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Promoting Cleaner Production in South East Asia: A Case Study of the DTI/BOI Environmental Unit

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Abstract

This article reviews the role of the Philippine Department of Trade and Industry/Board of Investment's Environmental Unit in promoting the adoption of cleaner production technologies and practices by Philippine industry. The activities of the Environmental Unit represent a significant shift in policy away from traditional regulatory approaches towards a cooperative, partnership approach to environmental improvement. It remains to be seen, however, whether the considerable ambitions of the Environmental Unit can be matched by the implementation of effective policy instruments. This article examines existing approaches adopted by the Environmental Unit, and uses this as a basis for proposing an expanded role. The focus is on identifying strategies which mesh with overriding policy parameters of the Department of Trade/Board of Investment, such as the desire for alternatives to conventional regulation, the requirement to promote economic growth in tandem with environmental improvement and the need to avoid large drains on the public purse. The lessons drawn have a much broader application and resonate with the challenges faced by a wide variety of agencies in developing countries in the region.

Introduction

As South East Asian countries continue to rebuild their economies in the aftermath of the "Asian financial crisis", a considerable challenge is how to reconcile economic growth with environmental protection. In the past, the emphasis has been on the first of these objectives, with very little attention being given to the second.[1] The consequence has been widespread environmental despoilation, alarming rates of water and air pollution and the depletion of agricultural and fishery resources.[2] While industrialisation continues in the South East Asia region with little regard to its environmental impact, so these problems will be exacerbated. James D Wolfensohn, President of the World Bank, neatly encapsulates this danger:

> … when you have problems, the greatest sufferer is usually the environment. With poverty, people cut down the trees to warm themselves; with poverty they despoil the environment; with poverty, people do not think about the environment around them. So we are faced with an even greater challenge, whether it be in the jungles of Brazil or in the cities in Indonesia, whether it be in the countryside in Thailand; the challenge is there for us to face, not just financial issues but the social issues, the structural issues, and the environmental issues.[3]

Recognising these concerns, it is critical that South East Asian countries develop policy frameworks that would allow economic growth to be pursued, not at the expense of, but in harmony with the environment. One strategy for achieving such "win-win" outcomes, and for at least partially resolving the apparent tensions between economic and environmental objectives, is that of cleaner production.

Cleaner production is defined by the United Nations Environment Programme (UNEP) as "the continuous application of an integrated preventative environmental strategy applied to processes, products, and services to increase eco-efficiency and reduce risks for humans and the environment".[4] This definition encompasses, for example, conserving business inputs such as raw materials, water and energy while simultaneously reducing the amount of toxic and polluting business outputs from the production process itself. It also encompasses the design of products to limit their environmental impact once they leave the factory gate, that is, a "life-cycle" approach. In short, the emphasis of cleaner production is on "changing attitudes, responsible environmental management, creating conducive national policy environments, and evaluating technology options".[5]

A major purported benefit of this approach is to deliver both environmental *and* economic benefits. For example, cleaner production often leads to increased resource use efficiency and wider management improvements. The promise of achieving win-win outcomes, has led to the increasing adoption of cleaner production techniques in the industrialised world. However, in the developing countries of South East Asia there has been little evidence of its systematic introduction. For example, a recent study of the chemical industry's Responsible Care program (a global initiative with a major

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[1] Shigemitsu Sugisaki, *Economic Crisis and Recovery in Asia and its Implications for the International Financial System* (IMF, Washington, D.C.: 1999) 1-5 (http:/www.imf.org/external/np/speeches/1999030599.HTM 6/8/99).

[2] Michael C Howard (editor) *Asia's Environmental Crisis* (Boulder: Westview Press: 1993).

[3] James D Wolfensohn, President, The World Bank Group, *Speech to the Cambridge Business and Environment Program* (Banqueting House, London, November 17, 1998) at 3 (http://www.worldban.org/html.extdr/extme/jdwsp111798.htm 6/8/99).

4 United Nations Environment Program (UNEP) *Sustainable Business: Economic development and environmentally sound technologies* (UNEP, Nairobi: 1998) at 121.

5 United Nations Environment Program (UNEP) *Sustainable Business: Economic development and environmentally sound technologies* (UNEP, Nairobi: 1998) at 121.

emphasis on cleaner production) found its implementation to be "strongest in North America, too weak in Europe and not yet established in most of the Asia Pacific region".[6]

This poses a challenge for policymakers: how can cleaner production be more effectively promoted in the region? A recent report by the Regional Institute of Environmental Technology, for example, identified a number of reasons why companies have been slow to implement cleaner production technologies and practices.[7] These include: end-of-pipe solutions being viewed as cheaper in the short term, more widely known and less disruptive to adopt; a lack of necessary expertise to implement cleaner technologies; a reluctance by companies to invest in longer term returns (partly due to an absence of amortisation provisions); and less stringent environmental regulations which are rarely enforced.

The issue is a critically important one. Indeed, it has been suggested that "how to foster a clean production revolution among its high performance economies is one of Asia's greatest challenges as it prepares to enter the 21st century".[8] A failure to address this challenge will not only result in negative environmental and social consequences, but may also have serious economic consequences for individual corporations. For example, companies that lack green credentials may find themselves locked out of international markets through a combination of consumer preferences and subtle trade restrictions. They may also find it increasingly difficult to compete with foreign corporations that are more productive as a result of adopting cleaner production practices. Finally, they will also be unable to compete successfully in the growing global market for environmental technologies and services.

The task confronting South East Asian governments therefore, is to develop and implement policies which can harness the enormous potential that cleaner production offers, both in environmental terms and in terms of the financial interests of their companies and the economy as a whole. As we will see, the challenge is made even harder by generally weak regulatory frameworks and very limited resources.

This article addresses how one government body, the Philippine Department of Trade and Industry/Board of Investment (DTI/BOI) Environmental Unit, is and could further promote the widespread adoption of cleaner production practices and technologies by industry. This case study is intended to provide a microcosm of the problems and opportunities that arise with cleaner production policy regimes, and to resonate more broadly with the challenges facing other agencies and countries in the South East Asian region. The DTI/BOI Environmental Unit was chosen precisely because it is not a traditional environmental regulator, and as such, can provide insight into overcoming the limitations of traditional regulatory approaches to cleaner production.[9]

The article comprises six parts. First, we set the institutional scene, describing the evolution of environmental responsibilities in the Philippine government, with a particular emphasis on the role of the DTI/BOI Environmental Unit. Second, we describe in detail the cleaner production policy instruments currently employed by the DTI/BOI Environmental Unit. Third, we consider a recent

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[6] "Leading from the front: a matter of chief importance", (1996) Nov, *CAREline*, at 6.

[7] *Cleaner Production in Asia* (Regional Institute of Environmental Technology, Singapore: 1998).

[8] Theodore Panayotou, Todd Schatzki and Qwanruedee Limvorapitak *A Case Study for the HIID 1997 Asia Environmental Economics Seminar: Differential Industry Response to Formal and Informal Environmental Regulations in Newly Industrializing Economies: The Case of Thailand* (Harvard Institute for International Development: 1997) at 1.

[9] It is noted that each country in the region will have a unique set of circumstances that will require tailored policy responses. This does not preclude, however, learning from the experience of others, and from using hybrid solutions to promote cleaner production in different settings in the region. It is in this vein that the particular lessons of the DTI/BOI Environmental Unit may be of interest to policymakers and commentators alike.

cleaner production policy developments in the Philippines directly relevant to the DTI/BOI Environmental Unit, namely, the internationally funded PRIME project. Fourth, we consider potential flaws in current and/or proposed cleaner production policy approaches of the DTI/BOI Environmental Unit. Fifth, we articulate an appropriate cleaner production policy rationale for the DTI/BOI Environmental Unit. Sixth, and finally, we describe our vision of a effective, pragmatic and cost-efficient cleaner production policy strategy that could be readily adopted by the DTI/BOI Environmental Unit, or indeed any other equivalent government agency in South East Asia.

