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Eco-Industrial Parks
Industrial Park Managers Training

Cairo, 31th of May, 2023

Welcome and introduction

UNIDO and MoTI

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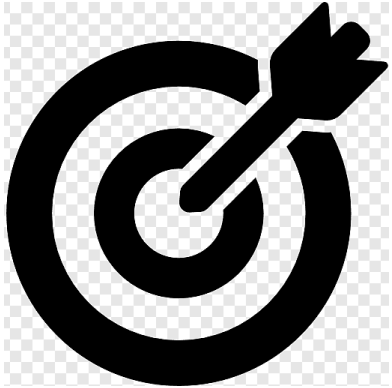
Introduction to the workshop and assignment

Mona Hamdi
Chemonics Egypt

The workshop
Eco- Industrial Park Managers Training

Objective:

- ✓ To raise stakeholder awareness of the environmental, economic and social benefits of EIPs.
- ✓ To familiarize park authority managers with methods and tools for evaluating the current state of the park in terms of EIP performance levels and assessing EIP opportunities to achieve EIP performance levels.



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The IP managers training is an activity of:
EIP Policy Support assignment

Objectives

- ✓ Create effective policies to support the implementation of EIPs
- ✓ Mainstream environmental and social issues into industrial development policies
- ✓ Development of the EIP vision and roadmap

Success Factors

- ✓ A combination of international best practices and national expertise
- ✓ A participatory approach with actors and stakeholders (multi-stakeholder approaches)
- ✓ Attention to implementation mechanisms and procedures
- ✓ Taking into account the diversity in the conditions of industrial zones in Egypt
- ✓ Prioritize policy interventions
- ✓ Building on the above

Overview of the Global Eco-Industrial Park Programme (GEIPP)

Shahenaz Fouad
UNIDO

Introduction to Eco-industrial parks and the international framework

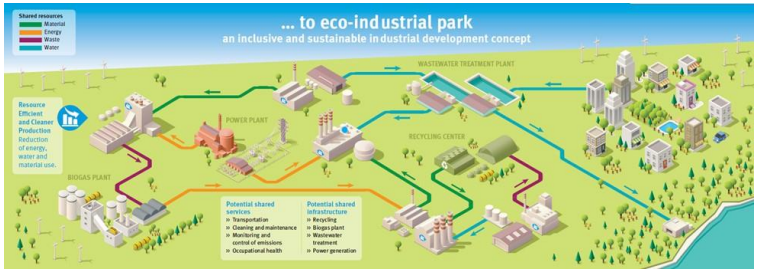
Michael Weber
Weber Consulting

What is an Eco-Industrial Park?

”A community of manufacturing and service businesses located together on common property. Member businesses seek enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues.

By working together, the community of businesses seeks a collective benefit that is greater than the sum of individual benefits each company would realize by only optimizing its individual performance.”

(Lowe, 2001)



In short, the EIP concept is about creating
more resource-efficient and cost-effective industrial zones which are more competitive, attractive for investment
and risk resilient.

Different terminologies are used internationally

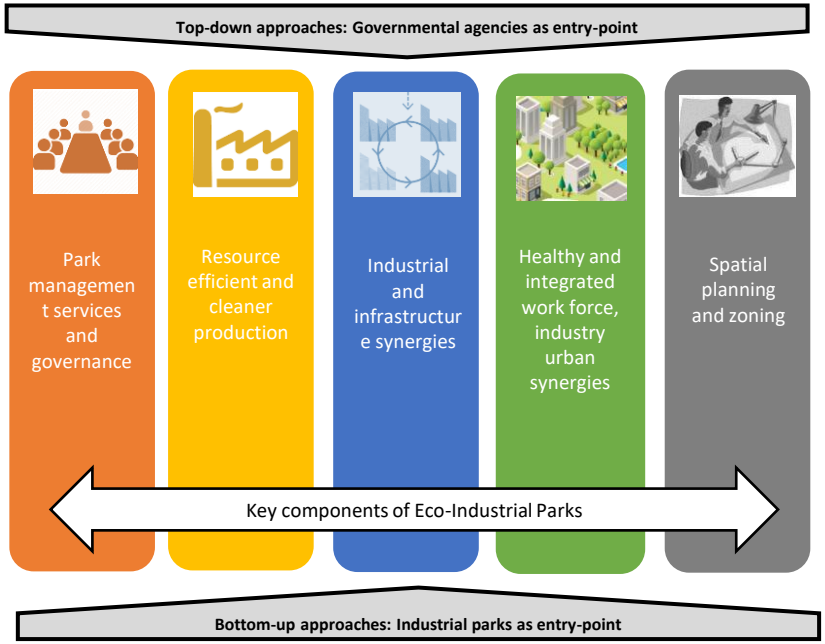
But all based on same principles and concept

Combinations of related EIP terminology used internationally		
Eco	Industrial	Park
Sustainable	Manufacturing	Zone
Low carbon	Investment	Area
Green		Cluster
Circular	(Special) Economic	Estate

Question to participants: what is the most used terminology in your country?

Source: UNIDO, WBG, GIZ (2017). An International Framework for Eco-Industrial Parks.
https://openknowledge.worldbank.org/handle/10986/29110.

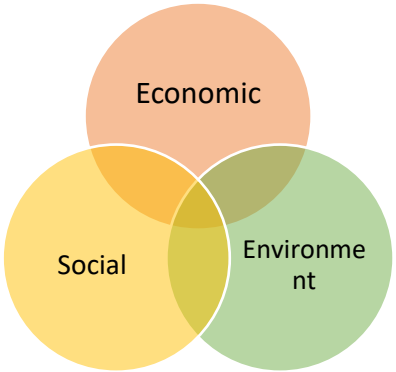
Key components of eco-industrial parks



Development of an International Framework on EIP

"… need for process standards for all industrial parks and performance standards for eco-industrial parks"

Joint cooperation → Towards a Common Framework



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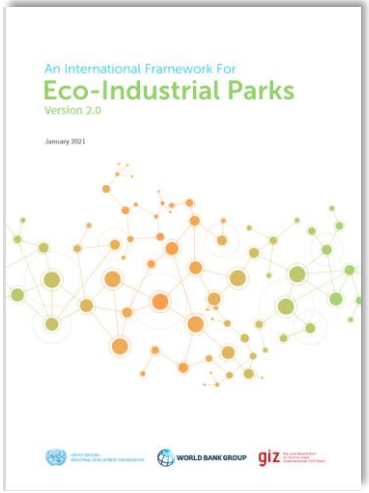

Download
from Internet

International Framework can be downloaded from:
https://www.unido.org/sites/default/files/files/2021-04/An%20international%20framework%20for%20eco-industrial%20parks%20v2.0.pdf

UNIDO EIP Assessment Tool

Rationale for the tool:

- The management of an industrial park plays a crucial role in the daily operations of the industrial park property, ensuring the continuous implementation of EIP opportunities and engaging with the park's stakeholders, including resident firms, communities, and regulating bodies.
- An effective park management structure is a key requisite for a successful EIP development.
- It is important for park management to understand their performance against international EIP benchmarks to identify gaps and take action on EIP opportunities which are achievable and can generate substantial benefits (e.g. economic, environmental, and social).

Objectives of tool:

- Assess an industrial park against the International Framework for Eco-Industrial Parks (UNIDO, WBG and GIZ, 2017 / 2021)
- Identify and prioritize EIP improvement opportunities for industrial park
- Plan, manage and monitor EIP opportunities

International EIP Performance Requirements

- Requirements: key topics and sub-topics which are considered relevant as components and requisites of Eco-Industrial Parks and their performance
- Focus on key impacts, rather than focusing on detailed requirements which may differ per industrial park
- Include indicators which can be monitored, managed or influenced by the park management or companies

Overall Framework for Describing Eco-Industrial Parks

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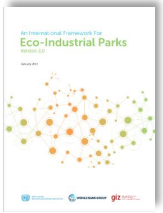


Process of continuous improvement:
Going beyond the minimum EIP requirements

Minimum EIP Requirements

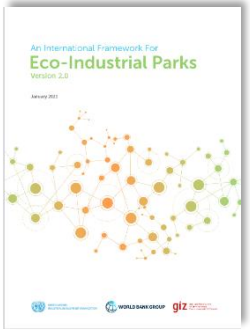
Core EIP Categories and Topics

Park management performance	Environmental performance	Social performance	Economic performance
• Park management services • Monitoring • Planning and zoning	• Environmental management and monitoring • Energy management • Water management • Waste and material use • Natural environment and climate resilience	• Social management and monitoring • Social infrastructure • Community outreach and dialogue	• Employment generation • Local business and SME promotion • Economic value creation

Compliance with local and national regulations and alignment with international standards

Overall Framework for Describing Eco-Industrial Parks

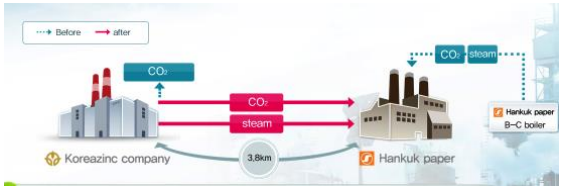
Park management	
Park management	Park management exists to deal with park planning, operations, management, monitoring.
Park planning	Master Plan (or equivalent planning document) for industrial park exists and reviewed periodically
Environmental performance	
Water reuse, efficiency	Proportion of total industrial wastewater from firms in the park are reused responsibly within or outside the industrial park [50%].
Waste re-use/recycling	Proportion of solid wastes generated by firms, which are reused by other firms or outside [20%].
Social performance	
Social infrastructure	Essential social infrastructure is provided in the site master plan and fully operational.
OH&S management system	Proportion of all firms in the industrial park with more than 250 employees that have a well-functioning OH&S management system [75%].
Community outreach	Number of outreach activities implemented by the park management [2 activities per year].
Economic performance	
Local employment generation	Proportion of total workers employed in industrial park who live within daily commuting distance [60%].
SME development	Park management entity allows and promotes the establishment of SMEs that provide services and add value to park residents.



