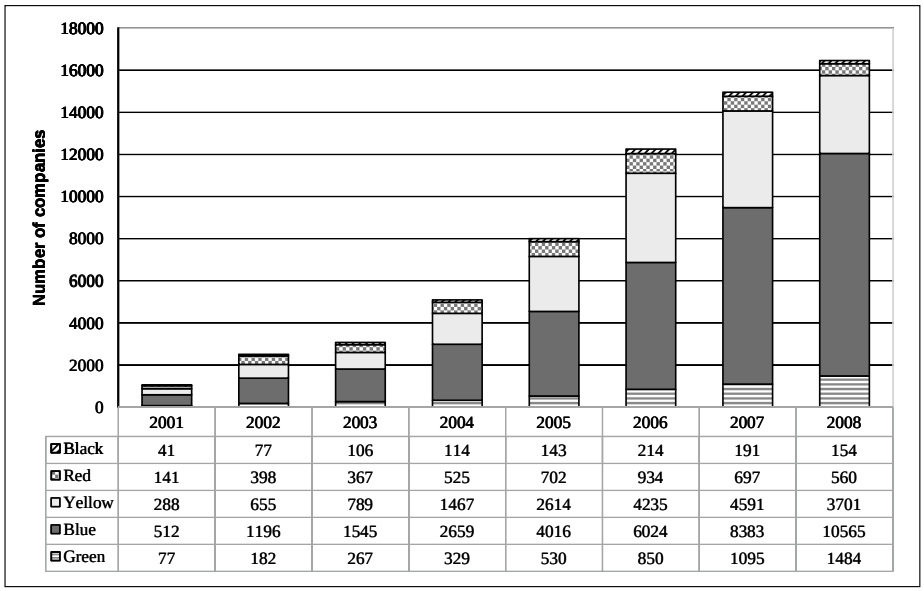
Green Watch in China

In response to the success of performance rating programmes in Indonesia, China implemented a similar programme called "Green Watch," where the environmental performance of firms is rated from best to worst using five colours (green, blue, yellow, red and black), and the ratings are disseminated to the public through the media. Supported by the World Bank's Information for Development Program,[10] the State Environmental Protection Administration (SEPA)[11] of China started a pilot programme in 1998 in Zhenjiang and Hohhot in 2000. As a result of its success, SEPA decided to promote it nationwide.

Similar to PROPER, the outcomes of the Green Watch programme suggest that it motivates more significant emissions reductions for plants with poor performance records, compared to those with good performances. An example is the environmental performance rating programme being implemented in Jiangsu province indicated in Figure 4.5. The total number of participating companies increased from 1,069 in 2001 to 16,464 in 2008. Encouragingly, the ratio of companies with bad performance records (rated red or black) decreased from 17.18% to 4.33% during the same period. However, the ratio of companies with very good performance records (rated green) only showed a slight increase from 7.27% to 9.01%. This demonstrates that Chinese companies worry about bad ratings and try to comply with the basic requirements on pollution control.

The functioning of this disclosure programme was qualitatively assessed in a study conducted by Liu et al. (2009) from 2005 to 2007. In the study, 32 firms located in Changshu City (25 in the dyeing and textile industry, seven in the chemical industry) were interviewed. Participating firms carried out a self-evaluation of their environmental performance and concluded that their general performance improved during the study period.

Figure 4.5 Number and rating change of companies participating in Green Watch from 2001-2008



	2001	2002	2003	2004	2005	2006	2007	2008
Black	41	77	106	114	143	214	191	154
Red	141	398	367	525	702	934	697	560
Yellow	288	655	789	1467	2614	4235	4591	3701
Blue	512	1196	1545	2659	4016	6024	8383	10565
Green	77	182	267	329	530	850	1095	1484

Source: Figure produced by authors based on data from Jiangsu Province Environmental Protection Bureau (JSEPB) (http://www.jshb.gov.cn)[12]

On average, the disclosure programme has significantly contributed to the improvement of environmental performance in many aspects. Reduction of pollutant emissions to meet concentration standards and permitted total emission load is the most prominent evidence of progress. The participating firms confirmed that the programme encouraged them to enhance daily environmental maintenance, such as maintaining effluent outlets and strengthening institutional arrangement for environmental management.

The same study found that complying with environmental regulations is still a determining factor in influencing a company's environmental performance. Chinese companies are mainly reactive to the mandatory environmental requirements.