The DTI/BOI Environmental Unit

Environmental responsibility in the Philippines has been divided principally among three institutions, the Department of Environment and Natural Resources (DENR), the Office of the President, and local government. The DENR has the majority of environmental regulatory and policy responsibilities[10] (including forestry, solid waste management, industrial pollution, vehicle emissions, sanitation and some mining operations), the Office of the President is active in setting broad environmental strategy, and, with the advent of the Local Government Code of 1991, local government has the power to implement environmental plans and programs.[11]

Beyond these three institutions, however, another Philippine government agency has moved into the environmental arena. The DTI/BOI Environmental Unit was established within the DTI in the early 1990s and since then has quietly assumed a number of environmental policy and quasi-regulatory functions. At the time of its inception, this represented a profound and unusual shift in institutional responsibilities because of its location within the lead public agency for attracting and encouraging business investment in the country, rather than within one of the traditional environmental agencies.[12] The key architect behind its formation, Melilito Siliso Salazar, Jr, former Managing Head of the BOI, describes its formation as "a recognition of the fundamental link between environmental improvement and industrial development and prosperity".[13]

The unique circumstance of the DTI/BOI Environmental Unit, in pursuing an environmental agenda whilst operating within a strongly pro-economic development institutional context, has not surprisingly focussed attention on opportunities for policy convergence linking economic growth and environmental protection. This has translated into a preference for *voluntary* approaches to industry engagement in conjunction with an emphasis on cleaner production; the rationale being that since cleaner production can achieve environmentally and economically attractive outcomes, coercion and regulation are unnecessary. For example, in describing the role of the DTI/BOI Environmental Unit, Melito Sison Salazar, Jr, has emphasised:

> … that the twin needs of environmental management and industry development are not being tackled in isolation in the Philippines. We have been evolving strategies of environmental management that consider our social context, the resources and capacities of our industries, and our regulatory framework. Realising the uniqueness and peculiarities of the Philippine situation,

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[10] In the Philippines, the genesis of environmental administration was the *Republic Act 3931* of 1964 which formed the National Water and Air Pollution Control Commission.

[11] Melito Siliso Salazar, Jr, "Environmental Management and Industry Development in the Philippines" (1999) at *Industrial Ecology IV: Profit and Sustainability*, April 29 – May 2, Watsonville, California (http://www.dti.gov.ph/boi/excerpt.htm 20/07/99).

[12] The Philippine BOI was created under the *Investment Incentive Act 1967* in order to provide a longer term strategic input into investment policy and economic development more generally.

[13] Interview with Melito Siliso Salazar, Jr, 24 October 1999.

> the DTI has undertaken to implement projects in the direction of greater industry self-regulation and voluntary compliance with environmental standards.[14]

Precisely because it is not a traditional government regulatory agency, the DTI/BOI Environmental Unit has a far greater capacity than other agencies to develop both innovative and voluntary approaches to cleaner production. That is, the very fact that it does not carry any regulatory "baggage", provides a considerable opportunity to overcome the limitations of other cleaner production approaches that have been tried in the region, such as largely ineffectual enforcement regimes.

For example, the DTI/BOI Environmental Unit has carriage of the Green Aid Plan (GAP), a program funded by the Japanese Government that aims to: promote the technical development of anti-pollution measures; promote investments in pollution prevention technologies; develop the necessary human resources for effective pollution control; and assist in the development of appropriate environmental standards. Conventionally, the lead agency for such a project would have been the Department of Environment and Natural Resources. In this particular instance, however, its was deemed that the DTI/BOI, through its Environmental Unit, possessed the necessary links with industry to effectively manage the project. This capacity was viewed as crucial in obtaining the cooperation of industrial companies to participate in the project.[15]

The DTI/BOI Environmental Unit's involvement in the GAP program has led to its engagement in a number of other overseas development assistance projects. For example, the United Nations Development Program sponsors the Private Sector Participation in Managing the Environment (PRIME) project, again with the DTI/BOI as the lead agency via its Environmental Unit. A major plank of the PRIME project is to engage the private sector in providing a range of environmental services. This includes the measuring and monitoring of pollution, creating privatised localised accreditation boards to provide certification under the International Standards Organisation (ISO) 14001 standard (which has established itself as the *de facto* international standard for environmental management systems (EMSs)), and the establishment of common wastewater treatment plants.

One of the difficulties confronting the DTI/BOI Environmental Unit, however, is that the bulk of its program activities to date have been funded by overseas development assistance. The task confronting the DTI/BOI Environmental Unit is to translate such externally funded developments into sustainable domestic cleaner production policies and programs in a way that is appropriate to the particular circumstances of Philippine culture, its stage of economic development and its institutional structures and functions.

Beyond its participation in aid projects, the DTI/BOI Environmental Unit provides an environmental dimension to the preparation of the BOI's annual Investment Priority Plan. It does this by: promoting investment in environmental projects and assisting in processing such applications through the various BOI approval mechanisms; promoting investments in clean technology, and the transfer of such technology to domestic companies; assisting in the environmental impact assessment process required for project approvals; and integrating the principles of sustainable development within a broader economic framework, advising the BOI Board and Management Committee on all environmental matters and representing the DTI/BOI in relevant environmental fora.[16]

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[14] Melito Siliso Salazar, Jr, "Environmental Management and Industry Development in the Philippines" (1999) at *Industrial Ecology IV: Profit and Sustainability*, April 29 – May 2, Watsonville, California at 10 (http://www.dti.gov.ph/boi/excerpt.htm 20/07/99).

[15] Key initiatives arising out of the project were training, which focussed on environmental management, building cooperative relationships with Japanese pollution abatement experts, establishing environmental research links, and putting in place a number of demonstration projects to assist companies in identifying and adopting appropriate cleaner technologies.

[16] *Overview of the Board of Investments* (http://www.dti.gov.ph/boi/boi.htm 24/10/99).

However, although this appears to be an impressive range of functions that provides a capacity to engage in a variety of initiatives with industry, there are only a few cleaner production policy instruments currently employed by the DTI/BOI Environmental Unit *which impact directly on companies* (and that exist independently of overseas development assistance). The most prominent of these are environmental impact assessment (EIA) and financial incentives.

In terms of cleaner production, the EIA process emphasises a systematic approach to pollution prevention. This "begins with the project design and the selection of technologies and approaches for the efficient use of inputs (eg water, raw materials, energy) in the production process and for minimizing pollution control requirements. The environmental impact assessment identifies specific pollution prevention measures and determines the cost-effectiveness of employing different strategies. The mitigation measures in the environmental impact assessment call for specific pollution discharge monitoring reports".[17]

The DTI and the DENR signed a Memorandum of Agreement in 1997 in response to problems in obtaining Environmental Compliance Certificate under EIA approval processes. Specifically, the purpose of this agreement is to reduce the administrative delays and transaction costs associated with Environmental Compliance Certificate approval for BOI priority projects.[18] The DTI/BOI Environmental Unit vetting projects according to the EIA requirements early in the project development cycle achieves this. If they are found to comply with all the relevant rules and regulations they are then recommended to the Environmental Management Bureau for approval. A major attraction of this approach is that it encourages companies to assume more responsibility for their environmental actions. It also emphasises industry working to meet the needs of local communities (in order to gain endorsement). The incentive for companies to work cooperatively with the DTI/BOI Environmental Unit is the greater investment certainty they accrue. The former Undersecretary of the DENR (who negotiated the Memorandum of Agreement), Dr Delfin J Ganapin, Jr, emphasised its significance:

> The Memorandum of Agreement between the DENR and the BOI represented a radical change in environmental policy direction. As a result, there was much suspicion within the ranks of the DENR at the time about the motives behind the agreement. I took the view that future progress in sustainability demanded a greater engagement of those agencies traditionally aligned with industry.[19]

The DTI/BOI Environmental Unit is currently updating its Memorandum of Agreement with DENR with a view to extending the scope of EIAs. In particular, the intention is to place a much greater priority on ensuring that companies do indeed deliver on the strategies, including cleaner production strategies, identified in their EIS. This is likely to include environmental standards compliance.

The DTI/BOI Environmental Unit also currently provides a financial incentive for cleaner production related activities (although this is not exclusive to environmental related projects). Under the BOI's Investment Priorities Plan, approved private sector projects are entitled an income tax holiday.[20] Specific cleaner production activities eligible for receipt of this incentive are: the development of industrial ecosystems; the adoption of the International Standard Organisation (ISO) 14001 EMS; the establishment of toxic and hazardous waste treatment facilities; the establishment of waste handling facilities and sewerage systems; and testing or measuring services for polluting emissions and

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[17] *Philippine EIS System Guide: Policies and Procedures* (Environmental Management Bureau, Department of Environment & Natural Resources: 1994) at 8.

[18] *Philippine EIS System Guide: Policies and Procedures* (Environmental Management Bureau, Department of Environment & Natural Resources: 1994).

[19] Interview with Dr Delfin J Ganapin, Jr, 10 November 1999.

[20] *Omnibus Investments Code EO-226*.

effluent.[21] As part of its Investment Priorities Plan application process, companies are now required to complete an environmental checklist.[22] The DTI/BOI Environmental Unit also provides financial incentives for polluting companies to relocate their operations away from the Pasig River, the major waterway in Metro Manila.

Additional cleaner production-related activities of the DTI/BOI Environmental Unit include: monitoring and enforces the implementation of *Environmental Order 259*, which stipulates the use of particular surfactants in the production of laundry detergent products (this is the only compliance function of the DTI/BOI Environmental Unit, and is considered "a bit of an anomaly")[23]; implementing jointly with the DENR the "Ozone Friendly Mark Scheme" whereby a label is issued to companies and their products that have eliminated the use of ozone depleting gases; and conducting a series of seminars aimed encouraging cleaner production (the first, "Environmental Laws and Your Business", was held on 29 July 1999).

