

closing THE

LOOP

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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

Upfront

CO-LOCATING FIRMS FIND POSSIBLE WASTE EXCHANGE WITHIN ESTATE

Though an intra-estate by-product exchange may still be far-fetched, waste materials in industrial parks do have potentials for re-use. This was an observation drawn from the PRIME Industrial Ecology Module's study on industrial waste materials to determine if co-locating companies can exchange waste. The Module surveyed a number of companies in five different industrial parks to determine the quantity and quality of resources used and the corresponding waste materials produced. Taking stock of the previously gathered data as basis for possible by-product matches, verification of these data through site visits and interviews confirmed that industrial firms may find useful some scrap materials produced by other firms.

A list of potential companies was matched against the identified materials for exchange. Materials were also assessed according to form and purity. The study used a support software program called the Facilities Synergy Tool or FaST was used as a support tool to identify matching. FaST is a patented program formulated by the US Environmental Protection Agency.

An example of a potential by-product re-use is the scrap or reject raw tex-



tile of one company. It was discovered that a steel manufacturer needs this material as lining for steel sheets during delivery. Used carton boxes can also be used underneath the lining while used plastics can be used as cover for the steel. The study further revealed that most materials with the potential to be exchanged or re-used are paper and plastics.

By-product exchange is not confined among co-locating companies. During the course of the study, a cement manufacturer outside of the pilot estates took interest in several locator companies as a source of alternative fuel for its dry-kiln process. However, concerns cropped up regarding the collection of the combustible solid waste, such as a scheduled collection scheme amenable to both parties. Locator companies from which the solid waste will be bought prefer that the cement manufacturer shoulder the transport costs. The

latter, in return plans to charge one peso per kilogram of solid waste brought in.

Waste generation rates must be economically viable considering the large hauling cost it will entail. It was also considered that a transfer station be put up where the solid waste will be sorted and compacted.

Further, authorized hauling contractors may be displaced, especially if the waste generator earns from some of its waste products.

To initiate and sustain a by-product exchange, the participating locator companies must have access to information on other locators' by-products listing. Though this may not guarantee a direct and immediate exchange, having the right information on hand increases the possibility of a buy-out. Another way to sustain interest and participation of locator companies is to create and train an in-house by-product exchange group within each industrial estate. A management policy that will institutionalize this can also help. Further, an information clearing house can help an interested locator to deal with only one entity if it needs information on a particular by-product.

MESSAGE FROM THE UNDERSECRETARY



Total Quality Management

Total quality mindset - that is the key ingredient in any organization's success. It also happens to be a premise we take in promoting industrial ecology in the country. Industrial ecology proposes to modify industrial systems so that these can be patterned after the natural ecosystems. In the latter, organisms utilize the output of other organisms as inputs, therefore all resources are maximized and waste minimized. Through total quality management, any company can maximize its resources and minimize its waste while making quality products. To "close the pro-

duction loop" helps make sustainable development achievable. And that's what we are striving for: to encourage businesses to be sustainable not only financially but also environmentally.

As Managing Head of the Board of Investments, I feel it is my duty to plant the seeds of productivity and total quality management (TQM) in this particular government organization, just as the same approach worked in a private firm I was previously involved in. I am sure that companies who are reached by this newsletter can relate to this approach.

The quality strategy is very much linked to the business strategy. We learn as we apply but everything is anchored on a clearly defined vision and supported by systems and processes. For any quality journey, there are three required fruits.

First is leadership. We have to believe in it and be seen as believers of it. When we espouse continuous improvement, we must walk our talk. I constantly challenge my management team to shift paradigms and challenge the status quo. This is what we use when developing our strategic plan or even in our day-to-day management of operations. The idea is to always find a better way.

The second requirement is people involvement. Management does not have monopoly

of the best ideas, rather the people themselves who know their jobs are the best sources. Encourage people to group together so that it becomes second nature to them to initiate teaming when there are projects or concerns.

The third is recognition. While money is important, it is not the sole motivation. People remain loyal to a company because they find opportunity for self-development. They find fulfillment in being involved in delivering results and making a difference. A work environment promoting learning and enjoyment is always a winner.

Leadership, people involvement, and recognition are the premises I take with me in making BOI the model government institution that provides exemplary service to its customers.