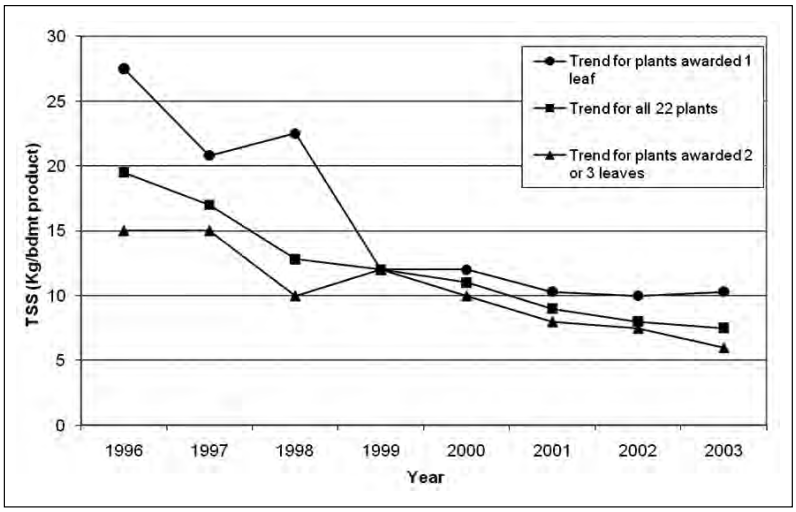
Green Rating Project in India

In the late 1990's, the Centre for Science and Environment (CSE), an NGO in India, initiated a performance rating programme called "Green Rating Project" (GRP). The programme is an effort to rate industrial units within a specific sector on the basis of their environmental impact. It aims to encourage companies to adopt better environment management policies. GRP ratings are not based on colours; rather, it is based on the number of tree leaves. The award is given by CSE in recognition of the rating achieved by industries on the basis of their environmental performance in various sectors covered under the GRP. Rating scores range from five leaves, the highest rating, to one leaf, the lowest.

GRP has been able to motivate companies, particularly plants that received one leaf, to improve their environmental performances significantly. Nicholas et al. (2008) used eight years of exceptionally detailed survey data on 22 of India's largest pulp and paper plants and found that, as depicted in Figures 4.6 and 4.7, there is a large decrease of both

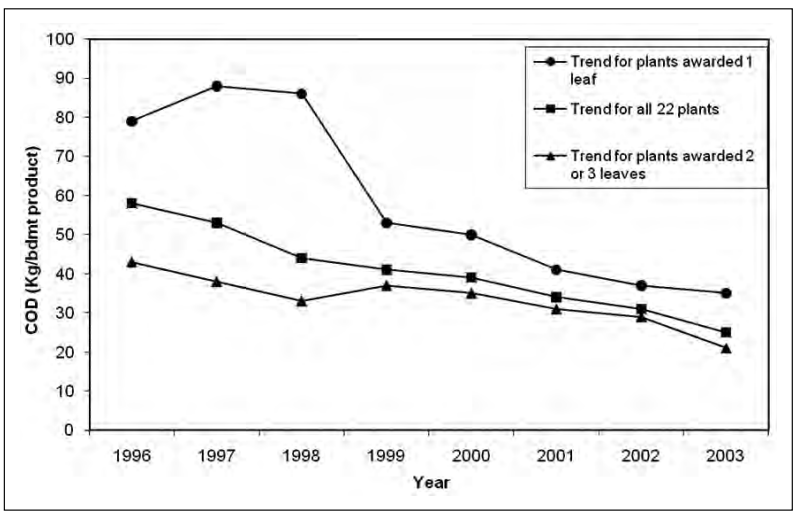
the annual average discharge of total suspended solids (TSS), and the annual average discharge of chemical oxygen demand (COD) from the total 22 selected plants participating in GRP. Among these, the decrease is greater for plants awarded one leaf than for plants awarded two or three leaves. Nicholas et al. (2008) found that with GRP disclosure, a company's COD discharges decreased by 63% between 1996 and 2003 compared to a decrease by 54% in a company not participating in GRP. The effect of the disclosure programme is even stronger regarding TSS, where a plant's emissions would decrease 65% with the disclosure programme but only 46% for non-participating companies.