The most significant indigenous DTI/BOI Environmental Unit activities, in terms of an impact on a company's uptake of cleaner production, are the EIA and Environmental Compliance Certificate approvals processes *and* the offering of tax holidays and other financial incentives to certain environmental related projects.[24] In their current form, these are relatively modest in their scope and ambition, and are likely to make only a limited contribution to the uptake of cleaner production practices by industry in the Philippines. The PRIME project, however, envisages a greatly expanded cleaner production role for non-regulatory agencies and institutions within the Philippines, including, in particular, the DTI/BOI Environmental Unit. As such, it is worthy of further consideration.

The PRIME Project

The United Nations Development Programme provides support for the implementation of the PRIME project in the Philippines. This initiative aims to shift the current focus of the DTI/BOI Environmental Unit away from EIA processes and taxation incentives, towards the formation of environmental partnerships with industry. In short, the intention is for industry to assume greater responsibility for implementing cleaner production. Consistent with the voluntary emphasis of the DTI/BOI Environmental Unit, the PRIME Project encourages, rather than forces, the private sector to improve its environmental performance. Significantly, the goal is to persuade enterprises to adopt strategies that will not only meet and exceed existing environmental regulatory obligations, *but also lead to improvements in productivity and international competitiveness*. This approach provides a valuable pointer to the possible future policy directions of the DTI/BOI Environmental Unit, and for cleaner production policies generally in the South East Asian region.

Adoption of the PRIME Project approach would represent a major shift in the environmental policymaking process in the Philippines, and has particular implications for the cleaner production related activities of the DTI/BOI Environmental Unit. Underscoring the significance of the PRIME Project, Melito Salazar has described it as:

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[21] *1999 IPP Investment Priorities Plan* (Philippine Board of Investments, Makati City: 1999).

[22] DB Fonacier, "Message from the Undersecretary", (1999) *Closing the Loop*, 4th Quarter, 1-4.

[23] Interview with Head of the DTI/BOI Environmental Unit, Paul Angeles, 9 November 1999.

[24] The DTI/BOI Environmental Unit does fulfil a policy advocacy role and promotes cleaner production within various government policy fora (for example, it has been in active in the formation of the Clean Air Act). It is unlikely, however, that such activities will bear fruit in the short term in the absence of more concrete programs and initiatives.

> … an alternative approach to managing the environment effectively that involves cooperation and collaboration between government, private sector, civil society, and specific communities[25];

and the current BOI Undersecretary, DB Fonacier, states that:

> the PRIME Project puts forth a business strategy that banners sustainability for future generations.[26]

The PRIME Project is being progressed through four modules (only one of which is the sole responsibility of the DTI/BOI Environmental Unit at this point, but all of which fall within its broad policy ambit, and with the DTI/BOI Environmental Unit assuming the overall project management):

(i) Develop a Business Agenda 21 that will serve as a blueprint for the role of the private sector in environmental management. This is being developed (at least in part) by the Philippine Business for the Environment (a private sector body). The emphasis is on policies that are tailored to local business conditions, and the introduction of cleaner and more efficient technologies including, for example, demonstration sites. A particular focus is on the promotion of technologies that mitigate greenhouse gas emissions.

(ii) Support pollution prevention by adopting industrial ecology in industrial sites. This is geared towards the promotion of cleaner production technologies and practices in Philippine economic growth centres through the concept of "industrial ecology". Specifically, it entails the re-organisation of entire industrial systems to mimic closed-loop biological systems in order to minimise wastes and to maximise the efficient use of material and energy inputs. Success with this approach requires substantial cooperation between participating companies. For example, the wastes from one company become the production inputs of another.

(iii) Promote competitiveness of industry self-regulation by implementing environmental management systems. This is being implemented through the Philippine Association of Environmental Assessment Professionals. The intention is to shift industry from a reactive approach to environmental improvement to one where companies seek out financially attractive cleaner production opportunities. In short, to deliver win-win outcomes. The primary mechanism for achieving this goal is the environmental management system (EMS), a process which applies the principles of continuous improvement and quality management to environmental performance, and in so doing, integrate environmental considerations within a company's core decision making processes. A key point about the use of EMSs in this context is that their adoption is entirely voluntary. The major international benchmark for EMSs is ISO 14001, and this module is intended to be compatible with this standard. However, because the costs of adopting external EMSs may be prohibitive, small and medium sized companies are encouraged to develop simplified and less costly systems in-house.

(iv) Encourage entrepreneurs to invest in the environmental services industry. The final module in the PRIME Project recognises that governments alone cannot be expected to fully meet the costs of providing basic environmental services to industry and the community. As such, the aim is to explore means by which the private sector can share some of the pollution abatement burden. The emphasis, in this regard, is on creating an appropriate cleaner production investment climate.

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[25] Melito Siliso Salazar, Jr, "Environmental Management and Industry Development in the Philippines" (1999) at *Industrial Ecology IV: Profit and Sustainability*, April 29 – May 2, Watsonville, California at 10 (http://www.dti.gov.ph/boi/excerpt.htm 20/07/99).

[26] DB Fonacier, "Message from the Undersecretary", (1999) *Closing the Loop* 4th Quarter 1999, at 1.

Potential Policy Flaws

The PRIME Project represents a significant advance in environmental policy thinking in the Philippines, and in relation to the role of the DTI/BOI Environmental Unit, in promoting cleaner production in particular. This is most evident in terms of the contemplated move away from a heavy reliance on traditional command and control regulation towards the promotion of cooperative approaches with industry and other stakeholders. This policy approach should resonate with other South East Asian countries where environmental enforcement regimes, for a variety of reasons, have proved to be largely ineffectual. It should also sit comfortably with strongly pro-economic development agendas common to all governments in the region.

It remains to be seen, however, whether the initiatives contemplated under the PRIME Project, or the other existing policy mechanisms employed by the DTI/BOI Environmental Unit, will successfully encourage the widespread adoption of cleaner production technologies and practices by Philippine companies. There are a two potential policy flaws that threaten to undermine the effectiveness of the current and proposed cleaner production policy approaches of the DTI/BOI Environmental Unit. These are, first, the expressed desire to promote cleaner production through a regime of self-regulation and voluntary compliance, in particular, the use EMSs as a central implementation vehicle, and second, the lack of genuine incentives to foster a significant change in corporate environmental behaviour.

EMSs and self-regulation

The success of cleaner production policy strategies in South East Asia, and indeed the world over, depends on a major re-orientation of company behaviour and attitudes such that environmental considerations are integrated into core business decision making processes. A particular difficulty for policymakers in South East Asia, apart from under-resourced government agencies, is the many cultural and organisational obstacles to such a substantive transformation of company management practices. These include, for example, regulatory capture (whereby enforcement officials begin to sympathise with the plight of companies), the culture of compromise (whereby conflict and confrontation are avoided), the culture of gratitude (whereby officials feel obligated to reward previous company donations to local communities, for example), and the culture of corruption (whereby enforcement discretion may be abused). Further, many managers of South East Asian companies are wary of edicts from government bodies that aim to tell them how to manage their businesses. It is common for regulators, in particular, to be viewed as isolated from the commercial realities of managing a company in an increasingly competitive global economy.

One way of potentially overcoming such attitudes is through the use of EMSs. This is because EMSs focus on the *way* in which companies address environmental issues, not just *what* is addressed. For example, EMSs require companies to have an overall environmental improvement plan that covers each area of their business, a mechanism for monitoring progress in meeting that plan, and the means to correct shortcoming and take advantage of improvement opportunities as they arise. It is now widely accepted that the EMS approach has the potential to bring about positive environmental outcomes through organisational change. Ideally, "cost, efficiency, productivity and environmental performance all become part of the same decision-making process".[27]

Significantly, EMSs are becoming increasing attractive in Asia. According to Chynoweth, "focus on the environmental management systems standard series ISO 14001 is particularly strong in the Asian region. … Most governments in the region have schemes to raise industry awareness of the standard, which they see as a ticket for industrial growth, especially via exports. It is also a potential tool to

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[27] Alan Knight, "International Standards for Environmental Management", 17(3) (1994) *United Nations Environment Program: Industry and Environment* 45, at 26.

improve compliance with environmental regulation".[28] Further, "Asian multinationals are being very aggressive regarding global certification… 'Asian multinationals want to be market leaders in ISO 14001'. … the key driving forces are the potential marketing edge ISO 14001 gives similar ISO 9000 – coupled with the desire by Asian firms to be good corporate citizens". [29]

In the hope of building on these developments, the DTI/BOI Environmental Unit is contemplating the use of EMSs as a form of self-regulation in order for companies to meet, and preferably do better than, existing environmental regulatory requirements. In short, the adoption of EMSs is seen as a means of circumventing the essentially ineffectual existing compliance regime that operates in the Philippines. In principle, EMSs have considerable promise in this regard, given their emphasis on continuous improvement and changing management attitudes to environmental performance. Cascio, for example, argues that in "countries where enforcement is either lacking or ineffectual [such as in many South East Asian countries], ISO 14001 will provide the needed (and some cases only) impetus to develop processes to reach and maintain compliance".[30] If this promise is to be realised, then it might achieve results far above those which regulations currently seek to achieve, both in terms of environmental outcomes *and* flexibility and cost-effectiveness for business.

