ECO-INDUSTRIAL PARKS

A Strategy towards Industrial Ecology in Developing New Industrialized Countries

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Background

With natural resources declining in both quantity and quality, the time has come to practice resource recovery. The materials, water and energy regarded as unproductive by one company can be turned into business opportunity by another operating nearby, transforming industrial parks into industrial ecosystems. Eco Industrial Parks are a promising strategy to promote sustainable industrial development and to improve the industries environmental performance in terms of management of materials, energy and waste. The first evidence of concept of eco-industrial parks surfaced in 1989 in Kalundborg, Denmark.

Eco Industrial Development Approach

“An eco-industrial park or estate is a community of manufacturing and service businesses located together on a common property. Member businesses seek enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues”.

In eco-industrial parks, industrial production is organized in a synergistic manner that mimics natural systems so that ‘waste’ from one company becomes a resource for another company. Business relations change in an eco-industrial parks where waste is sold as a by-product, instilling productivity and environmental stewardship.
Eco-Industrial Parks Development according to India context

In India wherein there are several old industrial parks do not have cost effective common environmental infrastructure and services as well as lack synergies among the industries in the parks, the eco industry park concept has been customized to address the following aspects:

a) sitting and site master planning of new industrial parks integrating environment, energy and climate issues

b) transformation process of existing parks into eco industrial parks

c) strengthening of environment infrastructure and services in the industrial parks

d) resource efficiency and improved environmental management in individual industries

e) capacity building of individuals and organizations in the areas of eco industrial development, pollution control / regulatory actions, disaster risk management etc.

Benefits of EIPs

Communities embracing the EIP concept are seeking benefits environmentally and socially for all public and private stakeholders.

✔ Business derives cost savings and new revenues; shared services; reduced regulatory burden; and increased competitiveness

✔ The community enjoys cleaner, healthier environment; business and job development; an attraction for recruitment; and an end to conflict between the economy and the environment

Designing perspective of Eco-Industrial Park

❖ Integration into Natural Systems
Designing the EIP in harmony with the characteristics and constraints of local ecosystems; Minimize contributions to global environmental impacts, i.e. greenhouse gas emissions.

❖ Energy Systems
Maximize energy efficiency through facility design or rehabilitation, co-generation (the capture and use of otherwise wasted heat from the electrical generating process).
Materials Flows and “Waste” Management
Emphasize pollution prevention, especially with toxics; Ensures maximum re-use and recycling of materials among EIP businesses. It promotes Industrial Symbiosis by using waste of one industry as a by-product or raw material into another.

Effective EIP Management
i) Companies makes best use of each others ‘by-products;
ii) Supports improvement in environmental performance for individual companies and the park as a whole;
iii) Supports inter-company communications, informs members of local environmental conditions, and provides feedback on EIP performance.

Efforts by Gujarat Cleaner Production Centre in Eco-Industrial Parks Development in the state of Gujarat
Gujarat Cleaner Production Centre has taken up Pilot Project on Resource Efficient and Cleaner Production (RECP) to Foster Eco-Industrial Park Development in India, initiated by UNIDO with aim to improve the Resource Productivity and Environmental Performance of industries. Two industrial estates are identified for the execution of the Project, Dahej and Nandesari. The project will focus on generating a potential of developing Industrial Symbiosis, where industries can efficiently utilize the available resources, thereby generating lesser waste (emissions to air, waste water generation, hazardous waste generation and loss of energy) and exchange those wastes and by-products with other enterprises, so as to develop an Eco – Industrial Parks; with that, also reducing the impact to the environment due to the existing method of transportation and logistics. First and the foremost benefit of the project will be the reduction of the environmental pollution, with that, the project will also develop business opportunities in the state and result in improved resource efficiency and environmental performance throughout existing and new industrial parks.