Figure 4.6 Trend of the annual average discharge of TSS from selected pulp and paper plants participating in India's GRP



Source: Nicholas et al. 2008

Figure 4.7 Trend of the annual average discharge of COD from selected pulp and paper plants participating in India's GRP



Source: Nicholas et al. 2008

The GRP has also motivated companies to improve their environmental performance independently by sector, such as pulp and paper, chemicals and automobiles. Achievements are summarised in Table 4.2.

Table 4.2 Major impact of the rating process in three industries

Industrial Sector	Before GRP	After GRP
Pulp and Paper	Less than 10% of companies substituted chlorine with chlorine dioxide (an environment friendly substitute).	Around 90% companies substituted chlorine with chlorine dioxide.
	Elemental chlorine (Cl) consumption is about 75 kg/tonne paper.	Elemental Cl consumption ≈ 48 kg/tonne-paper. First elemental chlorine free plant in India.
	No standard for absorbable organic halides (AOX: a group of potent carcinogens). Depends on consumption of elemental chlorine.	Standard for AOX introduced and monitored for the paper industry. Led to shift from elemental chlorine for bleaching and reduced AOX load.
	No standards for colour of the treated effluent from paper manufacturing units.	Andhra Pradesh and Tamil Nadu State PCBs set standards for colour of the treated effluent from paper manufacturing units.
	No water consumption guidelines for the sector.	Water consumption guidelines in paper manufacturing introduced.
Chemical	More than 50% of mercury consumed in the sector is lost or unaccounted, as monitoring end-of-pipe (EOP) emissions in case of mercury not feasible. Solution was to regulate mercury input.	Government of India put in place guidelines to regulate input mercury.
	Use of mercury cell technology resulted in high emission of mercury	Switchover to membrane technology facilitated through: a) subsidies for the import of membrane technology, b) reduction in customs duty on components of membrane cell technology used in the caustic soda industry from 15% to 5%.
Automobile Industry	Supply-chain environmental management: Companies sourcing raw-material and components from small and medium scale sector, which had neither resources nor intent to control pollution.	Companies like Ford, Mercedes, General Motors, Hero, Honda, etc. set clear policy on outsourcing, keeping environmental performance of the supplier in mind. Ford and General Motors asked suppliers to get ISO 14001.
	Companies transferring old technology to their Indian subsidiaries.	Hyundai Motors publicly committed to supply similar technology to India as supplied to Europe or the U.S.
	Little or no efforts on rainwater harvesting.	Companies like Hero Motors, General Motors and Eicher Motors started rainwater harvesting within their plants to reduce external water demand.

Source: IGES 2008

5. Analysis of the constraints on using CEID as a strategy to promote corporate sustainable production in developing Asia

Admittedly few in number, the CEID initiatives reported in the previous section show that communicating corporate environmental information to other stakeholders is a strategy accepted both by companies and governments in developing Asia. While these initiatives

have been effective in reducing emissions and improving environmental performance in many aspects, overall, there is still room for improvement.

Corporate Environmental Reporting (CER) can work more effectively if they increase in number and reach a wider set of stakeholders, and respond to their needs. CERs are still supply driven and scarce with many companies sharing their CERs only in hard copies, which is a costly process and one that reaches only a limited number of stakeholders. Other companies publish their CERs on the internet, but not every company has a website, particularly in developing areas, nor can every stakeholder access the internet for the purpose of checking a particular company's CER. The demand for CERs is also modest. Each stakeholder has different needs and therefore, the potential uses of the information differ. Consumers, for example, need information about the impacts of a company's current activities on his or her health, investors need information about the overall policy of the company, regulators need information about the level of compliance with specific standards, workers need information about operational risks, and so on, which makes it difficult for one CER to respond to all stakeholders' needs at the same time. Furthermore, some stakeholders are too weak to create enough pressure to force companies to respond to their needs or to check the accuracy of the information provided. Actions have to be taken both at the supply side and demand side of CERs to make them more effective. This is not only a role of government agencies; cooperation between all stakeholders is needed especially in determining guidelines for the content. For example, mandating companies to report their environmental information or rewarding comprehensive CERs can increase the number of CERs. Furthermore, issuing reports based on specific guidelines can ensure the reliability and understanding of the information. Last but not least, enabling easy access to information, developing stakeholders' capacity on how to use available information, and empowering them to take action against companies unwilling to report or companies who report inaccurate information are all actions that can bridge the gap between supply and demand sides for CERs.

Actions have to be taken both at the supply side and demand side of CERs to make them work more effectively. This is not only a role of government agencies; cooperation between all stakeholders is needed especially in determining guidelines for the content.