However, EMSs such as ISO 14001 tend to be weighed down by a number of structural weaknesses when used as a form of self-regulation to promote cleaner production. These include:

- A lack of detailed implementation guidelines for participating companies. For example, ISO 14001 does not list the issues that must be addressed by companies' environmental policies and programs, and environmental audits, nor does it detail how audits should be carried out. Thus it is entirely possible that companies could introduce an EMS but totally ignore some or all of the very environmental issues obligated under existing regulation, which it is hoped the EMS self-regulatory model would supplant.
- No requirement for participating firms to provide a regular environmental statement detailing their activities, the major environmental issues these activities raise, a summary of pollution emissions and waste generation, or an evaluation of overall environmental performance. Thus it is difficult for external parties to determine whether EMS as a form of self-regulation is delivering genuine environmental improvements, including the matching of existing regulatory requirements.
- No obligation to evaluate environmental impacts. There is, for example, no "environmental effects" register that details both the direct and indirect environmental impacts of activities, products and services[31], save for limited references to the identification of environmental aspects of a company's activities, products and services.[32] The absence of such a register could compromise the identification of areas of business activity requiring improvement, and it may prevent public scrutiny and assessment of a company's environmental performance.[33]
- No requirement for independent verification and public disclosure of environmental audit statements. Under ISO 14001 the entire audit process may be conducted in-house, leaving it severely lacking both in independent verification and in its public disclosure requirements. Again,

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[28] Emma Chynoweth, "High Standards", (1997) May *ACN-Careline Responsible Care Handbook*, at 14.

[29] Emma Chynoweth, "High Standards", (1997) May *ACN-Careline Responsible Care Handbook*, at 14.

[30] Joseph Cascio, *Testimony before the US House of Representatives, Committee on Science, Subcommittee on Technology*, June 4, 1996.

[31] Naomi Roht-Arriaza, "Shifting the Point of Regulation: The International Organisation for Standardisation and Global Lawmaking on Trade and the Environment" (1995) 22 *Ecology Law Quarterly* 479, 506–7.

[32] *What are the key elements of an ISO 14001 EMS?* (International Organisation for Standardisation, http://www.tc207.org/faqs/index.html 19/10/00).

[33] Naomi Roht-Arriaza, "Shifting the Point of Regulation: The International Organisation for Standardisation and Global Lawmaking on Trade and the Environment", (1995) 22 *Ecology Law Quarterly* 479, 506–7.

this lack of transparency and objectivity makes it difficult to determine if existing regulatory requirements are being met, let alone bettered.

A serious danger of relying on EMSs in isolation as a form of self-regulation is the emphasis on processes over outcomes. ISO 14001 is *intended* to establish management processes that result in an overall improvement in environmental performance. It may also serve as a tool for better risk management. However, nothing in ISO 14001 either measures or ensures either of these results.[34] As Cascio points out "ISO 14001 requires only evidence of working processes that are designed to maintain compliance".[35] Consequently, companies with widely differing levels of environmental performance, even within the same industry sector, may all establish EMSs that comply with ISO 14001. That is, the ISO 14001 certification criteria can be satisfied simply by demonstrating that the necessary system elements are in place, without having to demonstrate actual improvements in environmental outcomes (beyond compliance with local environmental laws).

Unless such policy shortcomings are specifically addressed by the DTI/BOI Environmental Unit, then there must be some considerable doubt that the use of EMSs as self-regulation will lead to a dramatic increase in the adoption of cleaner production technologies and practices by Philippine industry. In light of this conclusion, there are a number of pertinent questions confronting policymakers. How can the DTI/BOI Environmental Unit encourage the adoption of genuine EMSs without resorting to traditional regulation? How can it maximise the advantages of ISO 14001, while compensating for its weaknesses? And, how can it best harness the internal resources of industrial organisations for the benefit of environmental improvement?

Inadequate use of incentives

One of the major difficulties confronting policymakers in attempting to bring about the widespread adoption of cleaner production technologies and practices is that it is not something that is easily mandated by external agencies. The very nature of cleaner production requires that a company itself have a strong commitment to its ethos. Nothing will be achieved, as noted above, if companies merely "go through the motions" without a genuine level of commitment to cleaner production, including the process of continuous improvement. This may produce superficially attractive outcomes in the short term, but is unlikely to deliver fundamental improvements in environmental management in the long term.

If the "stick" is unlikely to be effective in promoting cleaner production, at least in a substantial proportion of companies, then our attention must turn to the "carrot". At first glance, it might be thought that incentives are not necessary in the case of cleaner production. After all, if it has the capacity to provide "win-win" opportunities, then enterprises might be anticipated to adopt these as a matter of enlightened self-interest, without any form of external inducement.

Unfortunately, however, this is rarely the case. Many commentators have noted the seemingly irrational behaviour of companies ignoring opportunities for environmental improvement that deliver clear-cut financial benefits. This is indicative of the inherent conservatism of company management and behaviour. In part, a reluctance to address cleaner production can be attributed to an excessive focus on short-term profits. In such circumstances, even profitable opportunities may be ignored if the financial pay-off is measured in years rather than quarters. An additional factor is the so-called "bounded rationality" of senior managers. This limits their capacity to juggle more than a handful of management tasks at any one time. In most cases, cleaner production will not be sufficiently high on

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[34] Even the commitment to continuous improvement must not be taken too seriously, since the rate and extent of can be determined by the organisation in the light of economic and other circumstances.

[35] Joseph Cascio, *Testimony before the US House of Representatives, Committee on Science, Subcommittee on Technology*, June 4, 1996.

the corporate agenda, or close enough to the company's core business agenda, to warrant management attention, even if it offers financially attractive win-win outcomes.

Accordingly, the use of incentives for companies to adopt cleaner production technologies and practices may be required. A key issue, in this regard, would be to ensure any such incentives are significant enough to foster a shift in corporate environmental behaviour. The incentives employed by the DTI/BOI Environmental Unit, including the offer to chaperone companies through the EIA and Environmental Compliance Certificate approvals processes, and the offer of tax concessions for relevant investments, are unlikely to be sufficiently attractive to promote the widespread adoption of cleaner production, at least in their current form.

There are three problems with these incentives as they stand. First, it is not clear what exactly is being asked of companies in return for the incentives being offered. For example, what is required of companies as a *quid pro quo* for a streamlined EIA approval process is only very vaguely defined. What is lacking is any requirement for a company to put in place a comprehensive cleaner production plan, with approved benchmarks and performance indicators, in exchange for the approval process assistance. The DTI/BOI Environmental Units in fact acknowledge this shortcoming itself: they are currently in discussions with the Environmental Management Bureau to find ways to provide follow-up monitoring.[36] The basic proposal is to require companies to submit environmental reports/audits on a regular annual basis.

Second, having received the benefit, whether it is in the form of an EIA approval or tax concession, there is no incentive for the company to persist with, let alone continually improve, its cleaner production strategy and practices. That is, the company can make all the promises in the world, without having to prove that it actually implements them *or that it will continue to implement them into the future*. In order to overcome this problem, there needs to be an ongoing incentive, in some form, for companies to maintain an ongoing commitment to cleaner production.

Third, and this relates principally to the availability of tax concessions, the incentive is not unique to cleaner production. There are several other means by which a company can receive the very same tax concession, many of which may be perceived as less onerous by the company in question. One way around this problem is to make a comprehensive cleaner production plan a condition of *all* tax concessions arrangements, irrespective of whether the particular investment is "environmental" or not.

To summarise, the PRIME Project goes some way to addressing the lack of appropriate cleaner production incentives, or at the very least, their inappropriate application. For example, it seeks to encourage entrepreneurs to invest in the environmental services industry, and it aims to establish commercial markets for the recycling and re-use of industrial wastes. It is far from certain, however, how these will be achieved in practice. At this point, the PRIME Project is essentially a policy development mechanism, with little thought given to the practicalities of providing workable cleaner production incentives on the ground. In addition, the current policies of the DTI/BOI Environmental Unit lack sufficient incentives to act as a viable alternative or supplement to compliance orientated approaches. These limitations raise the need for an appropriate policy framework within which the DTI/BOI Environmental Unit can better promote cleaner production, and the issue of what a more effective cleaner production strategy might look like.

A Cleaner Production Policy Rationale

From the above analysis, it is concluded that, in terms of developing and implementing a coherent and comprehensive cleaner production strategy, the DTI/BOI Environmental Unit approach is long on

[36] Interview with current head of DTI/BOI Environmental Unit, Paul Angeles, 9 November 1999.

ambition, but at least at this stage, short on substance. Perhaps, as with any new initiative, one has to walk before beginning to run, and its shortcomings should be understood in the context of its relatively brief history, limited resources and instrumentalities, and competition with other policy priorities. Indeed, the DTI/BOI Environmental Unit should be applauded for having the foresight to identify cleaner production, in particular, and environmental performance more generally, as policy issues worthy of attention. In this respect, it sets an example for equivalent government agencies in other South East Asian countries.