Practical Examples Worldwide

Ecoplus' extended park management services to 17 industrial parks in Austria

e.g. Investor service hub, industry network creation, research and innovation centres

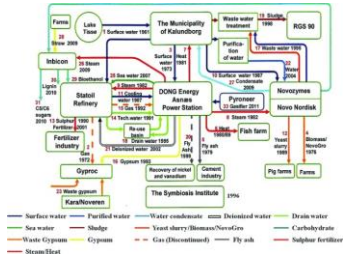


Korea EIP Initiative (source: Kicox, 2016)

IS Projects: 521 found > 337 Supported > 262 Completed

Eg: CO_2 & Steam Networks between paper Mill & Zinc Smelter

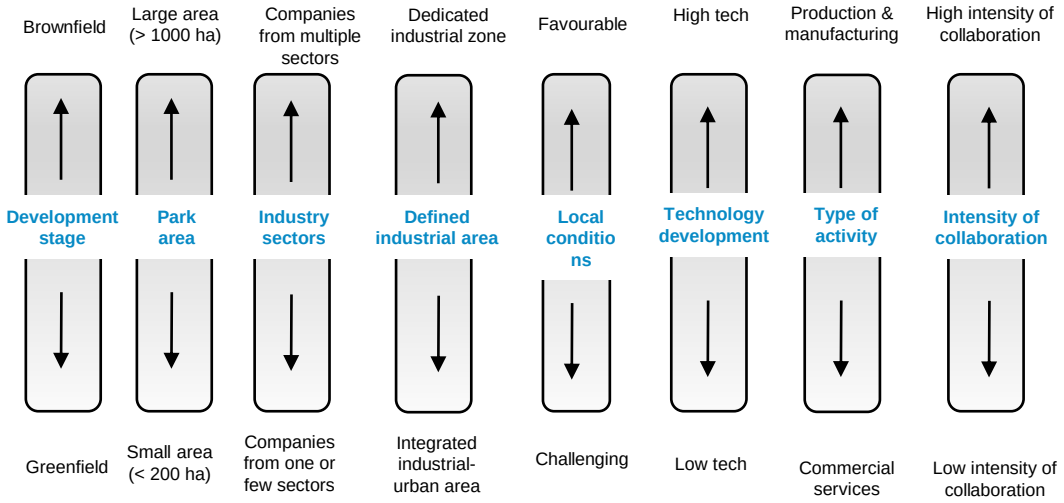
Solar Power Stations In Chinese Industrial Parks



Industrial synergies Kalundborg, Denmark

Use of waste plastics by Clariter in the East London Industrial Development Zone (ELIDZ) to produce solvents, oils and waxes

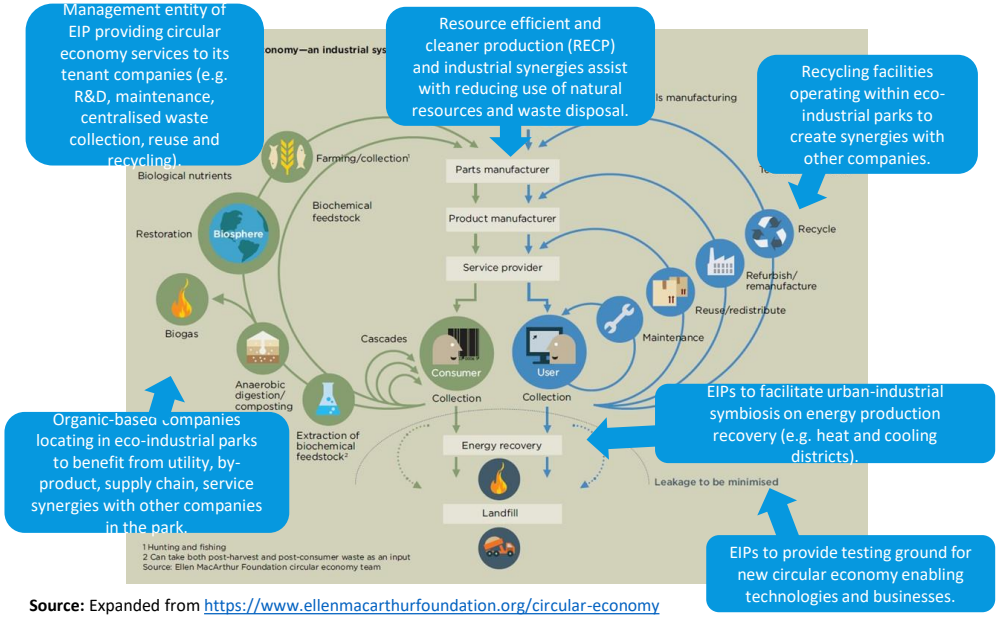
Need for customised solutions and opportunities



Each industrial park is unique

Contribution of eco-industrial parks to the circular economy

A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.



Source: Expanded from https://www.ellenmacarthurfoundation.org/circular-economy

Greenfield versus brownfield

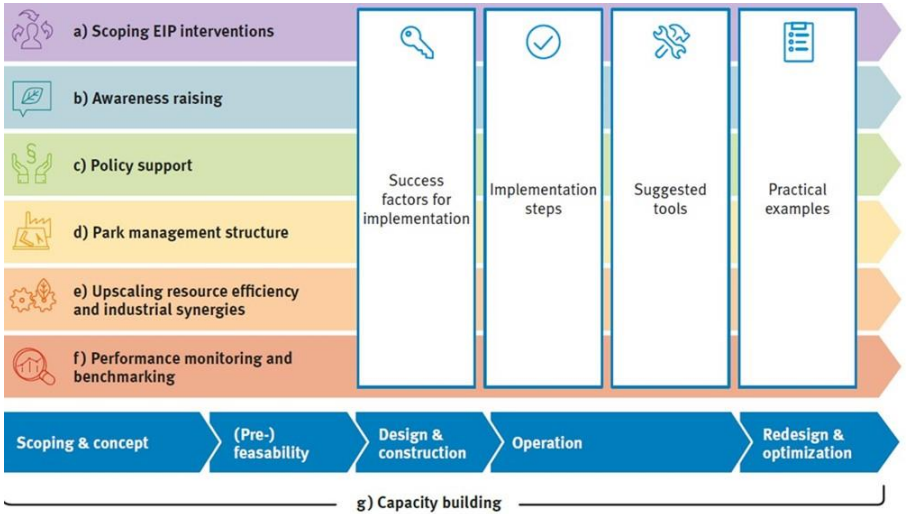
Development of new eco-industrial parks

+ Optimise design of park from start - “blank canvas”
+ Allow for strategic planning of parks across country
- Uncertainties about industry mix and needs
- Upfront investments for eco-industrial initiatives

Optimising existing industrial parks

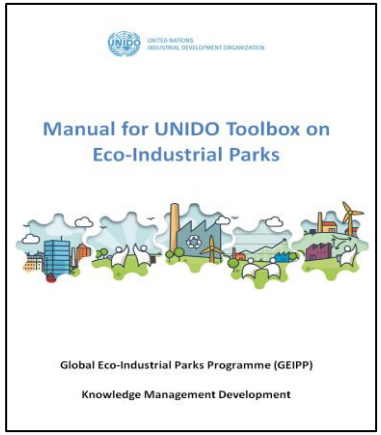
+ Build upon existing industry initiatives
+ Certainty about industry mix and needs
- Retrofitting existing infrastructure can be costly
- Dealing with “historical legacies”

Implementation Handbook for Eco-Industrial Parks



UNIDO (2018). https://open.unido.org/api/documents/7523639/download/UNIDO%20Eco-Industrial%20Park%20Handbook_English.pdfb

UNIDO's EIP Toolbox



UNIDO's EIP Toolbox is freely available online

- https://open.unido.org/projects/C6/projects/170222

Benefits and motivation of EIPs

Ahmed Yahia
Chemonics Egypt

Key benefits of eco-industrial parks

- Reduced use of raw materials, water, energy and chemicals (toxic)
- Minimized green house gas emissions and release of pollutants
- Reduced waste through resource circularity
- Reduced economic, environmental, social risks
- Improved competitiveness and profitability
- Shared recycling facilities
- Creation of good-quality jobs
- Improved workers health and safety
- Increased quality of life for communities
- Better access to new technologies and finances

Key barriers for eco-industrial parks

Potential regulatory barriers include:

- ✓ Lack of suitable policies to encourage EIP development (both command and control, and fiscal incentives).
- ✓ Lack of policies to encourage clean technology development and adoption.
- ✓ Lack of transparency surrounding industrial regulations and enforcement.
- ✓ Regulations not applied universally, leading to competitive disadvantages.
- ✓ Limited capacity of stakeholders to engage with more favorable regulatory frameworks.

➢ **Technological and socio-economic barriers**
➢ **Institutional and organizational capacity**

→ **Lack of consistent translation of national economic development policies into laws, regulations, and governance at the industrial park level.**

Key barriers for eco-industrial parks

Potential technological and socio-economic barriers include:

- ✓ Park management entity and firms lack finance to implement pollution prevention mechanisms.
- ✓ High upfront capital costs with longer term returns on investments limit implementation.
- ✓ Limited financial support for innovative processes and environmental measures to improve park infrastructure for the benefit of firms.
- ✓ Park management is not entrusted with mandates and budgets by tenant firms.
- ✓ Long lead times and disruptions when installing new technologies.
- ✓ Limited understanding of the benefits of socially responsible business practices.
- ✓ Lack of research funding

Key barriers for eco-industrial parks

Potential institutional and organizational capacity barriers include:

- ✓ Lack of internal resources and technical workforce.
- ✓ Lack of motivation for continuous improvements in moving toward an EIP.
- ✓ Lack of experience in dealing with developers and authorities.
- ✓ Lack of capacity for energy conservation and pollution prevention, or awareness of their cost saving potential.
- ✓ Lack of stakeholder communication channels.
- ✓ Lack of management resources.
- ✓ Lack of indicators and guidelines.
- ✓ Lack of external support from owners, value chains, communities and international organizations.

Promoting EIP to Attract Investors and New Tenants

Ahmed Yehia
Chemonics Egypt

Promoting EIP to Attract Investors and New Tenants

- ✓ An EIP help investors increase their profitability and resource efficiency (for instance through recycling, water re-use and renewable energy integration or monitoring of energy consumption)
- ✓ EIP offers tenants an easier route to compliance and meeting commitments
- ✓ Numerous multinationals and exporting firms have water, energy and waste commitments which are easier to meet in an EIP

Promoting EIP to Attract Investors and New Tenants

- ✓ An EIP offers investors access to shared resources such as energy, material, and water
- ✓ EIP can be translated into much needed services for wastewater treatment and waste management for instance
- ✓ EIP assists factories in improving their management practices and cost control
- ✓ An EIP helps investors improve employee retention and loyalty

Egypt Experience

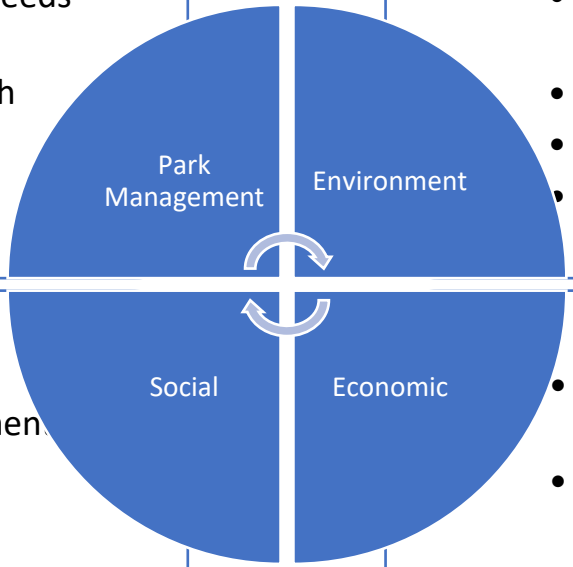
- Based on CE database and GEIPP assessments 7 Egyptian IP performance varies significantly between 20% and 60%
- Most zones taking the assessment have aspirations to improve above 70%
- Scoring from highest to lowest
  - ✓ Economic
  - ✓ Park management
  - ✓ Social
  - ✓ Environmental

