

## **GREENING AN INDUSTRIAL ESTATE: TOWARDS A METHODOLOGICAL TRANSFORMATION**

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### **EXTENDED ABSTRACT**

Back in 1992, Hardin Tibbs [1] stated that 'in its complexity the global environmental problem resembles an iceberg; well-publicized environmental problems are the visible one-tenth above the surface'. In the same year in Rio, the United Nations Conference on Environment and Development admitted the non sustainable character of development and through the publication of Agenda 21 tried to find a balanced and integrated approach to environment and development questions. Similar insights have led to the concept of Industrial Ecology which involves designing infrastructures as if they were a series of interlocking manmade ecosystems interfacing with the natural global ecosystem.

Industrial estates are a common feature of today's industrial landscape and an effective instrument for industrial and economic development in many countries. One of the main directions of Industrial Ecology is the idea of 'eco-industrial park' (EIP) which includes the transition of an industrial estate into a more sustainable form.

This paper discusses this transition from a systemic point of view. We consider the industrial estate as a system which inter-relates natural sources, energy, raw materials, wastes, final products, and labor. The transition from the existing industrial estate to a sustainable EIP can be accomplished from interventions in the structure and content of the elements of the system, as well as their interactions.

Towards this end, we provide a systematic framework for transition and we discuss its application in a specific industrial estate in Greece. We concentrate in the first stage of our framework with respect to the industrial estate of Patras. More specifically, we investigate the issues of landscape, access and infrastructures. We reveal topics of possible intervention along these axes, which include building construction, water, waste and energy management, the connection of the industrial estate with the city of Patras etc.

**Key words:** environmental policies, sustainable development, industrial ecology, industrial estate, eco-industrial park, landscape, infrastructures, access, Greece.