In considering an appropriate future and expanded role for the DTI/BOI Environmental Unit, there are three institutional and policy parameters which, collectively, must be taken into account (indeed, these are features which resonate across the region). First, it must conform to the overriding objective of the BOI, that is, to promote further investment and economic activity in the Philippines. This obviously does not rule out a greater emphasis on cleaner production, but it must be done in a way that is compatible with legitimate Philippine aspirations to pursue appropriate economic growth.

Second, it is not in a position to assume conventional regulatory responsibilities or powers. The DENR has prime environmental regulatory responsibilities in the Philippines, and it would be inappropriate to duplicate such functions. In addition, the BOI is designed to be of assistance to industry and investors, and as such, any attempt for it to assume an overtly compliance oriented posture could undermine this role. Even if the DTI/BOI Environmental Unit chose to assume enforcement responsibilities, it is far from clear it would be successful. Indeed, weak enforcement of environmental standards and regulations is common to agencies in South East Asian region as a whole. Panayotou *et al*, for example, point out that most countries in the region "have introduced pollution control systems such as volume and concentration standards and mandated abatement technologies similar to those in developed countries but enforcement has been variable and inconsistent".[37]

Third, a large influx of public funds is not imminent. As in any developing country, there are many competing claims on the public purse in the Philippines. These are likely to mitigate against a substantial increase in any one policy jurisdiction initiative, including that of cleaner production.

In conclusion, any cleaner production policy rationale for the DTI/BOI Environmental Unit, and comparable agencies in the Asia Pacific region, must accommodate the following features: it must seek out environmental improvements in tandem with economic advantage; it must foster cooperative initiatives rather than rely on the overt rule of law; and it must engineer policy responses that are unlikely to be a drain on public expenditure.

Economic advantage

The opportunities for the widespread adoption of cleaner production by Philippine industry, or indeed in other South East Asian countries, will be considerably enhanced if policies are introduced which are specifically designed to improve environmental performance at the same time as generating economic advantage. This is necessary to appeal to the profit driven aspects of company behaviour. A key challenge for policymakers is to ensure that policy solutions facilitate and reward companies for going "beyond compliance", that is, voluntarily bettering minimum standards of environmental performance.

Cleaner production offers companies potential economic benefits, such as an enhanced corporate image, access to new environment-related market opportunities, improved efficiency and quality,

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[37] Theodore Panayotou, Todd Schatzki and Qwanruedee Limvorapitak *A Case Study for the HIID 1997 Asia Environmental Economics Seminar: Differential Industry Response to Formal and Informal Environmental Regulations in Newly Industrializing Economies: The Case of Thailand* (Harvard Institute for International Development: 1997), at 1.

greater consumer acceptance of their company and products, and reduced legal liability.[38] It also provides an incentive to develop new environmental technologies that can be sold into rapidly growing global markets for environmental goods and services.[39] However, few companies have taken advantage of these apparent benefits to position themselves as environmental leaders.[40] As noted above, this is at least in part due to a combination of their focus on short-term profits, and the inherent rigidity in their management processes.

Arguably, then, there is a role for government to increase the rate of uptake within firms of existing economically rational environmental improvements: in effect, seeking to compensate for both the inadequacy of markets (unaided) and lack of business rationality in order to maximise both the public (environmental) and private (economic) benefits.[41] In short, for governments to introduce policies that encourage and assist companies to take advantage of economically attractive cleaner production improvements and to overcome the hurdles of short-termism and bounded rationality.

The extent to which such a strategy will be successful will of course depend upon the extent to which win-win opportunities exist. Here it should be noted that a number of critics have attacked aspects of the cleaner production literature as being simplistic and misleading.[42] It is suggested by such critics that companies are only able to demonstrate savings through environmental improvement if they have previously neglected minor and readily accessible improvements – in essence, the "low hanging fruit" argument. In response to such criticisms, we recognise that the opportunities for short to medium term financial benefits from cleaner production will vary across companies, industry sectors and countries. The likelihood, however, is that a substantial number of companies in developing South East Asian economies will not have fully exploited all their win-win opportunities for cleaner production. At the very least, cleaner production offers a means of achieving environmental improvements in a more cost-effective manner than conventional end-of-pipe solutions.

Cooperative approaches

The DTI/BOI Environmental Unit is not in a position to become a principal regulator of industry's environmental performance in the Philippines. Apart from unnecessary administrative duplication that such a role would entail, it would not sit comfortably with the broader economic agendas of the BOI and DTI. This, however, still leaves considerable scope for it to carve out a policy niche in the cleaner production arena by pursuing a strategy of constructive engagement with industry, with the emphasis on cooperative approaches.

There are a variety of reasons why cooperative approaches for promoting cleaner production, in the context of the DTI/BOI Environmental Unit, should at least for the most part be preferred to more coercive ones. In particular, coercive measures rate badly in terms of at least three criteria: *efficiency, effectiveness and political acceptability*.

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[38] S Aora andT N Cason "An Experiment in Voluntary Regulation: Participation in EPA's 33/50 Program", (1995) 28 (3) *Journal of Environmental Economics and Management* at 271.

[39] On current OECD projections, for example, the global market for environmental goods and services will be $US 600 billion in the year 2000. See N A Gunningham, "Beyond Compliance: Management of Environmental Risk" in Boer, Fowler & Gunningham (Eds) *Environmental Outlook: Law and Policy*, (The Federation Press, Sydney: 1994).

[40] U Guntram and P Winsemius, "Responding to the Environmental Challenge", (1992) March/April *Business Horizons* 12.

[41] The prominent US commentator Micheal Porter argues that there is much that governments can and should do to encourage firms to develop environmental technologies and to harness environmental services markets. See M E Porter and C van der Linde “Green and Competitive”, (1995) Sept-Oct *Harvard Business Review* 120.

[42] J Nash and J Ehrenfeld "Code Green", (1996) Jan-Feb *Environment* 42.

(i) Efficiency – coercive instruments usually require substantial administrative resources for monitoring and policing, without which they are likely to be ineffective. For example, they require an unnecessary deployment of resources to police those companies already meeting or bettering legislative requirements. This is a drain on public resources that undermines their efficiency from a government budgetary perspective. From the viewpoint of the *targets* of coercive regulation, they also lack flexibility and do not facilitate least-cost solutions. This makes them inefficient to comply with. For example, regulated enterprises may similarly be forced to spend large amounts of money satisfying highly prescriptive requirements that do little to promote cleaner production.

(ii) Effectiveness – coercive instruments also rate badly in terms of effectiveness because "conscripts" generally respond less favourably than "volunteers" do. Indeed, they may be counterproductive. For example, coercive instruments often cause resentment and resistance from those who regard them as an unjustifiable and intrusive intervention in their affairs, rather than the constructive resolution of environmental problems. This problem is particularly pertinent in the context of cleaner production, which depends to a large extent on a change in the internal dynamics and cultural attitudes of company management.

(iii) Political acceptability – perhaps not surprisingly, given their potentially low levels of efficiency and effectiveness, coercive instruments also tend to have low political acceptability. This is particularly the case in industries with a history of resistance to government regulatory intervention, and in developing countries were there is a strong emphasis on economic growth and wealth creation – coercive instruments may be viewed as an inhibitor of legitimate business aspirations.

The poor rating of highly coercive policy instruments against these criteria indicates that their application in the South East Asian context may be limited, at least in isolation (they may well be important as a regulatory backdrop, to complement other more cooperative cleaner production initiatives as part of a broader "enforcement pyramid"[43]). A preference for voluntary, cooperative approaches is supported by environmentally progressive industry organisations in the Philippines. The Philippine Business for the Environment group, for example, states that "with the help of voluntary initiatives, companies can achieve targets that go beyond the requirements set by environmental laws and regulations".[44]

In contrast to these problems, cooperative policy approaches have the virtues of providing greater flexibility to companies in their responses, greater ownership of solutions which they are directly involved in creating, less resistance, greater legitimacy, greater speed of decision making, sensitivity to market circumstances and lower costs.[45] Again, these features are important in the context of cleaner production that requires a high degree of commitment on the part of industry if it is to be successfully adopted. In developing countries in South America, for example, it is noted that "government leaders and industry alike are supporting the voluntary approach to [ISO 14001] certification".[46]

More broadly, some commentators argue that it is artificial and counterproductive to make distinctions between government policy and corporate responses. According to this view:

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[43] I Ayres and J Braithwaite *Responsive Regulation: Transcending the deregulation debate* (Oxford University Press, New York: 1992).

[44] "The Real Value of Voluntary Initiatives", (1999) January-February Vol V, No3 *Business and Environment* at 15.

[45] See J A Sigler and J E Murphy, *Interactive Corporate Compliance: An alternative to regulatory compulsion,* (Quorom Books, New York: 1989).