	PARK MANAGEMENT
75%	(Basic) park management services
25%	Monitoring and risk management
100%	Planning and zoning
	ENVIRONMENT
33%	Management and monitoring
22%	Energy
17%	Water
0%	Waste and material use
40%	Climate change and the natural environment
	SOCIAL
39%	Social management systems
57%	Social infrastructure
0%	Local community outreach
	ECONOMIC
100%	Employment generation
44%	Local business & SME promotion
78%	Economic value creation

Typical areas of improvement in Egypt

- Detailed understanding of customers needs and gaps (market assessment)
- Working groups on EIP (interaction with tenants)
- Improved customer care
- EIP governance

- Resource efficiency in of shared infrastructure
- Resource management
- Monitoring and benchmarking
- Shared infrastructure, access to resources and symbiosis



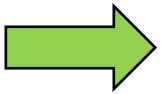
- Transportation services
- Joint CSR activities
- Vocational training and skills development
- Joint social infrastructure (clinics and nurseries)
- Gender inclusion

Value added business services to SMEs

- Service in licensing and government compliance
- Facilitating access to finance and banking services
- Suppliers management

Typical areas of improvement in Egypt

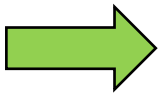
- Conduct surveys to understand current and potential tenants challenges and needs
- Develop EIP policy statements, vision, mission, roadmaps, develop EIP committee and targets
- Regular meeting with tenants on joint EIP and RCEP activities leading to stronger engagement and dialogue
- Development of KPIs, reporting lines, responsibility matrices
- Customer care SOPs and reporting lines
- Awareness raising services



Park Management
Increased Score

Typical areas of improvement in Egypt

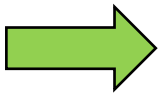
- Increased energy efficiency and renewable energy inclusion in shared infrastructure (street lighting, last mile electricity distribution, water supply and treatment)
- Investment in shared RCEP investments (heat recovery and exchange, shared cooling, heating, compressed air, utilities, etc.)
- Waste management services
- Improved energy and water management (metering, benchmarking and improvement)
- Facilitation of industrial symbiosis
- Linking with service providers, green finance
- Assistance in benchmarking and monitoring



Environment
Increased Score

Typical areas of improvement in Egypt

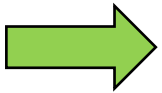
- Develop BDS for SMEs either directly through capacity building and consultancy or through linkages to support programmes
- Assistance in government compliance and paper work including licensing, certifications, social insurance, tax reporting etc. (on site officers or linkages with providers)
- Facilitating access to finance and banking services through attracting banks to open branches on site or advising and linking firms particularly to green finance facilities
- Assistance in accessing joint supply, creating databases of suppliers and B2B linkages for stronger value chain integration



Economic
Increased Score

Typical areas of improvement in Egypt

- Arrange joint transportation services for blue collars and workers in general
- Jointly implementing CSR programmes for stronger and more focused and coordinated impact on surrounding communities
- Develop vocational capacity building programmes addressing common skills gaps for labor and workers tenants face
- Improving social infrastructure by investing in on-site health care facilities (clinics to manage emergencies for instance) and day care for women with children working in the industrial zone
- Assistance in hiring and gender inclusion activities



Social
Increased Score

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Industrial park operation

The roles of park management for successful development of EIP

Michael Weber
Webers Consulting

Building Blocks of an Industrial Park

Infrastructure
- ✓ Available land
- ✓ Road system
- ✓ Supply and disposal networks
- ✓ Pipelines and conveyors
- ✓ Digital infrastructure

Governance
- ✓ Industrial park contracts
- ✓ Implementation of national policy
- ✓ Compliance
- ✓ Investor engagement
- ✓ Community regulations / By-laws

Utilities
- ✓ Energy Management
- ✓ Water Management
- ✓ Waste and Material utilization

Site development
- ✓ Site master planning
- ✓ Site Marketing / investors attraction
- ✓ Local business and SME promotion
- ✓ Site planning

Management of the site
- ✓ Maintenance
- ✓ Facility management
- ✓ Security
- ✓ Incident / emergency management
- ✓ Fire brigade
- ✓ Monitoring & risk management

Cooperation / Joint services
- ✓ Creation of cooperation networks
- ✓ Business development services
- ✓ Formation & management of clusters
- ✓ Information platform

Logistics / access
- ✓ On-site logistics
- ✓ Inbound and outbound logistics
- ✓ Transportation of workers
- ✓ Access routes

Human resources
- ✓ Recruitment of qualified workers
- ✓ Pre-job and on-job training
- ✓ Ambulance and first aid
- ✓ Social infrastructure & services
- ✓ Workers well being

Structuring Industrial Park models
Governance related Models (Ownership Park Models)

To develop, organize, and manage an industrial park, relevant actors should be considered

Owners of the land	The landlord selling or leasing the land to other legal entities
Operators of facilities	Companies using the facilities for production, manufacturing, servicing, or development
Operators of the infrastructure	Provision of infrastructure such as roads, lighting, waste Water treatment, distribution networks for electricity or water, digital infrastrucrture
Regulatory authority	Created by the government to oversee and enforce regulations regarding specific aspects e. g. industrial park regulations or safety issues

- Ways of cooperation, assignment of responsibilities, tasks, and duties are characteristic for the different **Ownership Park Models** and for success and risks in the prevailing context

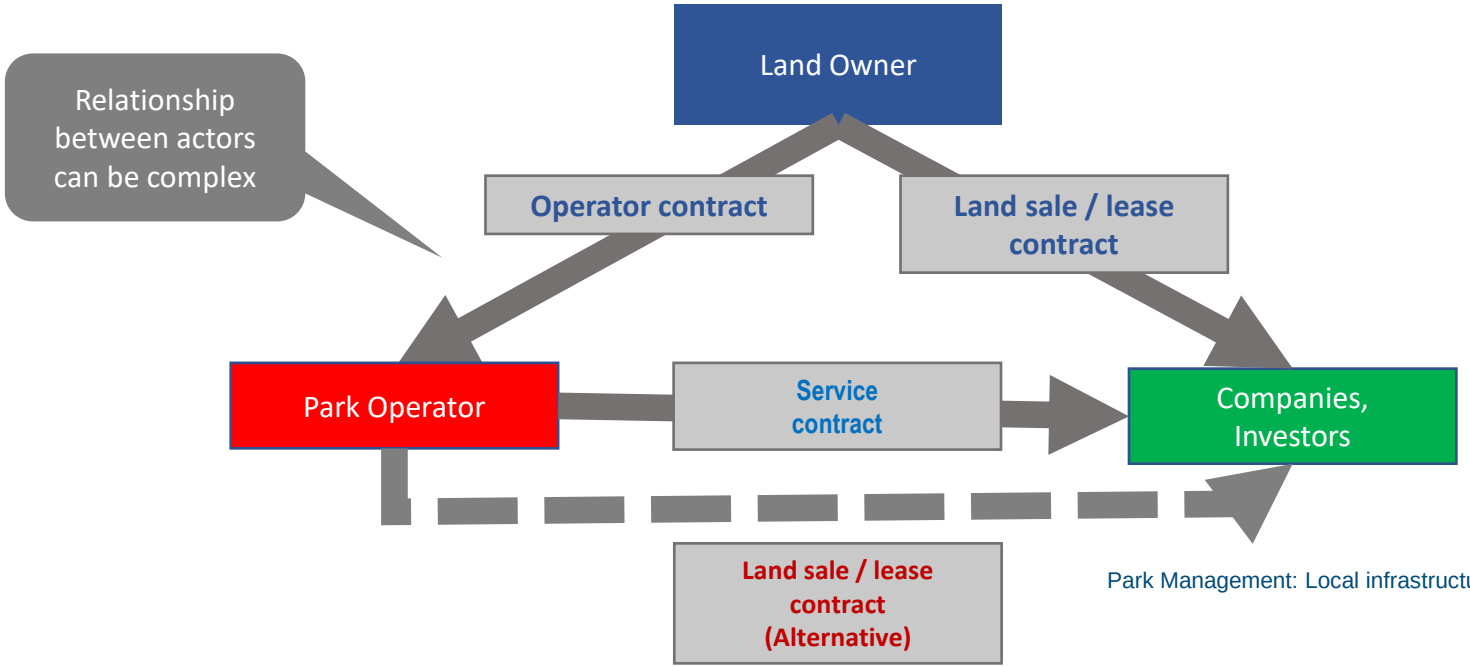
Roles of Stakeholders in the Industrial Park Models

Stakeholders follow different interests depending on their engagement in the park model

Owners of the land	▪ Silent land owner ▪ Committed to park development
Operators of facilities / Investors	▪ Focusing on their business ▪ Controlled by parent company abroad with limited freedom
Operators of the park / infrastructure	▪ Industrial developer ▪ Industrial park operator
Regulatory authority	▪ Governance that legal requirements are complied with ▪ Guideline / supervision that national industrial park policy is implemented

Assign the respective role to all stakeholders through the governance structure over all levels

Contractual establishment of EIP operator – example



Park Management: Local infrastructure & Business Models

Petronas Pengerang Integrated Complex (PIC) Malaysia – generalised contract framework

Role of EIP operator

- Be aligned with the governance for the EIP
- **Facilitate** installation, implementation, and operation of resident companies‘ activities under aspects such as
  - Time to market
  - Cost
  - Quality
  - Business environment
  - Focus on core activities
- **Enable** cooperation among resident companies and with EIP outside the EIP through
  - Dedicated services
  - (digital) platforms
  - Park Council meetings
  - Creation & organization of networks
  - Pitch events

Tasks of a facilitator:

- Partner
- Guide
- Planner
- Taskmaster
- Enabler

Key functions of park management

- Management park property / service provision to tenants
- Engagement with stakeholders and business representation
- Facilitate ongoing and sustainable development of park
- Monitoring and enforcement of Key Performance Indicators

Potential contributions of park management services to International EIP Framework

By working on park management services, industrial parks can strengthen their performance on most of the following benchmarks of the International EIP Framework, illustratively:

Park management		
Park management services	Prerequisite	Park management entity to manage and maintain the industrial park property, common infrastructure, and services as prescribed in the tenant contract and the park's Master Plan.
	Performance indicators	At least 75% of resident firms indicate satisfaction with regard to the provision of services and common infrastructure by the park management's entity (or alternative agency, where applicable).
Monitoring and risk management	Prerequisite	Park management entity maintains a monitoring system in place, tracking progress on environmental, social and economic performance at the park level and critical risk factors and related response
	Prerequisite	Where required, Park management has a plan in place to react to possible negative impacts due to climate change risks (heat waves and droughts, storms and floodwater events).
	Prerequisite	Park management entity has a functioning system in place to comply with local/national regulations and international standards applicable to the industrial park.
	Performance indicators	At least every 6 months, park management entity monitors and prepares consolidated reports regarding the achievement of target values (as documented in this framework) to encompass the following: Environmental performance; Social performance; Economic performance; and critical risk management at the level of the park.

