UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

GEIPP
EGYPT
GLOBAL ECO-INDUSTRIAL PARKS PROGRAMME

Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

Eco-Industrial Parks Tools

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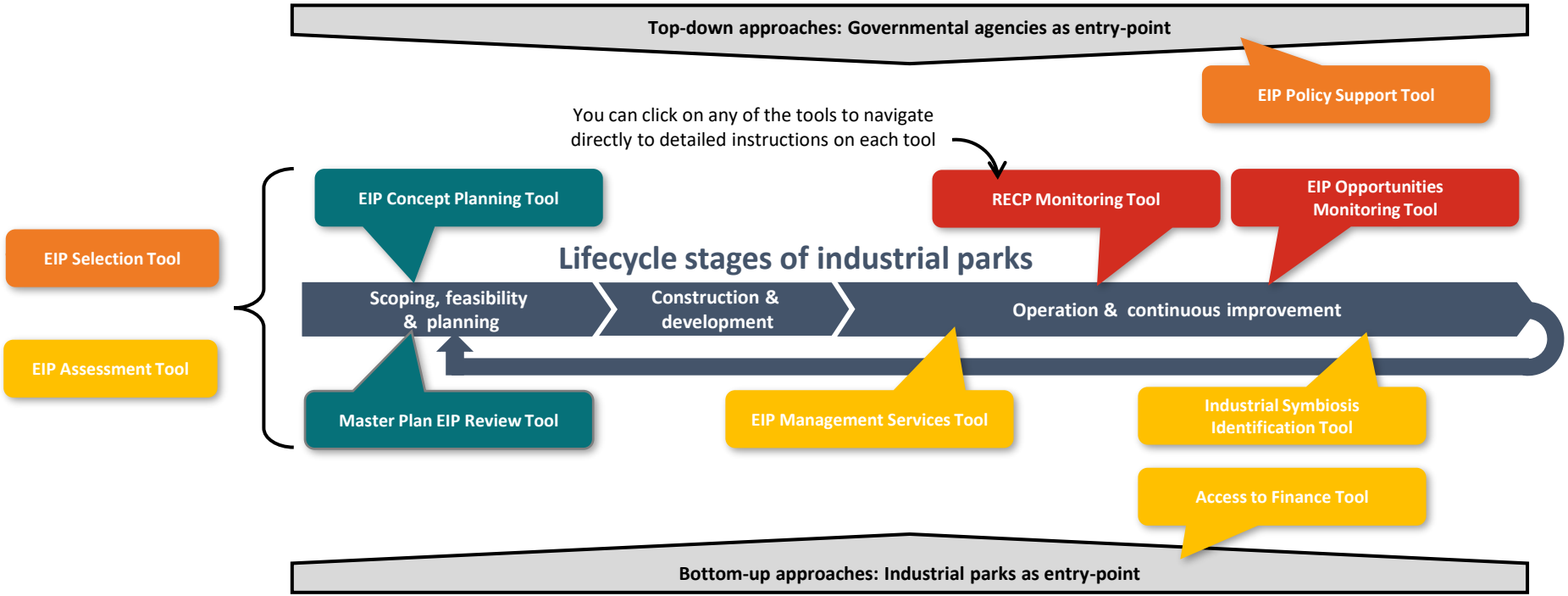
CONTRIBUTION OF TOOLS TO EIP TRANSFORMATION PROCESSES



OBJECTIVES OF TOOLBOX

The objectives of the UNIDO EIP Toolbox are to:

- Provide a practical set of customised and flexible tools to assist practitioners with the development and implementation of eco-industrial parks and related initiatives;
- Support the EIP implementation and decision making processes in relation to both new and existing industrial parks.

TARGET USERS OF THE TOOLBOX

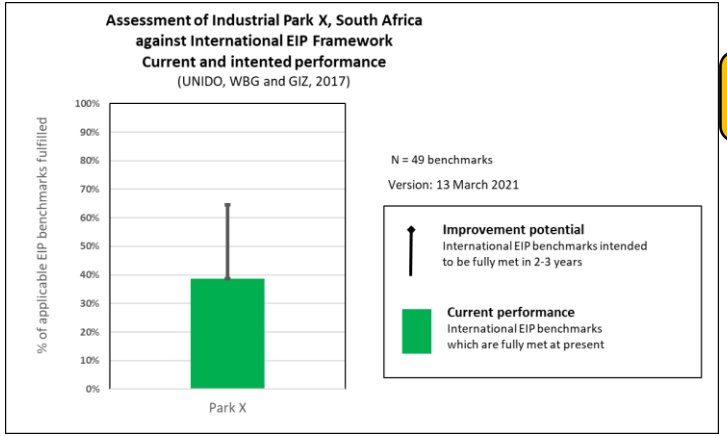
Target users of the EIP tools are management entities of industrial parks as well as development organizations and service providers working on eco-industrial park projects.