[46] "From Command and Control to Self-Regulation: the role of environmental management systems", (1997) March 5 *International Environmental Reporter (BNA)* at 227.

> Governments and other actors like large firms, branch organisations and NGOs are mutually dependent on achieving their goals. Government policy is therefore the result of interactions between these organisations. Most attention is paid to steering strategies that governments can employ in such a network context, eg by creating win-win situations, managing the perceptions of others, or by selectively including some organisations and excluding others. [47]

In short, a cooperative approach between government and industry is a logical response to this merging of public and private interests. It is "far better if the public values of a regulatory system are internalised as the private values of firm managers - that they act in accordance with [cooperative approaches] because it is the 'right thing to do'".[48] There will always be a need, however, for a backdrop of traditional regulatory standards and clearly defined limits of polluting discharges, if only to target recalcitrant companies. The advantage of the cooperative approach is that it shifts the emphasis to improvements in process and management to reduce the volumes of pollution generated at their source. Most importantly from the DTI/BOI Environmental Unit's perspective, an emphasis on cooperative approaches is consistent with a pro-development agenda and also has the attraction of freeing up scarce resources to devote to other complementary policies.

Cost efficiency

Given the limited resources likely to be available to the DTI/BOI Environmental Unit, both now and into the future, it is imperative that the underlying policy rationale it adopts for promoting cleaner production emphasises the need to avoid a significant drain on the public purse. This is a scenario that is equally applicable to other South East Asian government agencies intending to promote cleaner production.

The are several means of achieving the aim of policy cost efficiency, but a common theme, as discussed in the next section, is to harness or leverage resources outside of the public sector in the pursuit of cleaner production outcomes. This is consistent with the previous policy suggestion of opting for cooperative instruments over traditional command and control regulation. Implicit in this approach is a greater reliance on the private sector to voluntarily achieve beyond compliance levels of environmental performance. This reduces the need for expensive monitoring and inspection services, and importantly, can have a multiplier effect on public expenditure.

An important aspect of cost efficiency is to pursue policy "multipliers". That is, policies which catalyse others parties and institutions to promote cleaner production outcomes. For example, the provision of information on corporate environmental performance can stimulate shareholders and financial institutions to place pressure on companies to improve their cleaner production practices. In short, government agencies should be seeking to obtain the "biggest bang for their buck" by targeting those with the greatest potential to support the cleaner production cause. An example of this might be combining the BOI Investment Priorities Plan incentives for investing in environmental technology with a requirement for the adoption of the ISO 14001 EMS standard (this is, in fact, is a policy option currently under consideration[49]).

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[47] Hugo Verheul and Katrien Termer "Beyond Regulation: Government Roles in the Diffusion of Cleaner Technologies", (1998) *Global Restructuring: A Place for Ecology?* 24-25.

[48] D Cohen, "Voluntary Codes: The Role of the Canadian State in a Privatised Regulatory Environment" in D Cohen and K Webb (editors) *Exploring Voluntary Codes in the Marketplace* (Government of Canada, Ottawa: 1996) at 19.

[49] Interview with Head of the DTI/BOI Environmental Unit, Paul Angeles, 9 November, 1999.

A Cleaner Production Policy Framework

This section proposes a series of cleaner production policy options that aim to build on existing DTI/BOI Environmental Unit initiatives, including the PRIME project, while overcoming some of their potential shortcomings. In particular, it is intended to be consistent with the DTI/BOI Environmental Unit's level of resources and particular institutional circumstances. The policy framework is also intended to be consistent with the policy rationale identified above, namely, a desire for achieving environmental improvements in tandem with better economic outcomes, a preference for non-regulatory, cooperative instruments, and the need to minimise public expenditure. Finally, it intended to be broadly applicable across the South East Asian region. The relevance of such a policy framework was highlighted recently by one commentator when he noted that:

> Rapidly growing economies, such as those in Southeast Asia, are experiencing growth in the manufacturing sectors of about 10 percent annually which means a doubling of their industrial base in a decade. Yet the regulatory institutions responsible for environmental protection typically lack the resources to effectively implement, monitor, and enforce compliance programs. For these countries, new approaches to environmental management that go beyond traditional command and control are essential to steer clear of serious environmental costs as a side consequence of economic success.[50]

It is envisaged that the primary institutional vehicle for coordinating the implementation of such a cleaner production policy framework would be the DTI/BOI Environmental Unit. It is ideally suited to assume such an expanded and more ambitious role because of its strong links with industry, its perceived distance from being a traditional regulatory agency, and its expressed desire to promote the widespread adoption of cleaner production technologies and practices by Philippine industry. Importantly, the promotion of cleaner production would be seen as complementary to the BOI's overriding goal of facilitating appropriate economic development. Again, this is a scenario that is likely to be replicated in other South East Asian countries.

Unfortunately, although there is a significant volume of material addressing cleaner production, much of that literature lacks a coherent and sophisticated framework within which to address the core institutional and structural barriers to its successful and widespread adoption by industry, particularly in the case of developing countries. One recent study, however, by the World Bank *New Ideas in Pollution Regulation* initiative, found that in Mexico the important factors in determining the level of environmental improvement by industry are: public scrutiny; enlightened internal management procedures; effective training for all personnel; regulatory pressure; and plant size.[51] Another study concluded that:

> Several institutions are important in the further development of cleaner production: firstly, the companies themselves; secondly, the various government agencies; and, thirdly, the wider innovative context including business organizations, NGOs, financial institutions and consumers.[52]

Picking up on these and other related findings, the cleaner production policy framework proposed for the DTI/BOI Environmental Unit consists of five major policy themes. These are: (i) providing information; (ii) changing corporate culture; (iii) industry partnerships; (iv) harnessing third parties; and (v) small business networks. This policy framework seeks to take advantage of the range of circumstances where cleaner production is both good for business and good for the environment – where there is a happy coincidence between private profit and the public interest.

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[50] Performance Reporting and Alternative Regulatory Approaches, page 25,

[51] *New Ideas in Pollution Regulation* (The World Bank, http://www.worldbank.com/nipr 24/10/99).

[52] Bjornar Saether and Audun Amundsen, "Cleaner Productions Assessment in Norway: Experiences and Policy implications" (1996) Vol 5 *Business Strategy and the Environment*, 178-187.

However, we must emphasise the difficulty of the task at hand, and the extent to which the DTI/BOI Environmental Unit, or indeed other equivalent agencies in South East Asia, need to secure industry's cooperation to achieve its aims. Left to its own devices, the market is unlikely to generate spontaneous improvements. In a study of sustainability in the Indonesian pulp and paper industry, for example, it was noted that "the role of government, and the chief players in how decisions are made to create a fully sustainable development are very important and the most strategic thing to be considered".[53] In activating private sector engagement, there is crucial role for government agencies such as the DTI/BOI Environmental Unit. Before discussing each policy theme, we provide a consolidated list of the major barriers to the adoption of cleaner production by industry.

Cleaner production barriers

The identification of barriers to industry's uptake of cleaner production will have a significant bearing on the direction of any subsequent policy framework. Space precludes a full description of such barriers, however, relevant candidates include[54]:

- The tendency for overly prescriptive regulatory standards to restrict industry flexibility and stifle innovation in seeking to adopt cleaner production strategies;
- A lack of information and expertise on the part of companies both about specific cleaner technologies and wider relevant management practices. This can contribute to risk and uncertainty in adopting technologies, and even to the extent that companies are interested in such them, a lack of appropriate skills and expertise in acting upon this desire;
- Narrow financial accounting systems and competing business priorities. Most accounting systems fail to factor in environmental costs and liabilities, and decision makers within the firm are consequently much less likely to integrate environmental considerations with wider business management issues;
- Bounded rationality in decision-making processes. Inevitably, because of time and concentration constraints, business managers can only juggle a limited number of issues at any one time. In many cases, this will be issues other than cleaner production;
- A lack of communication and cooperation in firms. The "silo mentality", for example between engineers and accountants, can be a significant handicap to decision making processes that include cleaner production considerations;
- Difficulty in implementing cleaner technology. The Organisation of Economic Cooperation and Development has identified structural factors, such as the need to amortise equipment already installed, as major impediments to the implementation of cleaner technology[55]; and
- Particular cultural and political characteristics of South East Asian countries, such as regulatory capture, compromise, gratitude and corruption, that combine to undermine effective environmental policy.

In developing the following cleaner production policy options, we are mindful of these potential barriers, and have attempted to suggest realistic and practicable measures tailored to the circumstances of the DTI/BOI Environmental Unit.

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[53] Hanafi Pratomo, "Impact of new government regulations on future existence of pulp mill", (1994) *48th Appita Annual General Conference Proceedings*, at 71.

[54] NGunningham and D Sinclair "Towards Sustainability: Incentives for cleaner production" in P Leadbeter, N Gunningham and B Boer (editors), *Environmental Outlook No3: Law and Policy* (The Federation Press, Sydney: 1999) 76-90.