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Generic Organization Chart for Industrial Park Operation

Basic functions required for park operation

General Site Manager
(shared or full time dedicated)
- Full Site Responsibility
- Commercial Responsibility
- Site Staff Responsibility
- Reports to Operator Superiors
- Site Communications

Support Functions
(shared or full time dedicated)
- Accounting / Controlling
- HR
- Finance
- Marketing
- Legal
- Engineering
- Real Estate
- Others as needed

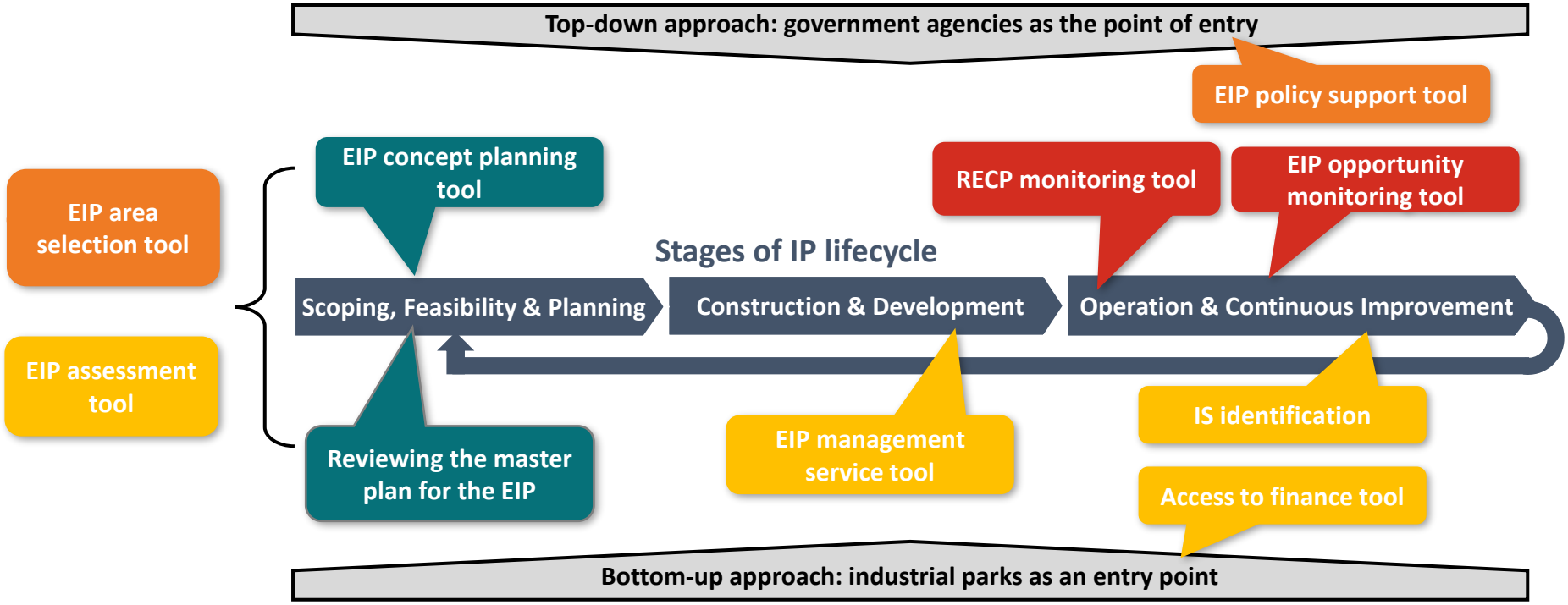
Services Manager
- Security
- Safety
- Availability of Utilities
- Infrastructure
- Billing / Collecting
- Emergency Management
- Others as needed

Customer Relations Manager
- Investor welcome process
- Availability of services on site
  - Logistics
  - Waste disposal
  - Healthcare
  - Personnel Services

  i.e. Food, Offices, Lockers, …
  - Others as needed
- Support for customer development

Site Maintenance Manager
- Functioning infrastructure
- Appearance of the site
- Site buildings
- Maintenance plan
- Maintenance budget
- Cleanup
- Others as needed

How the Toolkit Contributes to Transition to Eco-Industrial Parks



Eco-Industrial Parks Toolkit

Toolkit Goals

The objectives of the UNIDO EIP Toolkit are:

- To provide a practical set of customized and flexible tools to assist practitioners in the development and implementation of EIPs and related initiatives
- To support the implementation of the EIPs and decision-making processes regarding new and existing industrial zones

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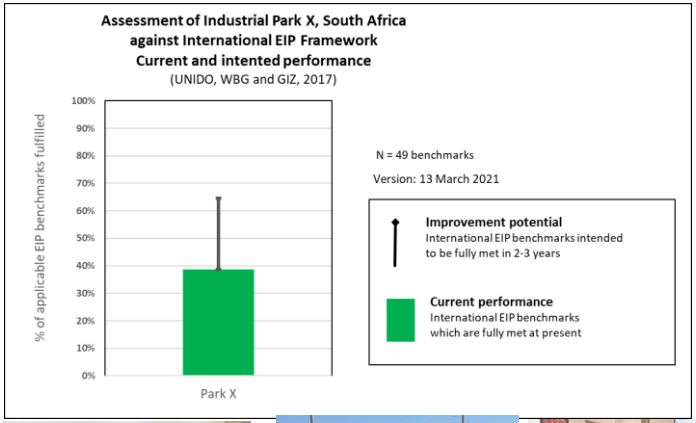
EIP Assessment Tool

General EIP Current and Expected Performance



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

EIP Score Card

Industrial Symbiosis Identification Tool |

The overall improvement potential of the industrial complex is 24% for all criteria of the EIP international framework

The overall intended performance against the EIP international framework for the four Ips assessed at the end of the project is 64%.

Low baseline on industrial area monitoring, risk management, 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 pr	67%	33%	100%
Economic value creation	50%	50%	100%

Note: EIP score card is based on applicable … IP benchmarks whic…

Highly intended improvement as a result of the use of waste and materials

The baseline corresponding to economic performance is generally higher than in other categories

High optimization potential for "economic value creation"

Chemonics Egypt
Consultants

Weber Sites Consulting
Management Consultant

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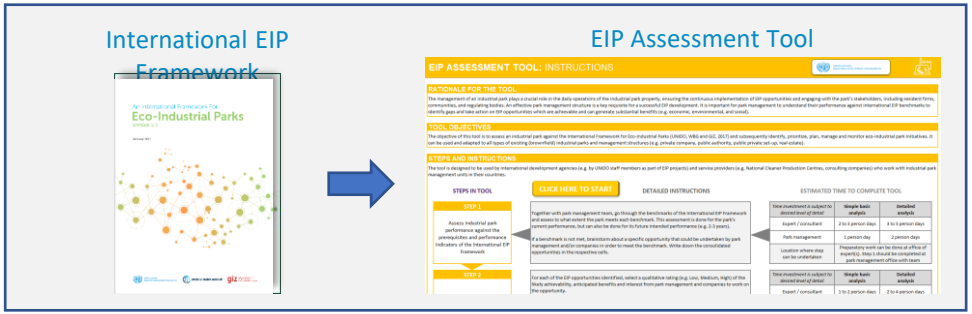
Assessment, Identification and Implementation of EIP Opportunities

Ahmed Yahia
Chemonics Egypt

UNIDO EIP Assessment Tool



Open EIP Assessment Tool

https://hub.unido.org/sites/default/files/publications/UNIDO_EIP_Assessment_Tool_EIP_International_Framework

EIP_Assessment_Tool_EIP_Framework_2.0_indicators

EIP Assessment for a Industrial Park (IP)

Gap Assessment

Conduct interviews with park management – Data collection – Benchmark with best practices

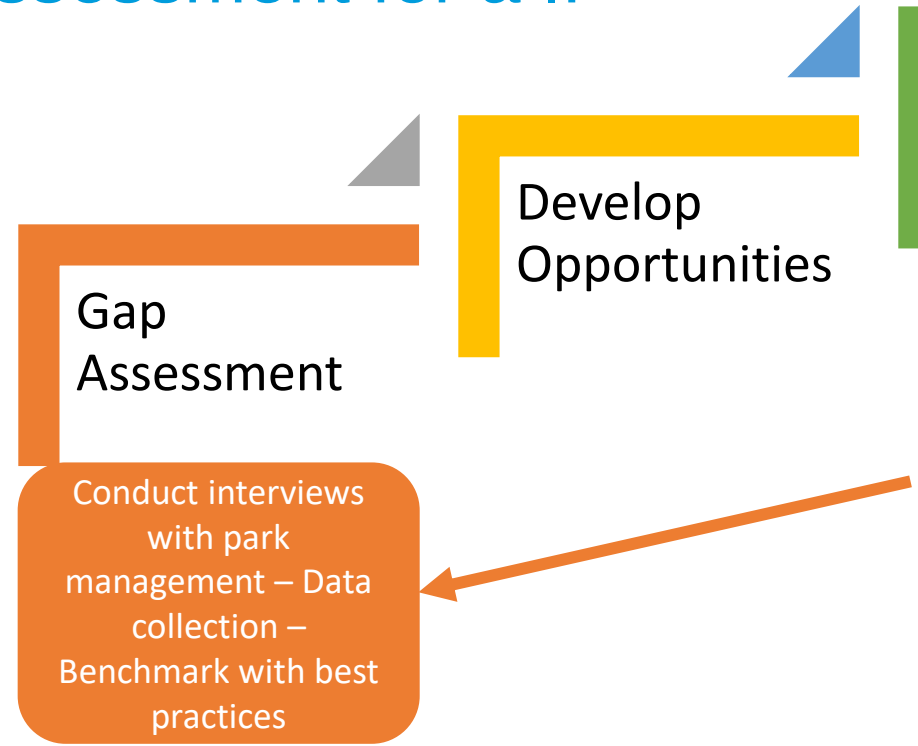
Develop Opportunities

Identify list of opportunities – take endorsement on opportunities – Define achievability and level of interest – Highlight short-term opportunities

Develop Roadmap

Identify breakdown of each opportunities into actions – define responsibilities – Define time frame – Define needed resources – Determine KPI's

EIP Assessment for a IP



- ✓ Series of interviews with operation team, CRM, Sales and CEO,
- ✓ It should be supported with evidence,
- ✓ It is determined for each pillar,
- ✓ Endorsement on benchmark

EIP Assessment for a IP

Gap Assessment

Develop Opportunities

Develop Roadmap

Identify list of opportunities – take endorsement on opportunities – Define achievability and level of interest – Highlight short-term opportunities

- ✓ Mandatory opportunities,
- ✓ Optional opportunities,
- ✓ Set meeting with park management to get feedback and endorsement,
- ✓ Achievability is determined according to park status,

EIP Assessment for a IP

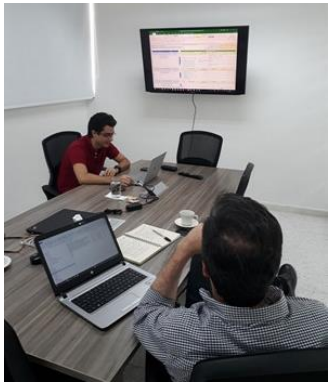
- ✓ Opportunities should be broken down into detailed actions,
- ✓ It's crucial to identify the needed resources (financial, human) for each action,
- ✓ Importance of presenting the pre-feasibility of opportunities that need investment,
- ✓ Endorsement on implementation time frame,
- ✓ Endorsement on responsibilities,

Identify breakdown of each opportunities into actions – define responsibilities – Define time frame – Define needed resources – Determine KPI's

How to use and complete the EIP Assessment Tool?

