

closing THE

LOOP

SPECIAL ISSUE

changing gears towards green productivity

A newsletter produced by the PRIME Project, Industrial Ecology Module under the United Nations Development Programme (UNDP) and Board of Investments, Department of Trade and Industry



MESSAGE FROM THE PROJECT DIRECTOR

While the industry acknowledges its need for waste treatment facilities for by-products that do not have takers, we see a gap between this need and the availability of such facilities or technology. What will bridge that gap is a concrete set of policies that will encourage the establishment of these facilities. An environmental entrepreneur will more likely invest if there are business incentives coming from the respective government office, apart from the residuals volume requirement for putting up such facility.

That is why we at the Industrial Ecology Module initiated a study on the existing policies that encourage and hinder the investment of waste treatment facilities, the adoption of by-product exchange, and the promotion of recycling and re-use.

We saw in these studies that existing environmental policies and laws do not accommodate innovative environmental management concepts that are beneficial to the business sector. Therein lies a vast opportunity for industrial ecology to flourish through local and national policies. For instance, Presidential Decree 984 or the Pollution Control Law is media-specific and promotes end-of-pipe approach rather than waste minimization at the source. Republic Act 6969 limits opportunities for re-use and recycle by its very own definition of toxic and hazardous waste. Even fiscal incentives can possibly be extended to the importation of capital equipment needed to further treat or recycle certain by-products.

Even the Clean Air Act hampers the establishment of such facilities especially waste-to-energy projects, due to the prohibition of incinerators. It also runs counter to the concept of industrial ecology and closing the loop of industrial processes. Wastes which cannot be recycled or re-used anymore would inevitably require burning in the final disposal.

A good interception is to provide market-based incentives to firms that will make them more responsive to adoption of sustainable practices and technologies. Continuing the rigorous promotion of industrial ecology tools also helps in spreading awareness among industries. Organizations can give awards and recognition to best practices of industries. Research institutions or the R&D arm of a firm can start an industrial metabolism study of the materials in a firm. Concerned organizations and institutions can promote environmental accounting, and review existing polices, laws, and incentives of the government agencies.

When new or modified policies and incentives are in place, we should also keep in mind

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Upfront

NEW TOOLS EMERGE FOR INDUSTRIAL PARK MANAGEMENT

If you are in the business of industrial park development and operation, then you just might find useful a document that showcases industrial ecology tools for industries and estate park management. Titled "Adopting Industrial Ecology Tools in Industries," the document is a development plan outlining strategic tools like by-product exchange and eco-industrial park development and how these can be implemented in industrial parks. The plan envisions giving industries an insight to a new competitive advantage attainable through innovative environmental management tools. Likewise, the development plan will help concerned government agencies in viewing barriers and issues from the businesses' side, allowing for a win-win situation when it comes to laws and policies. Other sectors which will find the development plan useful include agro-industrial clusters, the academe, local government units, financing institutions, industry associations, environmental entrepreneurs, and local experts and consultants.

The development plan is spawned from the pilot projects of the Module where by-product exchange (BPX) and eco-industrial park (EIP) development were pilot tested in existing industrial estates in the country. Having been tested in a local setting, these concepts gave consideration for opportunities and barriers existing uniquely in the pilot estates. Further, the market conditions, financial setting, business acceptability,

policy implementation process, social aspects, and local working culture gave way for a more localized plan that would be easy to replicate in local industries, and even in other Asian countries.

Users of this document will find the industrial ecology model or a framework where the development plan is based on. This model features important elements interplaying for a successful adoption. Goals, project components or activities, and their support systems must be in sync, with the multi-sectoral stakeholders holding together the synchronicity of these elements. The bottomline objectives of the industrial ecology framework are 1) enhance economic and environmental performance; 2) enhance material, water, and energy use efficiency, and 3) institutionalize capacity strengthening.

The development plan also highlights the key steps in developing an EIP and incorporating BPX in the park operation. These steps include: 1) mobilizing and organizing support; 2) resource inventory and analysis; 3) development of strategic plan; 4) implementation; and 5) monitoring, evaluation and replication.

A popularized summary of the document will be available in February 2001. Interested individuals and organizations may get a FREE copy at the Industrial Ecology Module office.



Integrating Cleaner Production with Industrial Ecology

by *Georgina Pascual-Sison*
Project Manager, Industrial Ecology Module

Cleaner production (CP) and eco-efficiency have become very popular in the environmental management arena since these provide a holistic view of industrial activities by covering all stages of the production processes. CP strategies are often voluntarily implemented to existing production practices by individual firms. But as we accelerate to higher means of improving production efficiency, we could think of going even further, and apply Cleaner Production at the system level, such as a cluster of various companies, an industrial zone, or even a whole region. This integrative function could be one of the most major contributions of industrial ecology.

Industrial ecology offers a whole systems context for effectively using existing tools and methods such as pollution prevention, energy efficiency, total quality environmental management, life-cycle analysis, and other valuable cleaner production approaches. Industrial ecology aims at looking at the industrial system as a whole. It does not address just issues of pollution and environment, but considers as equally important technologies, process economics, inter-relationships of businesses, financing, overall government policy and the entire spectrum of issues that are involved in the management of any firm, or the process of planning economic developments. Also, industrial ecology may offer options which are not only effective for protecting the environment but also for optimizing the use of scarce resources.