It takes a more determined will and the joint cooperation of the government and the private sector to use TQM approach to our advantage as a nation. Though in the end, the principles are the same wherever we go. The important thing is we must embrace TQM and use it as our weapon to achieve sustainable development and global competitiveness.

Raul C. Hernandez

Managing Head, Board of Investments

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In the NEWS

Project team looks into laws promoting industrial ecology

For industrial ecology to flourish and be adopted by industrial parks, it takes strong government support on a policy level. National and estate-level policies will help institutionalize industrial ecology strategies into a park's development and marketing.

That is why the Industrial Ecology Module has initiated efforts to study existing laws, regulations, and policies governing ecozones, industrial parks, and industrial waste management. The study will then become a basis for the development of new policies that will eventually encourage industrial ecology applications in the said industries.

The policy study entails a review of the Local Government Code of 1991, the series of legislation and regulations creating and strengthening the Laguna Lake Development Authority, industrial estate regulations, and jurisdictional LGU's applicable ordinances.

The review will establish the legal and policy limitations to and opportunities for industries to share materials across industrial estate productions and

processing methods. Local, national, and international documents will also be reviewed.

The study team contracted by the Module will focus on three materials particularly waste oil, water, and packaging materials (papers and plastics). The study team will use an exhaustive approach to analyze the input-process-output flow of waste oil and water. Packaging materials will be used as a "control" in the study. As a case study, one industrial estate will be focused on where the materials mentioned are available.

The case study will help in determining more specific areas to explore including mass balance of material use in the selected estate. A case study will also help determine the material quality requirements and their sources. Likewise, it will facilitate in identifying procurement use, waste generation, collection, sorting, transporting, and processing activities of the material and the existing incentives and regulations governing them.

Once the information has been analyzed, the study team will form an action plan that will provide focused actions, resources, and their timing to promote, enhance and institutionalize sustainable production through industrial promotion and industrial ecology. It will also include fundamental policy, regulatory, market-based, and information adjustments that must be made for the host government agency, which is the Department of Trade and Industry (DTI) to implement the first plan. This plan will call for more actors beyond DTI and will cover at least the following aspects of industrial ecology such as investments, environmental governance and regulations, land use, Laguna Lake management, industry self regulation and cooperation.

Survey reveals industrial waste situation in the country

The International Center for Environmental Technology Transfer (ICETT), a Japan-based firm, together with the PRIME Project Industrial Ecology Module, conducted a survey on the current industrial waste situation in the country.

The industrial waste survey augments available data that are either insufficient or inaccurate, quantity- and quality-wise, making it difficult to accurately understand the actual situation of industrial waste in the Philippines. The lack of a hazardous waste treatment facility in the country further gives the study another angle in looking at industrial waste generation. Moreover, the country's Republic Act 6969 that classifies hazardous substances prevalent in industrial operations leaves very little option for companies to dispose of their hazardous waste properly.

A diverse set of industries were surveyed, including electronics manufacture and assembly, chemical/petrochemical, transport equipment, food and beverage, textile, paper making/printing, rubber/plastics, metal, and recycling firms. A total of 31 companies were surveyed, 18 of which were from Laguna, three from Cavite, seven from the National Capital Region, and three+ from region 3 (Bataan area).

Apart from the survey that determined the quantity of industrial waste generated and the methods of treatment or disposal and management, the study team also visited the manufacturing plants of the respondents. These site visits helped verify the generation of by-pro-

ducts and waste materials in all processes from the purchase of materials, manufacturing, to shipment of products. The study team also asked the participating companies the current and future problems about their respective industrial waste.

The study found out that hazardous wastes such as acids, alkalis, and inorganic chemical wastes were contracted out to a treater. Waste liquid containing silver salt from photo-engraving process is sold to recyclers. Waste liquid without silver salt content are discharged into the sewage system without any treatment.

Summing up, non-hazardous wastes are recycled reused, or sold. Some are collected free of charge or the waste generator pays for the collection. Other non-hazardous waste are collected along with the municipal waste and buried in open dump sites. Oftentimes, companies are content that their waste are out of their premises, not concerned where the wastes will be taken and what will be done to these.

Non-hazardous waste, on the other hand, are also mixed with municipal waste for the reason that companies do not have a thorough understanding of hazardous waste categories according to DAO29. Even if some firms do understand, most do not have the techniques or analysis equipment in determining whether the waste is hazardous or not.