Environmental performance rating programmes, although they have not significantly promoted environmental performance for well-performing companies, have been able to bring poor performers into compliance. These initiatives could lead to more improvements in overall environmental performances if the standards are upgraded with time so that companies will keep improving their performance to remain in compliance.

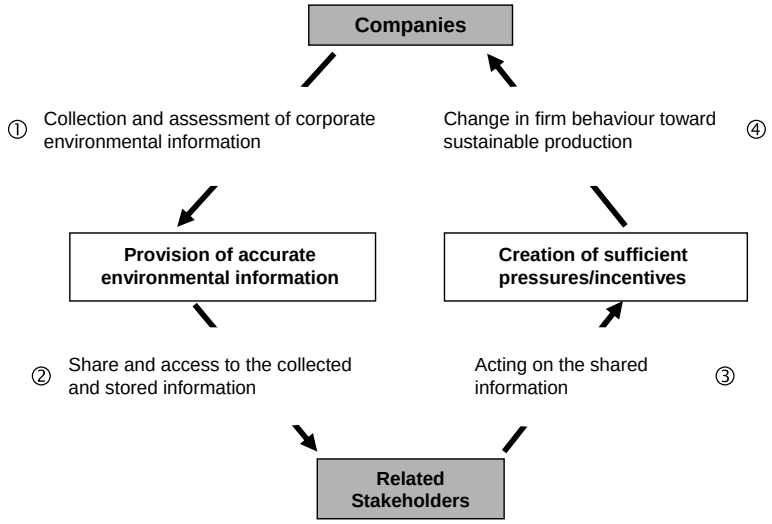
Furthermore, since these rating programmes worked through different channels in different countries, regulators should implement new policies or change existing ones to strengthen weaker channels, such as allowing more democratic media systems to share ratings with a wider audience, and allowing communities and NGOs to take direct action against powerful companies who may refuse to disseminate their environmental information or those who report inaccurate information. Since multinational companies or large companies tend to be better performers, governments can work with them to assist small and medium enterprises with limited financial and technical capacities to improve their environmental performance. Finally, these programmes should be coupled with other command and control and market-based mechanisms.

Command and control should be oriented for those companies which are not in compliance. Using this mechanism is more cost effective now since those companies have become easier to identify. Market-based mechanisms should be oriented for good performers as incentives to make even further improvement. Thus, CEID is a complementary policy to traditional policy instruments.

5.1 Procedures of CEID for promoting corporate sustainable production

Understanding the procedures for using CEID as a strategy to promote corporate sustainable production may help in analysing the outcome of current initiatives in the region, and in identifying the challenges to use it more effectively. Figure 4.8 summarises these procedures. The assumption is that disclosure of information about the environmental performance of a company enables stakeholders to make more sound decisions; and the reactions of stakeholders are translated into incentives and pressure on some companies to change their production behaviour. The process is roughly divided into four stages:

Figure 4.8 Procedures for using CEID to promote corporate sustainable production



Source: Authors

First, each company collects, assesses and stores information related to the impact of its products and activities on the environment and society depending on its own capacity (technical, financial, etc). Other actors, such as government agencies, research institutes and NGOs, also collect and store corporate environmental information independently or cooperatively.

Second, some companies voluntarily share the collected information or part of it with their related stakeholders; others will not do so unless they are requested, or mandated to do so.

Third, stakeholders who are able to access to the shared information, have to act on it. Their actions will largely depend on the characteristics of the information that is at hand and their motivation to act.

At the final stage, some responsible companies will take the perceptions of stakeholders into account and voluntarily change their production behaviour. Others will be enabled

to do so through more informed choice by the government through market-based and enforcement instruments.

5.2 Analysis of current status of CEID in the region and challenges to use it more effectively

For the process explained above to work effectively, some prerequisites have to be fulfilled in each of the four stages. These prerequisites seem to be partially or not fulfilled in developing Asia, which explains, among other reasons, the shortfall of the effectiveness of CEID initiatives taken so far in the region.