Incorporating CP and eco-efficiency principles before production can be ensured by using an Industrial Ecology approach. An example is industrial symbiosis where co-locating, complementary industries consider land-use planning and design of individual plants. With



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In the NEWS

Search for the by-product you need with just a click of the mouse



If you're looking for a particular industrial by-product, whether you're a service provider or a firm in need of a certain waste material, our materials database might be helpful.

Just go to <http://www.iephil.com> and click on the *By-Product Exchange Program* link. The *Materials Database* will lead you to a list-

ing of different waste materials including plastics and rubber, sludge, cartons and paper, used oil, metals and waste chemicals.

Each type of by-product is listed with its corresponding volume generated monthly, and the locator company generating that by-product. To protect the identities of the locator companies, the entries are coded, with the first three letters representing the industrial estate they are in. You may then contact that specific estate so that estate managers can forward your queries to the company of your interest, or they can directly refer you to contact the company itself.

The website lists the contact persons and the telephone numbers of the estates so you can easily access the data you need.

Tell your colleagues about it! You just might find the by-product you may need.

At <http://www.iephil.com>.

EDUCATE YOUR EMPLOYEES



"The world belongs to them," a fitting way of advocating environmental preservation among employees, posted at the cafeteria billboard of Fastech Electronique Inc. Photos of the employees' children are displayed as a constant reminder that we did not inherit the environment from our forefathers, rather we are merely borrowing it from our children.

Make your own statement in your firm and let your employees hear, understand, relate and act towards environmental protection.

IE regional conference set in April 2001



A regional conference on industrial estates (initially announced for December 2000) will be held in April 2001 in Manila, hosted by the Industrial Ecology Module of the PRIME Project. Dubbed *New Strategies for Industrial Development*, it

is the first of its kind in the Philippines. The conference-workshop will highlight experiences in eco-industrial park development in Asian countries. Industrial ecology applications to industrial estate management will also be an area of discussion. Sharing of experiences is seen to develop a common agenda among the country participants where an Asian approach to environmental management will be tailor-fitted. This gathering is seen to build an Asian network of industrial ecology and eco-industrial development practitioners.

The conference-workshop is co-sponsored by the Institute of Communication and Science and Technology (ICAST) based in Switzerland, Regional Institute of Environment and Technology (RIET) in Singapore, the United Nations Environment Programme (UNEP), University of Kaiserslautern in Germany, and the United Nations Development Programme (UNDP) through the PRIME Project, Industrial Ecology Module.

<http://www.iephil.com>

BOI represents Philippines in green productivity international symposium



Delegates to the symposium during a plant visit in Penang, Malaysia

Late last year saw the Philippines, through the Board of Investments (BOI), as one of the delegates in the *International Symposium on Management of Industrial Estates through Green Productivity*. The gathering, held in September in Penang, Malaysia, discussed green productivity as an approach to help improve economic efficiency, reduce wastes, and enhance the overall quality of life. The symposium spe-

cifically served as a venue to promote green productivity as a tool to manage industrial estates and develop these into green parks.

The concept of green productivity is drawn from the integration of two important development strategies: productivity improvement and environmental protection. It is the application of appropriate techniques, technologies and management systems to produce environmentally compatible goods and services.

For green productivity to succeed, the environment must be viewed as an essential and irreplaceable resource, which if not managed well will severely limit economic development.

BOI, through its Environmental Unit, can incorporate green productivity through the various projects of the organization. One of these is the PRIME Project through the Industrial Ecology Module. Training the unit's staff on green productivity equips them of information they will need for continuing foreign-funded projects and even for future undertakings. Likewise, the green productivity approach can be an effective tool in promoting the country to foreign investors.

Message from the Project Director...

that the bottomline to these laws is its full enforcement. The appointed government offices would greatly help firms in complying with these laws if firms operate in a cooperative atmosphere with the government. The government can then expect strict compliance if it provides transparency to the private sector on these policies and how they are enforced. In turn the private sector will naturally abide by these environmental laws if it sees that the laws are strongly enforced and the functions of these government agencies do not overlap.

Policies and laws make up the backbone of industrial ecology in the country. If these are properly implemented, we can see an effective change in the way industrial processes are. And with that, a change in the way of thinking and doing, which which is the foundation of industrial ecology.

Integrating cleaner production...

this, Industrial Ecology can provide the framework for exploring the relationships between companies implementing CP and how they can support each other's CP initiatives.

As cleaner production is implemented through changes in processes and materials as well as in the design of products, the generation of waste cannot be entirely eliminated. This can be addressed by an Industrial Ecology approach, where residual materials & energy are recycled or reused within or between companies.

However, it was cited that by encouraging by-product exchange, usually involving off-site recycling through waste exchange between two different plants, companies increase the risk of releases during transport and material handling. Also, residuals generated from the recycling process must often be treated, transported and disposed of. This is in conflict with CP's emphasis on source reduction, particularly of hazardous materials.

Likewise, concerns regarding off-site recycling can also be met through an industrial ecology approach. By recommending the clustering of industries in close proximity, transportation hazards are reduced, lowering risk to drivers, the public, and the environment. Many of the public health and environmental risks are alleviated in a set-up where companies enjoy close proximity to each other and information sharing among themselves. In this case, waste exchange can become a recommended alternative to treatment and disposal after source reduction opportunities have been exhausted.

Industrial Ecology demonstrates that the inter-linking of industries can yield significant cost-savings for companies, build greater property value for industrial estate developers and generate new revenues for the property's management through the provision of shared services. At the same time, the total environmental burden is lowered due to the reduction in pollution and more efficient use of resources, practically the same pillars behind cleaner production strategies.