Tips for completing EIP Assessment Tool

- Transparency, personal interaction and objectivity are key.
- Note at start of the exercise that EIP assessment is not an audit, but a means to understand where the industrial park stands with regards to the International EIP Framework and to serve as a basis to identify and prioritize EIP opportunities for the industrial park.
- It is important to verify the responses on current and intended performance by asking how the benchmarks are met and request evidence where needed. In some cases, an initial “Yes” response may be actually be a “No”.
- Get a consolidated response from the whole team present in the exercise, and allow time for discussion.
- Spread the assessment over two sessions in subsequent days to keep the interactions engaging. Completing the EIP assessment in one full day tends to be too intensive.
- Combine the EIP assessment with a site tour of the industrial park to get first hand impressions and learn about key opportunities and challenges facing the park.



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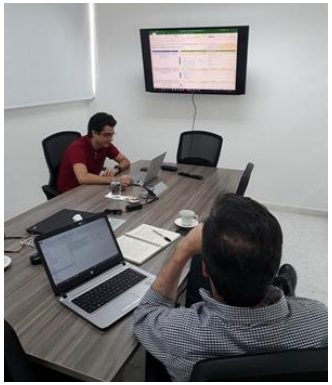


UNIDO EIP Assessment Tool

STEPS IN TOOL	DETAILED INSTRUCTIONS
STEP 1 Assess industrial park performance against the prerequisites and performance indicators of the International EIP Framework	Together with park management team, go through the benchmarks of the International EIP Framework and assess to what extent the park meets each benchmark. This assessment is done for the park's current performance, but can also be done for its future intended performance (e.g. 2-3 years). If a benchmark is not met, brainstorm about a specific opportunity that could be undertaken by park management and/or companies in order to meet the benchmark. Write down the consolidated opportunities in the respective cells.
STEP 2 Select EIP opportunities which are most achievable and beneficial	For each of the EIP opportunities identified, select a qualitative rating (e.g. Low, Medium, High) of the likely achievability, anticipated benefits and interest from park management and companies to work on the opportunity. Based on the review of the achievability, benefits and interest, come to a consolidated decision for each EIP opportunity on whether or not to select it for short-term action and monitoring. This selection process needs to be undertaken with park management team, and where needed with relevant tenant companies.
STEP 3 Plan, manage and monitor progress on prioritized EIP opportunities	Formulate the EIP opportunities (selected in step 2) into concrete initiatives. For each initiative: * Estimate CAPEX, OPEX and cost recovery model * Define activities to be undertaken to deliver the initiative, including time period, responsible person, progress note, and if needed corrective actions * Set SMART targets (e.g. Specific, Measurable, Attainable, Relevant and Timely) and note the actual performance levels over time Recognising that park management may have already systems in place to monitor and manage their activities, it is envisaged that the planning and monitoring of prioritized EIP opportunities is adapted to suit the specific requirements of park management and existing systems in place.

Assess current and intended performance

Each of the benchmarks of the International EIP Framework are assessed:

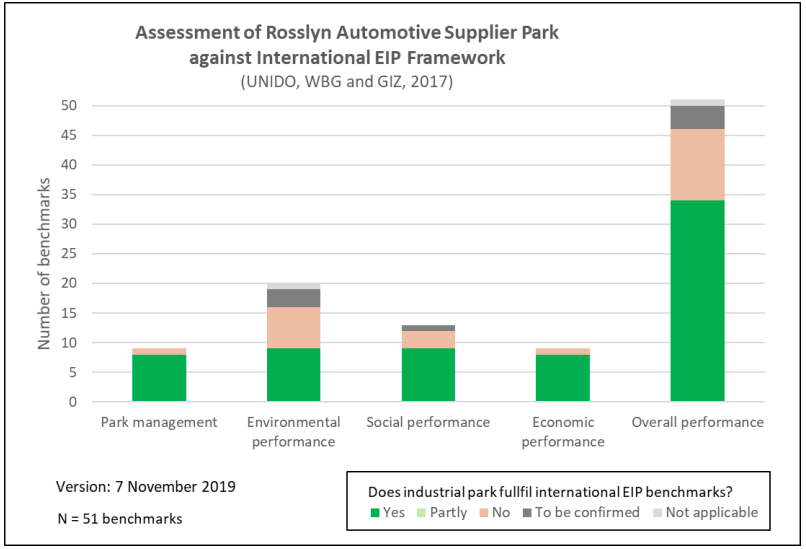
- Does park meet EIP benchmark at present?
- What is the intended performance?
  (Is the park interested/committed to achieve benchmark in 2-3 years time?)
- Possible responses: Yes, No, Partly, To be confirmed, Not applicable.
- Insert notes from discussion with park management and key evidence current performance.

INTERNATIONAL EIP FRAMEWORK (UNIDO, WORLD BANK, GIZ, 2017)		**STEP 1: ASSESSMENT OF INDUSTRIAL PARK**		
Topic	**EIP prerequisites and performance indicators (including target values)**	**Does park meet EIP benchmark AT PRESENT?**	**(OPTIONAL) What is intended performance? (e.g. in 2-3 YEARS)**	**Notes and evidence on current performance of industrial park**
PARK MANAGEMENT: EIP prerequisites ("must have for EIPs")				
Park management services	A distinct park management entity (or alternative agency, where applicable) exists to handle park planning, operations and management, and monitoring.	Please select	Please select	
	Park management entity to manage and maintain the industrial park property, common infrastructure, and services as prescribed in the tenant contract and the park's Master Plan. This should include, but is not limited to the following: • Property management, including plot allotments, re-allotments, development, land use monitoring, and so on. • Utilities, roads, and technical units such as waste and wastewater treatment plants and operations, power and energy systems. • Waste collection areas and services. • Maintenance and repair workshops. • Security and emergency response services and facilities. • Common landscaping, buffer zones, street lighting, security surveillance and street cleaning. • Common employee and tenant facilities. • Provide facilitating services to and between tenant firms (for example, networking, collaboration and training opportunities). • Engagement with the park's stakeholders and business representatives.	Please select	Please select	

Assess current and intended performance

Assessing the current and intended performance of each of the benchmarks will generate the following graphs:

Illustrative example



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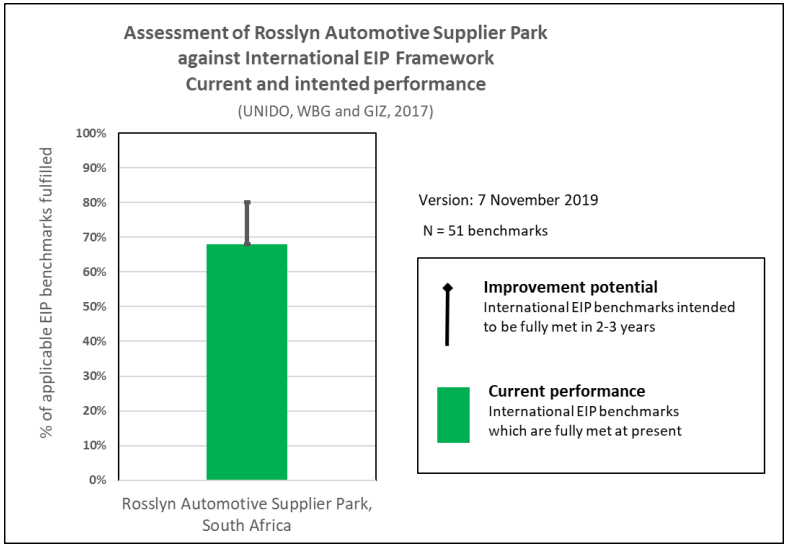
Illustrative example



How to identify the opportunities?

The EIP improvement opportunities are identified following gaps in the current performance against the International Framework and the commitment of park management to meet benchmarks in 2-3 years time.

- ✓ In its most simple form, the EIP opportunity can be a rewording of a benchmark into an concrete opportunity for the industrial park.
- ✓ If the park already fully meets the benchmark or there is no commitment to meet the benchmark, it is usually not needed to come up an EIP improvement opportunity.

INTERNATIONAL EIP FRAMEWORK (UNIDO, WORLD BANK, GIZ, 2017)		**STEP 1: ASSESSMENT OF INDUSTRIAL PARK**			
Topic	**EIP prerequisites and performance indicators (including target values)**	**Does park meet EIP benchmark AT PRESENT?**	**(OPTIONAL) What is intended performance? (e.g. in 2-3 YEARS)**	**Notes and evidence on current performance of industrial park**	**EIP opportunity for industrial park**
PARK MANAGEMENT: EIP prerequisites ("must have for EIPs")					
Park management services	A distinct park management entity (or alternative agency, where applicable) exists to handle park planning, operations and management, and monitoring.	Please select	Please select		
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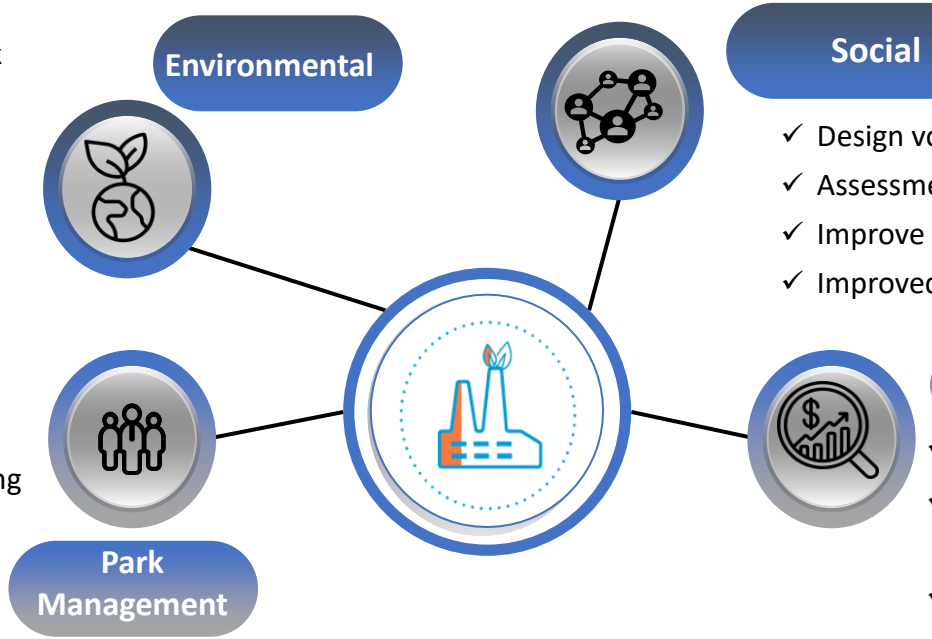
Most common opportunities in Egypt

- ✓ Resource management (park and tenants level)
- ✓ Benchmarking and targets
- ✓ Shared RE investments
- ✓ Symbiotic programme



- ✓ Design vocational training program
- ✓ Assessment of employees satisfaction
- ✓ Improve social insfrastructure
- ✓ Improved gender inclusions

- ✓ Define service needs and link with service providers
- ✓ Conduct workshops for sharing experience
- ✓ Increased systematic assessment of tenants satisfaction and needs

- ✓ Value added services to SMEs
- ✓ Services to overcome growth challenges
- ✓ Access to finance and improved access to banking services

How to prioritize EIP improvement opportunities?

