

Toolkit for Eco-industrial Parks: **WASTE MANAGEMENT**

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.



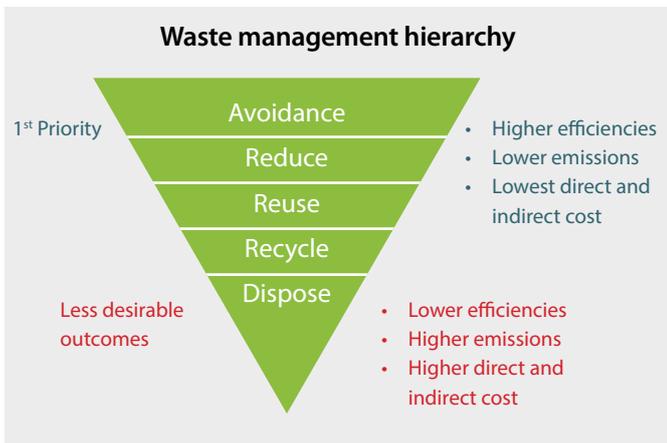
ADDRESSING WASTE CHALLENGES THROUGH ECO-INDUSTRIAL PARK APPROACHES

Addressing South African's waste challenges through business-driven opportunities is very much part of the eco-industrial park approach, e.g. companies minimising their waste through resource efficient and cleaner production (RECP), industrial and infrastructure synergies on waste processing and recycling.

ADDRESSING WASTE CHALLENGES IN SOUTH AFRICA

In South Africa, there is increased pressure on waste management facilities, which are already in short supply. Some identified challenges include:

- Increased complexity of waste streams due to mixing of general and industrial waste;
- Too few adequate and compliant landfills and hazardous waste management facilities;
- Constraints in the availability of landfill space;
- Outdated waste management infrastructure with declining levels of capital investments;
- Maintenance and budgetary inadequacies in certain municipalities;
- Operating and decommissioning landfills in a manner that is compliant with licensing conditions;
- Costly commissioning of new landfill sites and resistance of neighbouring communities to develop these sites;
- No waste management services in some communities, which leads to contaminated, unhealthy environments;
- Low public awareness and negative attitudes towards waste management;
- Few waste treatment options that can be more expensive than landfilling, e.g. the diversion of organic waste to biogas;
- Absence of recycling infrastructure to promote separation at source; and
- A policy and regulatory environment that does not actively promote or enforce the waste management hierarchy.



ECO-INDUSTRIAL PARK APPROACHES

Industrial parks can address some of the waste management challenges identified by implementing eco-industrial park approaches, such as:

- Ensuring that tenant companies appropriately handle, store, transport and dispose of waste, especially toxic and hazardous materials;
- Reducing landfill waste by facilitating industrial by-product synergies and waste exchanges between tenant companies, i.e. the use of previously disposed by-product from one facility by another facility as a valuable by-product;
- Reducing landfill waste by facilitating urban-industrial synergies, i.e. interlinkages and collaborations between companies and cities or municipalities on the collection, processing and reuse of materials and waste;
- Having a functioning system in place to comply with local and international regulations and international waste management practices;
- Monitoring environmental performance of tenant companies on a regular basis;
- Encouraging pollution prevention and emission reduction strategies at tenant companies;
- Providing infrastructure for waste recycling or separation at source;
- Investigating feasible alternative waste treatment options; and
- Promoting waste assessments for tenant companies.

Details on benchmarks of the International Eco-industrial Park Framework can be found at:

www.openknowledge.worldbank.org

WASTE ASSESSMENT METHODOLOGY

A typical waste assessment at company level, incorporating RECP methodology, as developed by the NCPC-SA include:

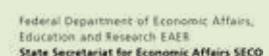
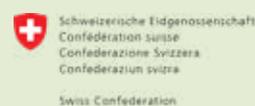
- An initial environmental assessment, which includes rating current environmental practices and completing an environment questionnaire;
- A pre-assessment or preparation phase, which establishes focus areas for further assessment, e.g. processes or input and output materials that have opportunities for industrial symbiosis and/or savings opportunities;
- Analysing current waste management procedures and verifying compliance standards;
- Compiling material flows and mass balances, i.e. inputs, and outputs in detailed process steps;
- Data collection or deriving material balances and waste pathways, which provides a detailed description of inputs and outputs on a yearly basis;
- Determining a baseline, i.e. for each waste type, its physical state, whether it is hazardous, quantity produced, source, generation frequency, waste management procedures, and associated costs;
- Calculating the real cost of waste, e.g. raw materials, processing, on-site treatment, removal (transport), disposal, compliance (permit) costs;
- Considering the waste hierarchy to identify improved waste management opportunities;
- Evaluating identified opportunities, e.g. diversion volumes, monetary savings, industrial water savings, greenhouse gases reduction, virgin resource reduction, investment costs, and simple payback periods; and
- Developing an implementation plan.

BEST PRACTICE EXAMPLE IN SOUTH AFRICA

Clariter in the East London Industrial Development Zone (ELIDZ) uses waste plastics to produce solvents, oils and waxes, which can be used in a large range of products such as polishes, waxes, and candles. For more information, visit:

www.clariter.com

Isowall operates two coal fired boilers that produce bottom ash, which used to be landfilled. Through the NCPC-SA's industrial symbiosis program, ash from one boiler is now being used by Crystal Concrete Works as a raw material to make ash bricks.



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).