[55] Organisation for Economic Co-operation and Development (OECD) *Technologies for Cleaner Production and Products: Towards Technological transformation for Sustainable Development* (OECD, Paris: 1995).

Providing information

Inadequate information seriously inhibits private parties from reaching rational decisions in favour of cleaner production. Small and medium-sized companies, in particular, barely know what questions to ask, or who to address them to, let alone what the possible solutions are. As a result, many profitable opportunities for cleaner production are missed entirely. Even in large firms, where information access may be easier, such information may not be acquired, or if it is acquired, may not be acted upon. Accordingly, the provision of adequate information is essential to improving the capacity of industry and the community to adopt cleaner production. It is critical to changing attitudes, behaviour and expertise to be consistent with environmental policy imperatives. Information, in terms of providing transparency, is also crucial in building trust between stakeholders.

Significantly, information must flow in both directions: to *and* from companies. In the case of the latter, transparency of corporate environmental performance can act as a spur of future progress in cleaner production. A good example of this is provided by a recent Indonesian initiative:

> Indonesia provides an interesting example of how to implement a practical information-based strategy to combat environmental pollution. The national environmental agency of Indonesia has launched an innovative program known as PROPER to rank the environmental performance of facilities in water pollution control. On the basis of self-reported data, site inspections, and independent monitoring 187 facilities were assigned to one of five colour coded categories [depending on the level of their environmental performance].[56]

Similar initiatives have taken place in the regulatory agencies of other Asian countries, with the assistance of, in particular, the World Bank.[57] In the Philippines, for example, the DENR is has introduced a public disclosure program called EcoWatch that follows in the footsteps of Indonesia's PROPER program.[58] President Ramos launched EcoWatch with a group of prominent business leaders. Its emphasis is on public reporting of factory environmental performance ratings. In India, a related program is the Green Rating Project that ranks Indian companies on the basis of environmental performance.[59] A local Indian community organisation, the Centre for Science and the Environment, which was selected to implement the project, has recently ranked 31 pulp and paper facilities across the country.

In terms of providing cleaner production information to companies, the DTI/BOI Environmental Unit may make a substantial contribution in the many circumstances where the market cannot be relied upon to do so, thereby helping to overcome the problem of irrational decision making. Among the most important roles of DTI/BOI Environmental Unit would be to provide technical assistance and expertise. This would be consistent with other DTI/BOI industry support programs that provide some form of technical support to firms. In the case of cleaner production these might include mechanisms such as telephone hotlines, visits from government engineers, workshops and conferences, and Internet databases. Many of these can be introduced with minimal public expenditure, but others may be too expensive in the short term at least.

Some of the information policy mechanisms contemplated in developed countries would be inappropriate to the resource levels of the DTI/BOI Environmental Unit (in the absence of overseas development assistance). These include providing extension services aimed at improving the managerial ability of firms to improve their uptake of cleaner production, and providing demonstration

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[56] *New Ideas in Pollution Regulation* (The World Bank, http://www.worldbank.org/nipr, 10/12/99).

[57] *New Ideas in Pollution Regulation* (The World Bank, http://www.worldbank.org/nipr 10/12/99).

[58] "Philippine's EcoWatch" *New Ideas in Pollution Regulation* (The World Bank, http://www.worldbank.org/nipr 10/12/99).

[59] Centre for Science and Environment (http://www.cseindia.org 10/12/99).

projects to promote new, cleaner technology. Demonstration projects in particular are limited by high start-up costs. If the DTI/BOI Environmental Unit were to contemplate such measures, it would be essential that any demonstration projects focus on technologies that are universally applicable to a specific sector, or indeed across sectors.

Additional information based measures that may be adopted by the DTI/BOI Environmental Unit include fostering environmental performance reporting and the provision of awards and prizes. Environmental reporting entails companies recording their environmental performance and disclosing this information publicly as part of an annual report or as a stand-alone document.[60] Recent surveys indicate that the number of companies producing corporate environmental reports has risen significantly in the past few years, although this is off a low base, and largely confined to the developed world. There is, however, a potential role for the DTI/BOI Environmental Unit to develop effective codes of practice for corporate environmental reporting.

Awards and prizes have considerable publicity potential, and as such, can contribute to the education and information strategies of cleaner production. Recipients of awards may be presented as role models, with the exemplary act or pattern of conduct celebrated by the award held out as worthy of emulation by others. Despite these merits, award schemes are not without limitations. Most significant of these is their tendency to become debased through overuse. The worth of such measures, in a consumer market lacking a strong environmental sensibility is also debatable. Consequently, an excessive reliance on award schemes is unlikely to be the most judicious of expenditure outlays, even taking into account their low start up costs.

Changing corporate culture

Some of the most significant barriers to cleaner production are a direct consequence of inappropriate company structures and the management culture within them. This is particularly the case in South East Asia where many companies lack a history of regulatory compliance. Examples of inappropriate management processes include inadequate business accounting systems and inappropriate incentive structures for management, in conjunction with excessive pressure to achieve short-term profits. There are a number of measures which, if implemented, would directly address one or more of these barriers and which would enhance the prospects for a change in company behaviour, particularly at the level of senior management and the decision making process.

Conventional accounting practices disguise many of the environmental costs of business decisions, either by burying them in "non-environmental" accounts or by failing to connect costs to the activities that generate them. This, in turn, results in a failure to exploit opportunities "to increase profits, use materials more efficiently, and protect the environment".[61] Environmental accounting attempts to change the way in which environmental costs influence corporate behaviour (which it can only do if it is communicated to appropriate managers) and integrate environmental performance into core business decision making and management processes.

As noted above, EMSs are another internal management tool that hold out the promise of continuous improvement and quality assurance for company environmental performance. Such systems also have the potential to deliver improved profits. In theory, therefore, companies should readily embrace EMSs voluntarily, as a matter of enlightened self-interest. Yet in practice, this is far from being the case. This may in part be because EMSs are expensive in the short term to establish: most of the costs are "up front" but the benefits are less measurable and are mostly long term.

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60 Such disclosures may contain: an overall environmental policy statement; an overview of significant environmental impacts; targets for reducing emissions and wastes and quantitative performance against those targets; descriptions of environmental management systems in place; relevant research and development activities; breaches of environmental regulations; and the results of environmental audits.

61 D Ditz, J Ranganathan and R D Banks (editors), *Green Ledgers: Case Studies in Corporate Environmental Accounting* (World Resources Institute, Washington DC, 1995) at 36.

Because of its position as a supporter of business growth, the DTI/BOI Environmental Unit is in a unique position to directly influence the behaviour of companies, both domestic and international, such that they integrate cleaner production into the core management decision making processes. These would include, for example, promoting the adoption of environmental accounting practices and EMSs. One obvious tactic would be to make them a condition of existing policy measures. For example, those companies wanting to obtain concessional tax treatment, whether domestic or international, would be required to present a detailed plan for implementing environmental accounting and EMSs. Similarly, those companies chaperoned by DTI/BOI Environmental Unit in obtaining EIA and Environmental Compliance Certificate approval could have the same conditions applied.

Industry partnerships

Industry cooperation is essential to the widespread adoption of cleaner production. Apart from being the target of DTI/BOI Environmental Unit policy measures, industry can actively participate in the cleaner production policy process. Specifically, industry may undertake voluntary cleaner production initiatives facilitated through formal, but not legally binding, partnerships with the DTI/BOI Environmental Unit. [62]

An illustration of how the DTI/BOI Environmental Unit might pursue cleaner production partnerships is provided by the Pollution Prevention Pilot Project (4P) in the United States, which has generating some encouraging results.[63] This unique partnership is led by a core group of experts from the Natural Resources Defence Council, Amoco Petroleum, the Dow Chemical Company, Monsanto, Rayonier, and the New Jersey Department of Environmental Protection. With a shared industry-environmentalist perspective, the group has begun to identify opportunities to cut production and environmental costs while reducing and preventing pollution at two chemical manufacturing facilities. Through site-specific work, the group is exploring what internal, external, or regulatory barriers may have kept the plants involved from already practising cost-saving pollution prevention. The 4P initiative demonstrates that industry, government and the environmental community can work together for success – towards enhanced environmental improvements, policy reform and economic savings. It also highlights the value of collective as opposed to unilateral efforts.

Suitably designed, and in combination with government intervention where necessary, industry partnerships have considerable attractions: "they avoid adversarial relations; involve businesses or other groups in political processes; improve compliance because rules rest on consensus rather than on coercion; and permit, through negotiation, the development of instruments better adapted to economic and competitive contexts".[64] The DTI/BOI Environmental Unit is ideally placed to take on a facilitatory role in the implementation of cleaner production partnerships with industry.

Harnessing third parties

For the DTI/BOI Environmental Unit to extend the reach of its influence beyond its own potentially limited resources, a crucially important task will be to harness the power of third parties as instruments of informal social control capable of shaping future cleaner production outcomes. Third parties may be either commercial or non-commercial in nature. The potential contribution of these interests in determining the cleaner production performance of industry is yet to be fully explored, particularly in the South East Asian region. One study in the region, however, points to their importance: when

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62 Organisation for Economic Co-operation and Development (OECD), *Meeting on Alternatives to Traditional Regulation* (OECD, Paris: 1994).