Not all identified EIP opportunities will be high interest to industrial park!

- Trying to address all identified EIP opportunities will likely result in diffused efforts and limited achievements.
- Qualitative prioritization based on likely achievability, anticipated benefits, interest from park management (low, medium, high ratings).
- If achievability, anticipated benefits, interest park management have high ratings, then it is recommended to select the EIP opportunity for short-term action.

	STEP 2: SELECT EIP OPPORTUNITIES FOR ACTIONING AND MONITORING				
EIP opportunity for industrial park	What is likely ACHIEVABILITY of EIP opportunity?	What are likely BENEFITS of EIP opportunity?	Interest from park management?	Select EIP opportunity for short-term action?	Comments
	Please select	Please select	Please select	Please select	
	Please select	Please select	Please select	Please select	

Interactive Session

- Each Group (Table) to represent industrial park,
- Use the EIP Assessment tool
- Implement step 1 (15 min)
- Implement step 2 (15 min)
- Define top opportunities (10 min)

Planning and monitoring of prioritized EIP opportunities – Key success factors

Michael Weber
Webers Consulting

Planning and monitoring of prioritized EIP improvement opportunities

Important to consider for action and monitor plan:

- ✓ How does industrial park currently monitor and manage its activities
- ✓ What are monitoring requirements for specific opportunities?
- ✓ What are current gaps or challenges in monitoring system of industrial park?

A template for action/monitoring plan is included in EIP Assessment Tool.

- ✓ This template is an illustrative example how action/monitoring plan could look like and key elements it should include.
- ✓ It is very important to align with existing action/monitoring systems already used by the industrial park being assessed.
- ✓ It is usually better to include the prioritized EIP opportunities into existing action/monitoring systems, rather than creating a new system.

Key success factors for performance monitoring of industrial parks

- Have a clear framework, customised to need and priorities of industrial park
- Allocate clear responsibilities for monitoring
- Enforcement and endorsement of EIP monitoring system
- Be flexible and prepared to revise as working with performance indicators is and should be a continuous learning and improvement process.
- Have a solid baseline to assess the current state of industrial park and tenants
- Where possible, link to existing indicator sets used by industrial park, companies and other stakeholders (e.g. OH&S or quality management systems)
- Recognize limitations and uncertainties of the different indicators for the EIP
- Balanced focus on economic, environmental and social impacts of industrial park
- Learn from other experiences and benchmarking from other industrial parks / countries

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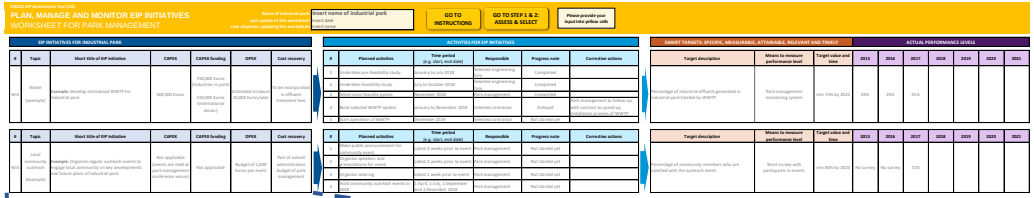
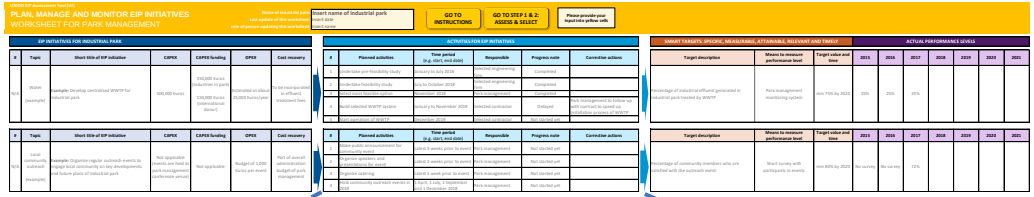


EIP INITIATIVES FOR INDUSTRIAL PARK

#	Topic	Short title of EIP initiative	CAPEX	CAPEX funding	OPEX	Cost recovery
N/A	Water (example)	**Example:** Develop centralised WWTP for industrial park	500,000 Euros	350,000 Euros (industries in park) 150,000 Euros (international donor)	Estimated at about 25,000 Euros/year	To be incorporated in effluent treatment fees

This is template for the action/monitoring plan in EIP Assessment Tool.
However, it is important to align with existing action/monitoring systems already used by industrial park

Planning and Monitoring of prioritized EIP improvement opportunities



ACTIVITIES FOR EIP INITIATIVES

#	Planned activities	Time period (e.g. start, end date)	Responsible	Progress note	Corrective actions
1	Undertake pre-feasibility study	January to July 2018	Selected engineering firm	Completed	
2	Undertake feasibility study	July to October 2018	Selected engineering firm	Completed	
3	Select most feasible option	November 2018	Park management	Completed	
4	Build selected WWTP system	January to November 2019	Selected contractor	Delayed	Park management to follow-up with contract to speed up installation process of WWTP
5					

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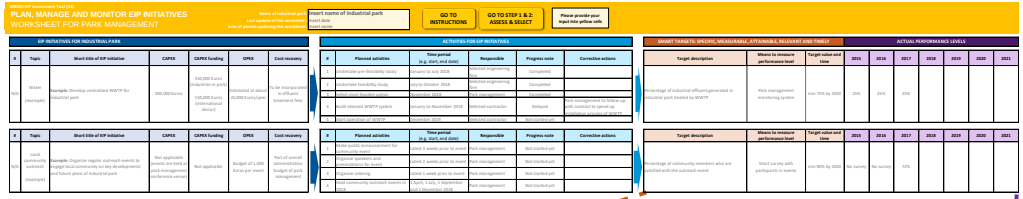
Planning and Monitoring of prioritized EIP improvement opportunities



SMART TARGETS: SPECIFIC, MEASURABLE, ATTAINABLE, RELEVANT AND TIMELY			ACTUAL PERFORMANCE LEVELS						
Target description	Means to measure performance level	Target value and time	2015	2016	2017	2018	2019	2020	2021
Percentage of industrial effluent generated in industrial park treated by WWTP	Park management monitoring system	min 75% by 2020	25%	25%	25%				

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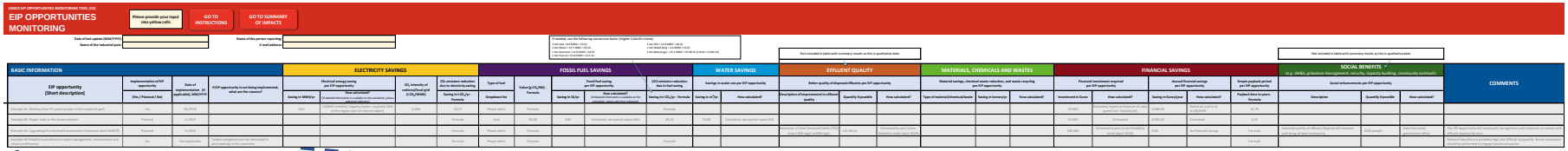
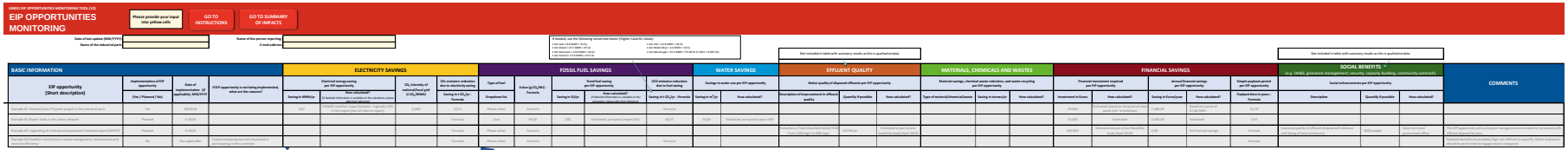


BASIC INFORMATION

EIP opportunity (Short description)	Implementation of EIP opportunity (Yes / Planned / No)	Date of implementation (if applicable), MM/YYYY	If EIP opportunity is not being implemented, what are the reasons?
Example #1: Develop Solar PV panel project in the industrial park	Yes	08/2018	
Example #2: Repair leaks in the steam network	Planned	in 2019	
Example #3: Upgrading of centralised wastewater treatment plant (WWTP)	Planned	in 2020	
Example #4 Establish committee on waste management, environment and resource efficiency	No	Not applicable	Tenant companies are not interested in participating in this committe

This is template for the action/monitoring plan in EIP Assessment Tool.
However, it is important to align with existing action/monitoring systems already used by industrial park

Planning and Monitoring of Prioritized EIP improvement opportunities



ELECTRICITY SAVINGS

Electrical energy saving per EIP opportunity		CO_2 intensity of national/local grid ($t\ CO_2/MWh$)	CO_2 emission reduction due to electricity saving
Saving in MWh/yr	How calculated? (If detailed information is available on the calculation, please add short reference)		Saving in $t\ CO_2/yr$ - Formula
19,2	120MW installed. Capacity factor = typically 16% in the region (see 1st interim report)	0,688	13,21
			Formula