Collection and assessment of corporate environmental information

In developing Asia, there is a need to improve the quality and utility of the environmental information that is gathered. There is still a lack of timely, reliable, and appropriate environmental information, which generates scepticism and stakeholders' hesitation to act. For example, there is a need to move from data generation driven by existing ambient standards, to a strategy of generating specific information that is useful to decision-makers and the public. In order to improve the quality of environmental information, it will be necessary to establish clear government standards and formats for environmental information collection and reporting. To verify the accuracy of environmental reports, these reports should be peer reviewed or developed according to reliable third party guidelines such as the GRI reporting guidelines. To successfully establish a performance rating programme based on the colour-coded scheme, it is necessary to integrate the design efforts of a technical team. In the PROPER case, for example, environmental agencies integrated teams from Australia, Canada, and the World Bank to create rigorous protocols for translating the ratings into the current colour-coded scheme.

In developing Asia…there is still a lack of timely, reliable, and appropriate environmental information, which generates scepticism and stakeholders' hesitation to act.

In developing Asia, most companies are SMEs. Unlike large or multinational companies, SMEs in particular have constraints in resources and capacity to collect and store in a given form relevant information about the environmental impact of their operational activities and their environmental behaviour. To help them in this regard, financial and technical assistance through training programmes on information gathering and management is urgently needed.

Share and access to the collected and stored information

The collected and assessed environmental information should reach all stakeholders in an understandable and usable form. Consumers, investors, communities, and regulators may need different kinds of information, and may interpret the information differently. The needs of each stakeholder should be taken in consideration. In the region, environmental performance rating programmes seem to be more effective than corporate environmental reporting because companies in the former scheme were ranked in a colour-coding system that was easy for the public to understand, not just a wealth of data that stakeholders find difficult to interpret. Furthermore, the former is more reliable, since it is conducted by more reliable agencies and not solely based on internal audits and the control procedures of a company. However, environmental performance rating programmes could work even more effectively if there is adequate media coverage of the worst performers. For instance, for PROPER, only 5% of the names of the worst performers are reported in the newspapers.

In developing Asia, there is a gap between the supply side of, and the demand side for, environmental information. Some financial, institutional and political reasons are constraints on information sharing. Even when information is shared, some companies may resort to "green washing" and only choose the kind of information that adds to their green image, while washing over potentially damaging information. Each CEID scheme should consider what information should be shared and with which stakeholders. Information can be fully disclosed where there is a free exchange of information among firms, governments, local communities, interest groups, the media and others who may be interested. To this end, the internet is a powerful tool. Information can be shared locally with surrounding communities or in a specific way by targeting those directly at risk through community advisory committees, arranging facility tours or door-to-door visits. Information sharing can be limited further, such as shared only with regulatory agencies or held internally and not disclosed at all. Answering which level of information sharing is correct for the type of information collected involves balancing the cost and benefits of disclosure.

Acting on the shared information

In some cases, stakeholders have access to information but do not have the power or the motivation to act on it due to the socio-political context. A number of characteristics in developing Asia tend to weaken the reaction of stakeholders to shared information and their capacity to use it. These characteristics include the lack of free press, relatively weak NGOs, communities, legislation, and so on. Citizens also may not be fully given the right to voice their opinion, and are not assured of their position in influencing the decision-making process. Furthermore, there is scepticism about the quality of information and dissemination mechanisms, and a lack of incentives to act on it. Helping stakeholders to act more effectively on the shared information can be accomplished by developing their capacity on how to use available information, motivating them with incentives to use the information, and empowering them to take action against companies unwilling to share information or those who share inaccurate information.

Change in firm behaviour toward sustainable production

The cases of CEID reported earlier lend credibility to the idea that the reactions of stakeholders have an impact on corporate environmental performance. However, there is a remarkable performance improvement difference between the companies. Thus, coupling a CEID scheme with other measures or incentives may yield a better result. For example, providing some incentives such as publicly awarding good performers, as in the case of the PROPER programme, may work more effectively than just disseminating the rating or providing environmental information in annual reports. In addition, for each participating company in PROPER, the Ministry of Environment issues a one-page report on environmental performance. This report serves as an information resource for the company's managers and environmental engineers, which is more reliable than self evaluation in environmental reporting.

To promote environmental performance on a large scale, the heterogeneity of companies and sectors must be recognised. For example, multinational companies prove to be the best performers because they are more inclined towards cleaner technologies. Thus, providing domestic companies, especially SMEs, with the needed technology and technical assistance is of the utmost importance.

Because some poor performing companies may choose not to change their behaviour at all, their performance could be promoted through stricter inspection and enforcement tools. Alternatively, appropriate market-based instruments could motivate companies that are performing well and have no catalyst to do anything further. Thus, CEID is a complimentary tool of command and control, and market-based policies.