The toolbox is applicable to:

- Industrial parks in various international contexts with a core focus on transition and developing countries;
- All development stages of industrial parks (e. g. scoping and concept planning, (pre-)feasibility studies, investment decisions, design and construction, operation, redesign and optimization);
- Industrial parks with different characteristics (e. g. types of industry sectors in park, park size, level of technology development, park management model).

EIP ASSESSMENT TOOL

Overall current and intended performance of industrial park



EIP assessments in Ukraine (left), Peru (centre) and Nigeria (right)

EIP score card for industrial park

Overall improvement potential for industrial park is 24% for all benchmarks of International EIP Framework

Overall intended performance against International EIP Framework of all four assessed parks at end of GEIPP is 64%

Low baseline on "Park monitoring and risk management" and "Planning and zoning"

ECO-INDUSTRIAL PARK SCORE CARD: Park X

OVERALL PERFORMANCE ON THE INTERNATIONAL EIP FRAMEWORK

40%	Improvement potential	24%	Intended performance	64%

PARK MANAGEMENT

	Baseline performance	Improvement potential	Intended performance
Park management overall	33%	44%	78%
Park management services	75%	0%	75%
Monitoring and risk management	0%	75%	75%
Planning and zoning	0%	100%	100%

SOCIAL PERFORMANCE

	Baseline performance	Improvement potential	Intended performance
Social performance overall	54%	15%	69%
Social management systems	83%	0%	83%
Social infrastructure	20%	40%	60%
Local community outreach	50%	0%	50%

ENVIRONMENTAL PERFORMANCE

	Baseline performance	Improvement potential	Intended performance
Environmental performance overall	20%	20%	40%
Management and monitoring	0%	0%	0%
Energy	33%	0%	33%
Water	25%	25%	50%
Waste and material use	0%	67%	67%
Climate change and the natural environment	20%	20%	40%

ECONOMIC PERFORMANCE

	Baseline performance	Improvement potential	Intended performance
Economic performance overall	75%	25%	100%
Employment creation	100%	0%	100%
Local business and SME promotio	67%	33%	100%
Economic value creation	50%	50%	100%

Note: EIP score card is based on applicable Inter P benchmarks which are fully met.

High intended improvement for "Waste and material use"

Baseline compliance on economic performance is highest overall, compared to other categories

High improvement potential for "Economic value creation"

Click here to download EIP Assessment Tool

INDUSTRIAL SYMBIOSIS IDENTIFICATION TOOL

Search results by company type: Chemical industry

The worksheet "Search by company" is used to identify potential industrial symbiosis options based on the selection of a specific company type. For example, the worksheet can inform you about alternative raw materials and potential reuses of the by-products/wastes of the chemical industry.

UNIDO Industrial Symbiosis Identification Tool (V2)

IDENTIFY INDUSTRIAL SYMBIOSIS OPTIONS: **SEARCH BY COMPANY TYPE**

GO TO INSTRUCTIONS | SEARCH BY-PRODUCTS / WASTES | REFERENCES

Possible inputs	Alternative or similar inputs
Blast furnace gas	Syngas, Hydrogen
Carbonates (mineral)	
Hydrochloric acid	
Sulphuric acid (80%)	
Zinc waste	
Steam (high temperature)	
Carbon dioxide	
C5 molasses residues	Pentose residues

Possible providers	Practical example(s)	Comment(s)
Iron and steel industry, Chemical industry (chlor-alkali)	Shandong, Liuzhou	chlor-alkali process = important producer, ammonia plant = important user
Iron and steel industry	Shandong	CO2 + slag (mineralization)
Titanium oxide producer	Kwinana	Sulphur (elemental)
Oil refinery	Kwinana	
Chlor-alkali plant	Kwinana	H2SO4 98% is used as drying agent. After use, the resulting 80% solution is sold on the market
Metal industry	Ulsan	Production of Zinc-rich paints
Waste incinerator	Ulsan	
Ammonia plant, Ethanol plant, Biogas producer, Biogas producer		For instance, biosynthesis of succinic acid
Ethanol plant		For instance, production of furfural

1. Select a company

Chemical industry

2. Which inputs **could you buy** from a neighbouring company?
(or)
Which inputs **could you sell** to a neighbouring company?