For instance, organic sludge defined under DAO29 does not expound on the type

of component substances it has and the content of such substances. As a result, food processing companies find it difficult to determine whether the sludge generated in their wastewater treatment facilities is hazardous or not. The waste usually ends up together with the municipal waste.

Aside from these, the study team found out that despite the enactment of RA 6969, implementing it is limited by the lack of financial resources, human resources including administrative power and competence, and the equipment for monitoring, analysis, and evaluation.

The study team recommended several measures that the cooperating government agencies can use. These include a construction of a facility for the comprehensive treatment/disposal of hazardous waste, establishment of concrete standards for treatment and disposal, and personnel development programs for both the public sector and the waste-generating sector. The study also recommended a strengthened cooperative structure between the government and the private sector, and the implementation of cooperative activities. A structure for eventual fund raising will also help.



A handy list on business and environmental requirements

AT LAST!

Are you tired of hopping from one government office to another just to secure a list of requirements for start-up businesses - and these are just requirements for registration? And then think of the other documents for environmental compliance...

Now, all the information you need about business registration and environmental compliance requirements are available in one handy brochure. Dubbed as **The Green List**, this brochure contains the business registration requirements of the Board of Investments, Department of Trade and Industry (BOI-DTI); the Securities and Exchange Commission (SEC); the Clark Special Economic Zone (CSEZ), the Philippine Economic Zone Authority (PEZA), and the Subic Bay Metropolitan Au-

thority (SBMA).

The Green List also outlines the documents required by the Housing and Land Use Regulatory Board (HLURB), water permit requirements from the National Water Resources Board (NWRB), and requirements from the Local Government Unit (LGU) where the project is or will be located.

More importantly, The Green List highlights a run-down of documents to secure for an Environmental Compliance Certificate (ECC) issued by the Department of Environment and Natural Resources (DENR). Users will find useful a handy list of projects that are covered and not covered by the Environmental Impact Statement (EIS) System, and a categorization of what projects are environmentally critical or those that are located in an environmentally critical area. The Laguna Lake Development Authority (LLDA) also lists its prerequisites for investments that will be located around the areas under its jurisdiction.

You will find in the brochure the complete addresses and telephone numbers of the concerned government offices should you need the details of the listed requirements. This project was undertaken by the PRIME Project, Industrial Ecology Module, a project of the United Nations Development Programme (UNDP) and the BOI-DTI, in cooperation with the DENR.

Get your FREE copy of the Green List now at the One-Stop Action Centre (OSAC) or at the Environmental Unit of the BOI-DTI: Trade and Investments Bldg., 385 Sen. Gil Puyat Ave. (Buendia Ave.), Makati City. The Green List will soon be available at the other government offices mentioned above.

FEATURE

Handbook on eco-industrial parks drafted for Asian countries

An Asian handbook on eco-industrial parks is underway through the auspices of RPP International, a US-based firm specializing in industrial ecology and the development of eco-industrial parks. The project is supported by the Asian Development Bank (ADB) under its Clean Production Project.

Entitled **A Handbook for Eco-Industrial Estates in Asia**, this proposes to improve economic and environmental performance of existing industrial and parks and developers of new ones in Asia. The new handbook is based on a previous version but this time focuses on particular Asian experiences.

An eco-industrial park is a community of manufacturing and service businesses seeking enhanced environmental and economic performance through collaboration in managing environmental and resource issues including energy, water, and materials. By working together, the community of businesses seeks a collective benefit that is greater than the sum of the individual benefits each company would realize if it optimized its individual performance only.

Shifting paradigms to develop eco-industrial parks aids industrial estate managers and developers to seek new models of development to increase their competitiveness.

The handbook will incorporate ongoing efforts of the Industrial Ecology Module, as well as those in Thailand and Singapore. China and India's future thrust towards eco-industrial parks will also be documented.

The handbook will contain design and planning of eco-industrial estates, construction and implementation, management, and greening of industrial parks and regions, among others.

The draft of the handbook is available online at <http://www.indigodev.com>. Interested parties may contact the lead author, Mr. Ernie Lowe at elowe@indigodev.com.



A handy list of business and environmental requirements every business person should know