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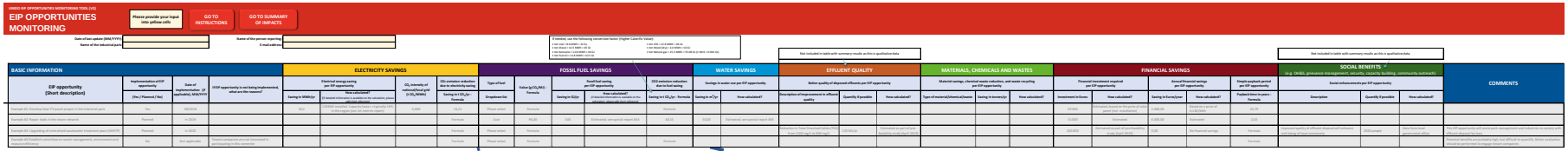

FOSSIL FUEL SAVINGS

Type of fuel	Value (g CO_2/MJ) - Formula	Fossil fuel saving per EIP opportunity		CO2 emission reduction due to fuel saving
Dropdown list		Saving in GJ/yr	How calculated? (If detailed information is available on the calculation, please add short reference)	Saving in t CO_2/yr - Formula
Please select	Formula			Formula
Coal	96,30	500	Estimated, see special report #34	48,15

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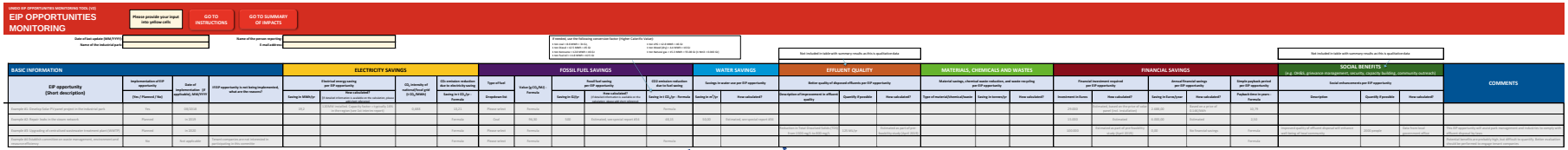

WATER SAVINGS

Savings in water use per EIP opportunity	
in m^3/yr	How calculated?
50,00	Estimated, see special report #34

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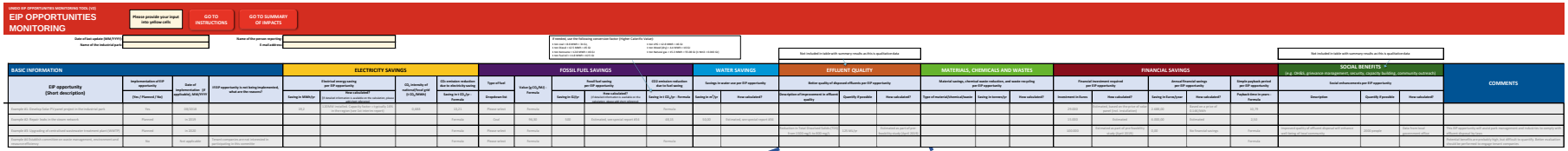
However, it is important to align with existing action/monitoring systems already used by industrial park

Planning and Monitoring of prioritized EIP improvement opportunities



EFFLUENT QUALITY

Better quality of disposed effluents per EIP opportunity

Description of improvement in effluent quality	Quantify if possible	How calculated?
Reduction in Total Dissolved Solids (TDS) from 1500 mg/L to 800 mg/L	125 ML/yr	Estimated as part of pre-feasbility study (April 2019)

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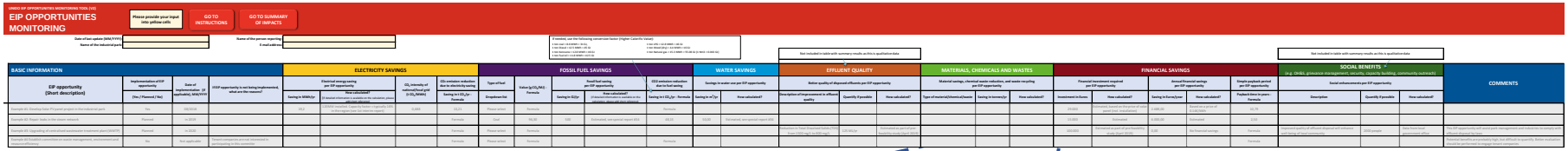

MATERIALS, CHEMICALS AND WASTES

Material savings, chemical waste reduction, and waste recycling per EIP opportunity

Type of material/chemical/waste	Saving in tonnes/yr	How calculated?

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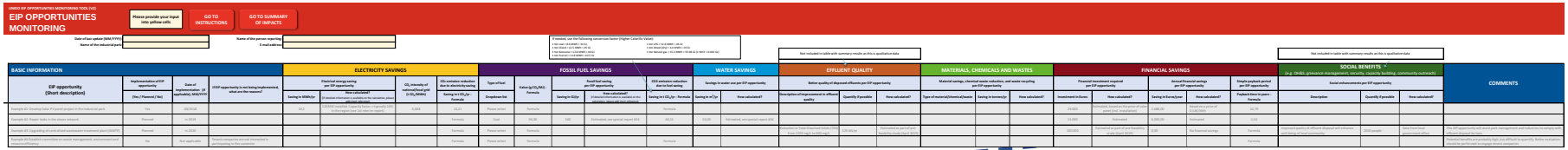
Planning and Monitoring of prioritized EIP improvement opportunities



FINANCIAL SAVINGS

Financial investment required per EIP opportunity		Annual financial savings per EIP opportunity		Simple payback period per EIP opportunity
Investment in Euros	**How calculated?**	**Saving in Euros/year**	**How calculated?**	**Payback time in years - Formula**
29.000	Estimated, based on the price of solar panel (incl. installation)	2.688,00	Based on a price of 0.14€/kWh	10,79
15.000	Estimated	6.000,00	Estimated	2,50
100.000	Estimated as part of pre-feasbility study (April 2019)	0,00	No financial savings	Formula
				Formula

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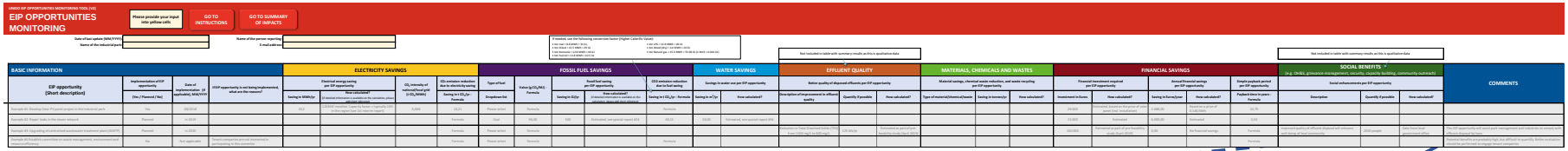
Planning and Monitoring of prioritized EIP improvement opportunities


EIP OPPORTUNITIES MONITORING

Please provide your input into yellow cells | GO TO INSTRUCTIONS | GO TO SUMMARY OF IMPACTS

Date of last update (DD/MM/YYYY):
Name of the industrial park:
Name of the person reporting:
E-mail address:

Included, use the following conversion factor (Higher Calorific Value):

Not included in table with summary results as this is qualitative data

Not included in table with summary results as this is qualitative data

BASIC INFORMATION				ELECTRICITY SAVINGS				FOSSIL FUEL SAVINGS					WATER SAVINGS		EFFLUENT QUALITY			MATERIALS, CHEMICALS AND WASTES			FINANCIAL SAVINGS				SOCIAL BENEFITS * (e.g. OH&S, grievance management, security, capacity building, community outreach)			COMMENTS
EIP opportunity (Short description)	Implementation of EIP opportunity (Yes / Planned / No)	Date of implementation (if applicable), MM/YYYY	If EIP opportunity is not being implemented, what are the reasons?	Electrical energy saving per EIP opportunity: Saving in MWh/yr	How calculated? (Reference information to quantities in the calculation, please add a new column if required)	CO_2 intensity of grid / fossil grid (t CO_2/MWh)	CO_2 emission reduction due to electricity saving: Saving in t CO_2/yr - Formula	Type of fuel: Drop-down list	Value (t CO_2/MJ): Formula	Fossil fuel saving per EIP opportunity: Saving in TJ/yr	How calculated? (Reference information to quantities in the calculation, please add a new column if required)	CO_2 emission reduction due to fuel saving: Saving in t CO_2/yr - Formula	Savings in water use per EIP opportunity: Saving in m^3/yr	How calculated?	Better quality of disposed effluents per EIP opportunity: Description of improvement in effluent quality	Quantify if possible	How calculated?	Material savings, chemical waste reduction, and waste recycling per EIP opportunity: Type of material/chemical/waste	Saving in tonnes/yr	How calculated?	Financial investment required per EIP opportunity: Investment in Euros	How calculated?	Annual financial savings per EIP opportunity: Saving in Euros/year	How calculated?	Simple payback period per EIP opportunity: Payback time in years - Formula	Social enhancements per EIP opportunity: Description	Quantify if possible	How calculated?	
Example #1: Creating Solar PV panel project in the industrial park	Yes	01/01/20		54.0	1,000 MWh/year/MW (Higher Calorific Value) x 54 MW (Capacity) = 54,000 MWh/year	0.445	24,012	Please select	Formula	194.40	Estimated, see spread sheet #23	48,215									200,000	Estimated, based on the price of solar panel, local market	1,000,00	Estimated	8,000.00	Estimated	4.50				
Example #2: Repair leaks in the steam network	Planned	01/2020					Formula	Coal	94.60	1,000	Estimated, see spread sheet #24	48,215	50,000	Estimated, see spread sheet #24							10,000	Estimated	10,000.00	Estimated	4.50				
Example #3: Upgrading of waste water wastewater treatment plant (WWTP)	Planned	01/2020					Formula	Please select	Formula			Formula			Reduction in Total Dissolved Solids (TDS) from 1,000 mg/l to 500 mg/l	2.00 tons/day	Estimated as part of WWTP upgrade study (short term)				300,000	Estimated as part of WWTP upgrade study (short term)	2.00	Not financial savings		Formula		Improved quality of effluent disposal will enhance well-being of local community	2000 people	Data from local government office	
Example #4: Establish committees on water management, environmental and financial efficiency	No	Not applicable	Several counterparts are not interested to participating in this committee																									

SOCIAL BENEFITS

(e.g. OH&S, grievance management, security, capacity building, community outreach)

Social enhancements per EIP opportunity		
Description	**Quantify if possible**	**How calculated?**
Improved quality of effluent disposal will enhance well-being of local community	2000 people	Data from local government office

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However, it is important to align with existing action/monitoring systems already used by industrial park