6. Conclusions and recommendations

Governments in developing Asia have mainly worked to promote corporate sustainable production through traditional approaches that looked solely at the relationship between regulators (government) and the regulated (companies). Theoretical and empirical studies show that they have been introduced with varying degrees of success. CEID, as a multistakeholder approach that links companies, the governments, the community and the market is another option that has to be examined. Existing literature supports the idea that CEID can influence corporate activities and characterised it as a third wave of environmental regulations (Tietenberg 1998). Admittedly few in number, the cases of CEID initiatives reported in this chapter also lend credibility to the idea.

Overall, corporate environmental reporting and environmental performance rating programmes adopted in the region have shown obvious effectiveness in reducing emissions, and improving environmental compliance. However, there is a remarkable difference between the reactions of companies to this reputational incentive. For example, accurate corporate environmental reports are still scarce and are mainly produced by large or multinational companies. Their content and quality vary widely and they may supply a wealth of data, but not necessarily the information that responds to the need of stakeholders. Environmental performance rating programmes, on the other hand, seem to motivate more significant emissions reductions for plants with poor performance records. This implies that there is still room for improvement in the effectiveness of CEID as a policy to promote sustainable production in developing Asia.

For this strategy to work effectively, challenges should be taken on the following fronts: first, the provision of accurate information for stakeholders; second, empowering stakeholders to create sufficient pressures/incentives; and third, coupling CEID with enforcement or incentives tools.

The role of stakeholders in the provision of accurate information

Reliable, timely, environmental information of good quality and sufficient quantity should reach appropriate stakeholders in an understandable and usable form. This is a challenging task as there is a gap between what companies are ready to provide and what stakeholders really need to know. Governments are the only institutions with the power to bridge this gap. To this end, the following measures should be taken:

- Establish clear government standards and formats for environmental information collection, and reporting procedures;
- Establish an environmental information clearinghouse in the database division of national environmental agencies to track the collection and management of environmental information;
- Establish systems for quality control and assurance for the disclosed environmental information, which may include a programme for peer review of data and reporting;

- Implement new policies or change existing ones to make clear what information should not be disclosed, what information can be made public, and which stakeholders have access to it;
- Conduct peer reviews to verify the accuracy of corporate environmental reports. To increase their number, companies can be asked to develop voluntary environmental reports according to local and international guidelines such as the European Union Eco-Management and Audit Scheme (EMAS) and Global Reporting Initiative (GRI), which build acceptance of a common framework to report environmental information in sustaining corporate public accountability;
- Integrate the design efforts of a special technical team, or external technical support unit to successfully establish a performance rating and disclosure programme that is accepted by wide set of stakeholders.

Empowering stakeholders to create sufficient pressures/incentives

Stakeholder empowerment and capacity development are prerequisites to achieving sufficient pressure to influence production behaviour towards a more sustainable manner. Lack of a free press, relatively weak civil society, and weak enforcement capacities in the region tend to weaken the power of stakeholders. Citizens also may not be fully given the right to voice their opinion. Empowering stakeholders includes enabling them to access environmental information and developing their capacities through education for sustainable consumption as discussed in chapter 3. Additionally, educated and informed stakeholders may not be able to make positive contributions to influence production behaviour unless they organise themselves and establish mechanisms and partnerships for collective actions toward achieving such goals. Beside the initiatives taken by companies, or supported by the government (as discussed in this chapter), many initiatives are taken by local governments (as discussed in chapter 5) and by communities (as discussed in chapter 6) which reflect that every stakeholder is aware of the issue of sustainable production and consumption, but there is lack of cooperation among all stakeholders. Since the successes of the CEID programmes also vary across countries, transboundary cooperation is also needed for capacity development and win-win outcomes, and to make guidelines and standards consistent.

Coupling CEID with other enforcement or incentive tools

CEID is an effective tool to bring companies into compliance with environmental performance standards. In this regard, regulators can upgrade these standards with time to ensure that companies keep improving their performance so that they remain in compliance. CEID also helps with identifying the compliance level of other companies, which enable regulators to use more informed choices to strategically select policy tools. In this regard, command and control could be oriented for those companies which are below compliance, while market-based mechanisms could be oriented for those above compliance as incentives to make even further improvement.

