

Toolkit for Eco-industrial Parks: INDUSTRIAL SYMBIOSIS

The eco-industrial park (EIP) concept is about creating more resource efficient and cost-effective industrial parks that are more competitive, attractive for investment, and risk resilient. The uptake of EIPs is rapidly increasing internationally and in South Africa.

The Global Eco-Industrial Parks Programme (GEIPP) demonstrates the viability and benefits of greening industrial parks by improving resource productivity and economic, environmental, and social performance of businesses.



BUSINESS OPPORTUNITIES THROUGH INDUSTRIAL SYNERGIES

Industrial synergies form part of the key components of eco-industrial parks.

WHAT ARE INDUSTRIAL SYNERGIES?

Industrial synergies can be categorized as follows:

- **Utility synergies and infrastructure sharing:** Shared use of utility infrastructure, mainly revolving around water (e.g. recovery) and energy (e.g. co-generation).
- **Supply synergies and co-location of suppliers and clients:** Co-location and clustering of companies in the supply and value chains (e.g. producers and suppliers of raw materials, fabricators, manufacturing, and business clients).
- **By-product synergies and waste exchanges:** The use of a previously disposed by-product from one facility by another facility as a valuable by-product.
- **Service synergies:** Sharing of services/activities between industries in an industrial area (e.g. joint staff training, sharing of maintenance contractors, etc.).
- **Urban-industrial synergies:** Interlinkages and collaborations between companies and cities or municipalities on the collection, processing and reuse of materials, waste, energy, and water streams.

Approach to develop industrial synergies



THE ROLE OF INDUSTRIAL PARK MANAGEMENT

Industrial park management should facilitate the synergy development process by:

- Bringing companies together in synergy identification and evaluation workshops;
- Organizing matchmaking of companies in the industrial park;
- Prioritizing identified synergy opportunities based on their achievability, anticipated benefits, and interest of park management and companies to assess them further;
- Addressing common challenges related to industrial synergies (e.g. access to finance, legislation);
- Driving strategic industrial synergy opportunities for the industrial park;
- Facilitating multi-stakeholder discussions (e.g. with government, financial institutions);
- Sharing of learning and facilitating links with other parks and organisations; and
- Supporting or facilitating capacity building programs.

IDENTIFICATION OF SYNERGY OPPORTUNITIES

The identification of synergy opportunities can be done through various ways, e.g.

- Collecting and connecting company inputs and outputs;
- Bilateral discussions with park management and tenant companies;
- Review of (inter)national experiences;
- Opportunity identification workshop discussions;
- Use of available automated tools e.g. the UNIDO Industrial Synergy Identification Tool.

BENEFITS OF INDUSTRIAL SYNERGIES

The benefits of industrial synergies often go well beyond conventional business case benefits.

Security of water and energy supply, increased resource efficiency, lower operational costs, reduced landfill disposal, and employment are some of the key benefits from industrial synergies. The benefits are not just commercial but also strategic, leading to reduced exposure to risk and improved reputation.

Decisions on the implementation of industrial synergies must account for their full set of economic, environmental, and social benefits.

For a to be successful, all involved parties must benefit in one way or another. The critical factor in initiating an industrial synergy is for all the involved parties to appreciate fully the range of benefits, both direct and indirect, that will result from its implementation.

Industrial synergies introduce integrated reporting, natural capital accounting and utilise various capitals in improving decision making, planning, performance, and competitiveness (Visit <https://capitalscoalition.org>). This furthermore relates to Life Cycle Management and Total Quality Management processes, all of which can contribute to improved firm level and park performance.

SOUTH AFRICAN GOOD PRACTICE

Industrial Symbiosis Programme of the NCPC-SA

The Industrial Symbiosis Programme is funded by the dtic and delivered by the NCPC-SA in five provinces, i.e. of Gauteng, Limpopo, Mpumalanga, Western Cape, and Kwa-Zulu Natal.

The NCPC-SA facilitates matches between companies with unused or residual resources with other member companies who can use these resources to create new business opportunities.

Introduced and initially led by the United Nations Environment Programme (UNEP), the NCPC-SA has led the project implementation in South Africa for more than five years.

Western Cape Industrial Symbiosis Programme (WISP)

The Western Cape Industrial Symbiosis Programme (WISP) is delivered by GreenCape and supported by the Western Cape Provincial Government.

WISP develops industrial synergy links between companies so that energy, water and/or materials of one company can be recovered, reprocessed, and re-used by another company.

GreenCape assisted the East London Industrial Development Zone and Buffalo City Metropolitan Municipality with running a pilot programme to determine the industrial symbiosis potential in the East London area.



The Global Eco-industrial Parks Programme (GEIPP) South Africa is being implemented from 2021 to 2023 through a collaboration between UNIDO, the Department of Trade, Industry and Competition (**the dtic**) and the National Cleaner Production Centre, South Africa (NCPC-SA). The GEIPP is made possible by funding from the Swiss State Secretariat for Economic Affairs (SECO).