63 World Business Council for Sustainable Development (WBCSB), *Eco-efficiency and cleaner production: Charting the course of sustainability* (WBCSD, Washington DC: 1996).

64 Organisation for Economic Co-operation and Development (OECD), *Meeting on Alternatives to Traditional Regulation* (OECD, Paris: 1994) at 14.

companies were asked to nominate the external factors leading to better environmental outcomes they identified "domestic customers, employees, government regulations and community pressures".[65]

Howard, for example, highlights the increasing influence of national environmental movements in Asia generally, but notes the tension between the pressure to pursue modern technology and centralised management and the traditional approaches to community participation.[66] Cleaner production, broadly defined, which involves third parties, provides a means of overcoming such competing interests. According Afsah *et al* this view is yet to penetrate policy discussions:

> Conventional discussions of pollution regulation in developing countries have been too shallow – devoting inordinate attention to the choice of instrument while ignoring the preconditions for applying any instrument effectively. The have also been too narrow – focussing only on the interaction of state and factory, and ignoring the role of the market and the community.[67]

One possible vehicle for commercial third party engagement is supply chain pressure. Companies, driven by their own internal priorities, or mindful of their customers' preferences and corporate image, commonly affect each other's behaviour. Purchasers often have leverage over suppliers which they may use to influence the latter's environmental performance. For example, an ISO 14001 certifier of Lloyds Register refers to "one [Asian] firm that is planning to have all 200 of its global operations certified – and that requirement is expected to filter down to the companies' suppliers, including chemical producers".[68] The interchange between industrial buyers and suppliers also generates incentives to innovate and to respond to market demands. A central feature of any DTI/BOI Environmental Unit policy to encourage supply chain pressure should be the formation of cleaner production relationships whereby larger companies, particularly multinational companies, assist their smaller vendors to achieve environmental goals.

Such assistance could take the form of environmental management expertise, quality control, product design, and advice on clean technologies or regulatory compliance audits. The objective of the relationship would be to deliver mutually beneficial outcomes: smaller companies gain expertise to improve their environmental performance in a way that reduces compliance costs and improves productivity and larger firms gain a more reliable, cleaner and efficient supplier.

In the context of South East Asian developing countries, this form of third party cleaner production relationship is an important way in which the cleaner production resources and expertise of multinational companies can be transferred to domestic companies. Again, as the major facilitator of foreign investment, the BOI, and through it, the DTI/BOI Environmental Unit would be ideally placed to coordinate and facilitate such an outcome. This could be achieved through overt incentives, such as a requirement of access to tax havens, or it could also be based on more subtle policy influences, such as the creation of best practice guidelines.

A source of non-commercial third party engagement is local communities. One study of industry in Thailand, for example, found that "pressure to address environmental issues by groups outside management – community, employees, and customers – increases the likelihood that firms develop an environmental plan. … this appears to indicate some responsiveness to outside pressure to

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[65] Theodore Panayotou, Todd Schatzki and Qwanruedee Limvorapitak *A Case Study for the HIID 1997 Asia Environmental Economics Seminar: Differential Industry Response to Formal and Informal Environmental Regulations in Newly Industrializing Economies: The Case of Thailand* (Harvard Institute for International Development: 1997) at 10.

[66] Michael C Howard (editor), *Asia's Environmental Crisis* (Boulder: Westview Press, 1993).

[67] Shakeb Afsah, Benoit Laplante and David Wheeler *Policy Research Working Paper 1672: Controlling Industrial Pollution: A New Paradigm* (The World Bank, Washington, D.C.: 1996) summary abstract.

[68] Emma Chynoweth "High Standards", (1997) May *ACN-Careline Responsible Care Handbook* at 14-15.

environmental problems".[69] One way for the DTI/BOI Environmental Unit to harness community involvement in the cause of cleaner production is through the formation of "good neighbour agreements". In Europe and the United States, for example, good neighbour agreements between chemical firms and local residents are common.[70] They feature community access to information relating to regulatory compliance, and the right to inspect facilities and to review compliance and accident plans. For example, under the United States Environment Protection Authority's Project XL, community organisations and other local stakeholders have the opportunity to shape and vet a firm's environmental management strategy. With community support, the strategy becomes a legally enforceable contract. Good neighbour agreements can provide companies with a strong incentive to engage in cleaner production activities, however, they are only likely to be appropriate for larger companies with a reasonably high community profile. The DTI/BOI Environmental Unit, through its strong industry networks, would be ideally placed amongst Philippine government agencies to support the formation of good neighbour agreements.

Small business networks

Small and medium-sized enterprises (SMEs) have a number of unique characteristics that may inhibit the adoption of cleaner production technologies and practices. In this respect, the Philippines is no different from other countries. SMEs often lack the necessary technological sophistication and economies of scale, and have greater difficulty understanding the issues involved in cleaner production. For example, "although ISO 14001 is ostensibly applicable to all types and sizes of organisations, many will undoubtedly find implementation expensive. Just how much it will cost to implement ISO 14001 depends in part upon the state of the organisation's present system".[71] They may also be unaware of their current regulatory requirements. A disproportionate number of SMEs are also economically marginal, further imposing pressures for short-term profit and rendering investment in cleaner production less likely. The costs of implementing cleaner production in most cases will be higher than for larger companies. Even where there is a demonstrated financial return from such investments, they may lack the resources and expertise to exploit such opportunities.

The DTI/BOI Environmental Unit may address the particular problems confronting SMEs through the creation of cleaner production networks. These would allow information and expertise on the implementation of cleaner production management practices and specific clean technologies to be exchanged between SMEs in the same sector. Such networks could be organised and administered in cooperation with relevant industry associations, and may also be linked to other policies such as harnessing supply chain pressure and information based strategies.

Conclusion

This article took as its starting point the potential conflict in South East Asian countries between the desire for economic growth and the desire for environmental protection. Cleaner production, with its emphasis on delivering environmental improvements in tandem with economic advantage, offers one

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[69] Theodore Panayotou, Todd Schatzki and Qwanruedee Limvorapitak *A Case Study for the HIID 1997 Asia Environmental Economics Seminar: Differential Industry Response to Formal and Informal Environmental Regulations in Newly Industrializing Economies: The Case of Thailand* (Harvard Institute for International Development: 1997) at 8.

70 For example, in the United States, an agreement was reached between industry, state regulatory authorities, and local citizens concerned about environmental and health issues of a chemical facility. The agreement involved the creation of an ongoing monitoring committee comprising representatives of the three parties.

[71] "Singapore Launching Program to Help SMEs Understand Requirements of ISO 14001 Series", (1996) Nov 13 *International Environmental Reporter (BNA)* at 1013.

means of overcoming this dilemma. It is conceded, however, that bringing about better environmental performance in South East Asian industry, whether through cleaner production or otherwise, is not something that is going to happen overnight. This is particularly so given the emphasis of many existing government policies on unbridled economic growth, and the weakness of many environmental regulatory enforcement regimes in the region.

Against this backdrop, a case can be made for the adoption of novel approaches to cleaner production, in particular those that seek to overcome the shortcomings of traditional regulatory strategies. The DTI/BOI Environmental Unit, unencumbered as it is by narrow notions of environmental policy, is ideally placed to exploit its credibility and connections with the Philippine industrial sector to foster cleaner production. In order to realise this potential, however, a much more sophisticated and ambitious policy strategy than that currently employed or envisaged is required. This article proposes one model for achieving this by building on a mutually supportive and economical mix of financial incentives, information and communication, co-regulation and third party engagement.

Arguably, this is not an excessively optimistic prescription, as there are numerous policy examples already delivering tangible benefits in both developed and developing countries upon which we can draw. The hope is that in learning from these successes (and where appropriate, failures) the DTI/BOI Environmental Unit would be able to "leapfrog" the Philippines into a new era of cleaner production. Although this has been articulated through the lens of one particular environmental agency, in one particular country, the broader rationale, and the strategy for achieving it, are applicable to the circumstances of most other South East Asian countries. As David Buzzelli, Dow Chemical Vice President and Corporate Director for Environment, Health and Safety, states:

> When I think about the Asia Pacific region … we have another opportunity, the chance not to repeat the mistakes we made elsewhere in the past. … We can do it right here the first time. Many of us operate 20 year old facilities in Europe and the US. They make a good return but it is difficult to make the investment necessary to take them up to scratch. Now in the Asia Pacific region we can do what no one else in the world can, even in our company. We can design out pollution and have no waste water and no emissions. … we have a unique opportunity to learn from the past – go beyond legislation and do the unexpected. This could give us the opportunity of not exporting US style laws. … We have the opportunity to do something different and escape from under the regulatory hammer through our performance.[72]

[72] David Buzzelli "Going for growth and getting it right this time", (1996) Nov, *CAREline* at 10.