Learning from the experiences of other countries that use incentives or enforcement tools to promote CEID is also needed in developing Asia. As incentives, establishing environmental reporting awards, such as the green reporting award in Japan,[13] ACCA award in the UK, the WWF annual environmental award in South Africa, and publicly awarding good performers as in the case of the PROPER programme in Indonesia is a good strategy to promote and encourage businesses to actively disclose and report their environmental issues. Mandating environmental reporting is also an option as in the U.S., Denmark and the Netherlands.

Most SMEs in developing Asia lack the capacity—technical and financial, to collect and assess information about the environmental impact of their activities. They also lack data on how much their efforts toward communicating with their stakeholders contribute to the overall value of the reputation of the company. External technical and financial support should be expanded to help them quantify the cost and benefit of sharing their environmental information with their stakeholders. To this end, national and multinational cooperation is needed.

Most SMEs are not well-known to the public, in terms of either their names or products. Reputational incentives may be not strong enough to promote improvements in their production behaviour, so other enforcement or incentives tools should be applied simultaneously.

And finally, judging from the reported CEID initiatives in this chapter, CEID schemes in developing Asia hold the promise of promoting the environmental performance of companies. To promote sustainable production on a more significant scale, it should be coupled with other command and control and market-based tools. Thus it should be recognised as a complementary tool, not only as a standalone policy.

Notes

1. Further information is available at: http://www.goodguide.com/ (Accessed 17 January 27 2010).
2. Further information is available at: http://www.socialinvest.org (Accessed 27 January 2010).
3. Further information is available at: http://eurosif.org (Accessed 27 January 2010).
4. Further information is available at: http://www.asria.org (Accessed 27 January 2010).
5. Further information is available at: http://www.unpri.org (Accessed 27 January 2010).
6. Further information is available at: http://www.equator-principles.com (Accessed 27 January 2010).
7. Is now the Ministry of Environmental Protection.
8. Password may be required.
9. After 2002 BAPEDAL merged into Ministry of Environment.
10. http://www.infodev.org/en/index.html
11. Currently the Ministry of Environmental Protection (MEP).
12. In Chinese.
13. Further information about this award scheme and others around the world is available at http://www.enviroreporting.com/mjv_awards.htm

References

Afsah, Shakeb, Benoit Laplante, and David Wheeler. 1996. Controlling industrial pollution: A new paradigm. World Bank, Development Research Group. Policy research working paper 1672.

Afsah, Shakeb, Benoit Laplante, David Wheeler, Nabiel Makarim, Rasio Ridho, Anton Sarjanto, Ahmad Salim, Mada Agus Setiawan, Damayanti Ratunanda, Fredirika Wawointana, and Ridwan Dahlan. 1995. What is PROPER? Reputational Incentives for Pollution Control in Indonesia. World Bank working paper available at http://www.p2pays.org/ref/22/21757.pdf (Accessed 2 February 2010).

Anderson, Robert. 2002. "Incentive-based policies for environmental management in developing countries." *Resources for the Future* August 2002, Issue brief 02-07.

Arbeláez, T, Sayantani Dasgupta, Benoit Laplante, and David Wheeler. 1998. Colombia's Pollution Charge System: Implementation, Impact and Implications. World Bank, Development Research Group, 1998-04.

Arimura, Toshi H., Akira Hibiki, and Hajime Katayama. 2007. "Is a voluntary approach an effective environmental policy instrument? A case for environmental management systems." *Resources for Future*, May 2007-31.

Blackman, Allen. 2007. "Voluntary environmental regulation in developing countries: Fad or fix?" *Resources for the Future*. Discussion paper available at http://www.rff.org/rff/Documents/RFF-DP-07-10.pdf. (Accessed 9 March 2010).

Blackman, Allen, Afsah Shakeb, and Damayanti Ratunanda. 2004. "How Do Public Disclosure Pollution Control Programs Work? Evidence from Indonesia." *Human Ecology Review* 11(3):235-246.

Blanco, Hernan, Nicola Borregaard, Georgina Cundill, Annie Duffy, and Carolina Palacios. 2005. The role of voluntary initiatives in sustainable production, trade and consumption in the APEC region. Background paper for Asia-Pacific Economic Cooperation (APEC) workshop held in Santiago on 26-27 September 2005.

Cohen, Mark. 2000. "Information as a policy instrument in protecting the environment: What we have learned?" *Environmental Law Reporter* 31:10425-31.