3. What type of **company might sell** this input as a by-product?
(or)
What type of **company could be interested to buy** your by-product?

4. More information?
Please consult "References" for weblinks and academic articles

Possible outputs	Alternative or similar outputs
Alcoholic residues	Aldehyde
Sulphuric acid (80%)	
Hydrogen	
Calcium sulfate	Gypsum
Spent solvent	waste oil

Possible users	Practical example(s)	Comment(s)
WWTP	Kalundborg, Ulsan	Carbon source for denitrification bacteria
Chemical industry	Kwinana	H2SO4 98% is used as drying agent. After use, the resulting 80% solution is sold on the market
Ammonia plant, Thermal power plant		Produced by chlor-alkali plant
Plasterboards manufacturer, Soil remediation, Cement factory & construction	Kwinana	Typically produced by desulfurization processes. Can be for instance produced in a phosphoric acid production plant
Cement factory & construction	Eclepens, Styria, Ulsan	Must not contain halogenated solvent. Solvent can be impregnated on solid material, for instance saw dust.

Click here to download
Industrial Symbiosis Identification Tool

EIP CONCEPT PLANNING TOOL

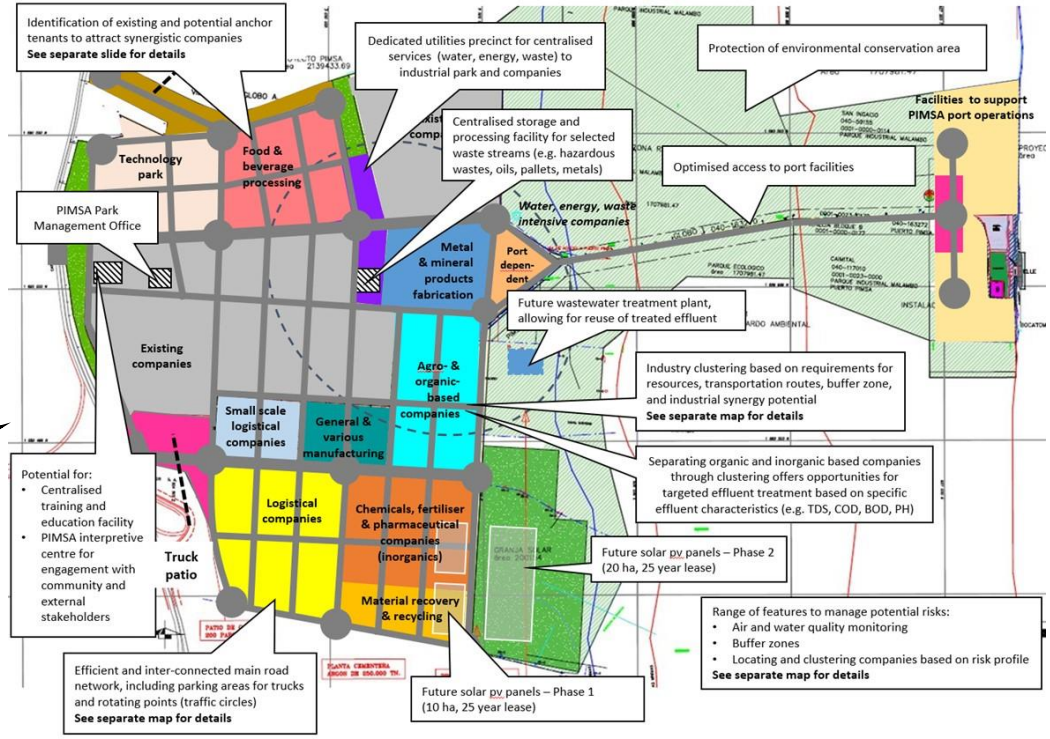
Example: Parque Industrial Malambo (PIMSA), Colombia

pimsa

Key EIP features incorporated into EIP concept plan

Features to manage potential risks

This is one of the multiple EIP concept plans produced for PIMSA. Further detailed examples are included in the EIP Concept Planning Tool itself.



Click here to download Master Plan EIP Review Tool

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VISIT THE **UNIDO KNOWLEDGE HUB** FOR MORE RESOURCES ON ECO-INDUSTRIAL PARKS