DasGupta, Sayantani, Benoit Laplante, and N. Mamingi. 2001. "Pollution and Capital Markets in Developing Countries." *Journal of Environmental Economics and Management* 42:310–335.

Doane, Deborah. 2005. "Beyond corporate social responsibility: minnows, mammoths and markets." *Futures* 37 (2-3):215-229.

Environmental and Social Development Department-East Asia and Pacific Region, World Bank. 2006. Corporate Environmental and Social Responsibility in the East Asia and Pacific Region: Review of emerging practice. Washington, D.C.: World Bank.

GRI website: http://www.globalreporting.org/GRIReports/GRIReportsList (Accessed 2 December 2009).

Gunningham, Neil, Robert A. Kagan and Dorothy Thornton. 2003. *Shade of Green: Business, regulation and environment*. Stanford: Stanford University Press.

Hahn, R. 1989. "Economic prescriptions for environmental problems: How the patient followed the doctor's orders." *The Journal of Economic Perspectives* 3(2):95-114.

Howard, Grenville, Jennifer Nash, Cary Coglianse. 2008. "Constructing the license to operate: Internal factors and their influence on corporate environmental decision." *Law and Policy* 31(1):73-107.

IGES. 2008. *Corporate Environmental Management: Policy initiatives and business responses*. Hayama: Institute for Global Environmental Strategies-Kansai research centre. Japan.

Jiangsu Province Envirenmental Protection Bureau (JSEPB) website: http://www.jshb.gov.cn (Accessed 29 December 2009).

Liu, Xianbing, Qinqin Yu, Tetsuro Fujitsuka, Beibei Liu, Jun Bi, and Shishime Tomohiro. 2009. "Functional mechanisms of mandatory corporate environmental disclosure: An empirical study in China." *Journal of Cleaner Production* (Article in press).

Liu, Xianbing, and Venkatachalam Anbumozhi. 2009. "Determinant factors of corporate environmental information disclosure: An empirical study of Chinese listed companies." *Journal of Cleaner Production* 17:593-600.

Liu, Xianbing. 2009. Disclosure of corporate environmental information: Progress and determinant factors in Chinese context. Working Paper, Kansai Research Centre, Institute for Global Environmental Strategies (IGES- KRC).

Lopez, Jorge Garcia, Thomas Sterner, and Shakeb Afsah. 2004. "Public disclosure of industrial pollution: The PROPER approach for Indonesia?" *Resources for Future*, October 2004-34.

Nicholas, Power, Allen Blackman, Thomas P. Lyon, and Urvashi Narain. 2008. "Does disclosure reduce pollution? Evidence from India's green rating project." *Resource for the Future*, October 2008-38.

PROPER. 2009. Laporan Hasil Penilaian: Peringkat kinerja perusahaan dalam pengelolaan lingkungan hidup: PROPER 2008-2009. Indonesia: PROPER Sekretariat PROPER Kementerian Negara Lingkungan Hidup. Available at: http://www.menlh.go.id/proper/proper%20baru/html/menu%206/press%20release/2008-2009/Laporan%20PROPER%202009.pdf (Accessed 17 December 2009).

Schmidneiny, S, R. Chase, L. De Simone. 1997. "Business progress toward sustainable development." *Bridges to Sustainability: Business and Government Working Together for a Better Environment*. 143–156.

Tietenberg, Tom. 1998. "Disclosure strategies for pollution control." *Environmental and Resource Economics* 11:587-602.

Tietenberg, Tom. 1995. Design lessons from existing air pollution control systems: The United States. Property Rights in a Social and Ecological Context: Case Studies and Design Applications. Washington, DC: World Bank.

Tietenberg, Tom. 1990. "Using economic incentives to maintain our environment." *Challenge* 33(2): 42-46.

Tietenberg, Tom. 1985. *Emissions Trading: An Exercise in Reforming Pollution Policy*. Washington, DC: Resources for the Future Inc.

Utting, Peter. 2002. Regulating Business via Multi-stakeholder Initiatives: A Preliminary Assessment. United Nations Research for Sustainable Development: Available at www.unrisd.org. (Last accessed 14 December 2009).

Vincent, J. 1993. "Reducing effluent while raising affluence: Water Pollution Abatement in Malaysia." Cambridge: Harvard Institute for International Development, Spring 1993.

World Bank. 2006. "Public Disclosure: A tool for controlling pollution." *World Bank Research Digest*, 8-23.