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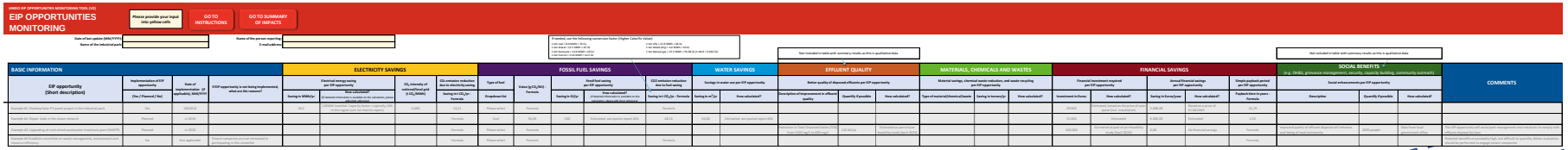
Planning and Monitoring of prioritized EIP improvement opportunities



EIP OPPORTUNITIES MONITORING

Please provide your input into yellow cells | GO TO INSTRUCTIONS | GO TO SUMMARY OF IMPACTS

Date of last update (DD/MM/YYYY):
Name of the industrial park:
Name of the person reporting:
E-mail address:

Included, use the following conversion factor (Higher Calorific Value):
1 ton coal = 0.476 MWh = 28 GJ
1 ton Diesel = 11.7 MWh = 42 GJ
1 ton Biomass = 5.333 MWh = 19 GJ
1 ton natural gas = 14.1 MWh = 51 GJ (1 MJ = 0.001 GJ)
1 ton LPG = 13.9 MWh = 50 GJ
1 ton HFO = 11.7 MWh = 42 GJ
1 ton Petrol (92 oct.) = 12.2 MWh = 44 GJ
1 ton Natural gas = 15.1 MWh = 55 GJ (1 MJ = 0.001 GJ)

Not included in table with summary results as this is qualitative data

Not included in table with summary results as this is qualitative data

BASIC INFORMATION				ELECTRICITY SAVINGS				FOSSIL FUEL SAVINGS					WATER SAVINGS		EFFLUENT QUALITY			MATERIALS, CHEMICALS AND WASTES			FINANCIAL SAVINGS				SOCIAL BENEFITS * (e.g. OH&S, grievance management, security, capacity building, community outreach)			COMMENTS
EIP opportunity (Short description)	Implementation of EIP opportunity (Yes / Planned / No)	Date of implementation (if applicable), MM/YYYY	If EIP opportunity is not being implemented, what are the reasons?	Electrical energy saving per EIP opportunity: Saving in MWh/yr	How calculated? (Measure information or assumption on the calculation, please add any data reference)	CO_2 intensity of grid / fossil fuel (t CO_2/MWh)	CO_2 emission reduction due to electricity saving: Saving in t CO_2/yr - Formula	Type of fuel: Energyhouse list	Value (t CO_2/MJ): Formula	Fossil fuel saving per EIP opportunity: Saving in t/yr	How calculated? (Measure information or assumption on the calculation, please add any data reference)	CO_2 emission reduction due to fuel saving: Saving in t CO_2/yr - Formula	Savings in water use per EIP opportunity: Saving in m^3/yr	How calculated?	Better quality of disposed effluents per EIP opportunity: Description of improvement in effluent quality	Quantify if possible	How calculated?	Material savings, chemical waste reduction, and waste recycling per EIP opportunity: Type of material/chemical/waste	Saving in tonnes/yr	How calculated?	Financial investment required per EIP opportunity: Investment in Euros	How calculated?	Annual financial savings per EIP opportunity: Saving in Euros/year	How calculated?	Simple payback period per EIP opportunity: Payback time in years - Formula	Social enhancements per EIP opportunity: Description	Quantify if possible	How calculated?	
Example #1: Creating Solar PV power project in the industrial park	Yes	05/2020		54.0	120,000 Panels with 75 kWp for Rooftop (1,000 kWp for the entire industrial park)	0.295	16.0	Please select	Formula	Coal	96.00	100	Estimated, see spread report #23	48.0	50.00	Estimated, see spread report #23						240,000	Estimated, mixed profile (one of the panel cost manufacturer)	4,800.00	Estimated a saving of 10,000 MWh	16.70				
Example #2: Repair leaks in the steam network	Planned	to 2020					Formula	Coal	96.00	100	Estimated, see spread report #23	48.00	50.00	Estimated, see spread report #23									14,000	Estimated	2,800.00	Estimated	4.70				
Example #3: Upgrading of waste-based wastewater treatment plant (Qualify)	Planned	to 2020					Formula	Please select	Formula			Formula			Reduction in Total Dissolved Solids (TDS) from 1000 mg/L to 600 mg/L	2.00 Mn/yr	Estimated as part of the feasibility study (Case 2020)				300,000	Estimated as per per unit feasibility study (Case 2020)	0.00	Not financial savings	Formula	Improved water quality of effluent (Business and commerce saving in wastewater)	2020 onwards	Water from local groundwater wells	New EIP opportunity will assist park management and industries to comply with effluent disposal by-laws
Example #4: Establish committees on water management, environmental and financial efficiency	No	Not applicable	Several counterparts are not interested to participating in this committee				Formula	Please select	Formula			Formula																	Potential benefits are probably high, but difficult to quantify. Better evaluation should be performed to engage tenant companies

COMMENTS

This EIP opportunity will assist park management and industries to comply with effluent disposal by-laws

Potential benefits are probably high, but difficult to quantify. Better evaluation should be performed to engage tenant companies

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However, it is important to align with existing action/monitoring systems already used by industrial park

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Planning and Monitoring of prioritized EIP improvement opportunities

Summary of impacts

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However, it is important to align with existing action/monitoring systems already used by industrial park

UNIDO EIP OPPORTUNITIES MONITORING TOOL (V2)

SUMMARY OF IMPACTS

GO TO INSTRUCTIONS | GO TO EIP OPPORTUNITIES MONITORING

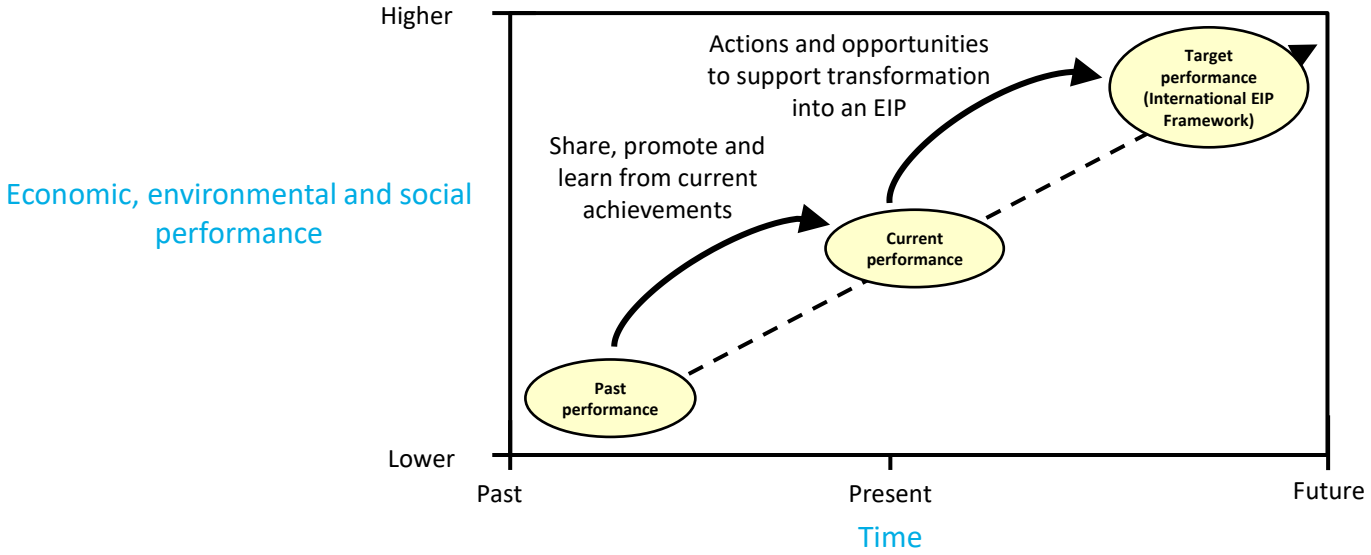
Worksheet is calculated automatically based on the monitoring worksheet

Name of industrial park:		
Total number of EIP opportunities	**0**	in total
- Implemented	*0*	
- Planned implementation	*0*	
- No implementation (yet)	*0*	
Electricity savings	**0,00**	MWh/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
CO_2 emission reduction due to electricity savings	**0,00**	t CO_2/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
Fossil fuel saving	**0,00**	GJ/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
CO_2 emission reduction due to fuel savings	**0,00**	t CO_2/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
Water savings	**0,00**	m^3/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
Material/chemicals savings and waste recycling	**0,00**	t/yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
Financial savings (in Euros)	**0,00**	€/year
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	
Return on investment (average payback time)	**0,00**	yr
- Implemented	*0,00*	
- Planned implementation	*0,00*	
- No implementation (yet)	*0,00*	

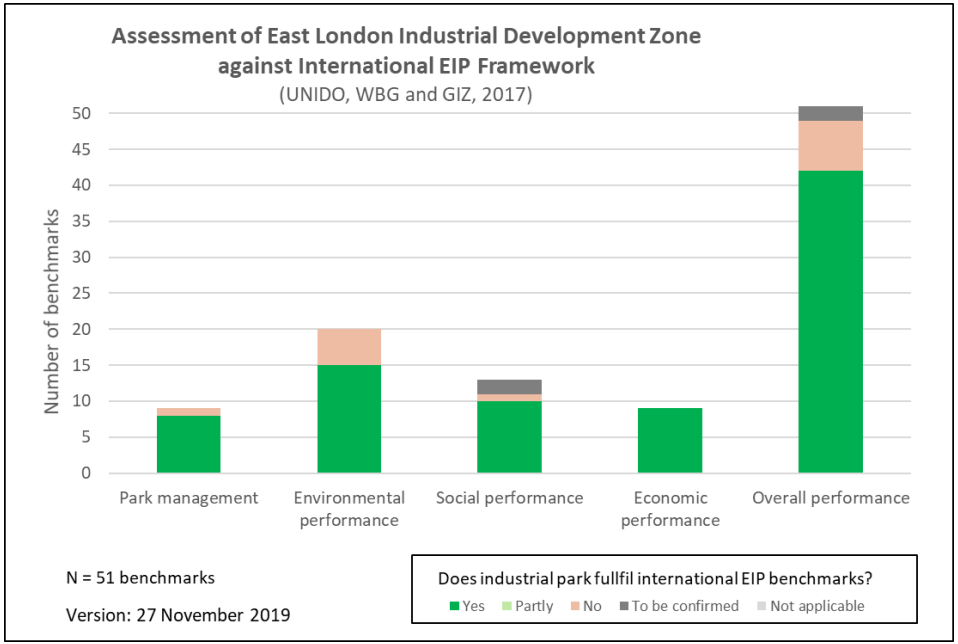
Learnings from applications of International EIP Framework

Transformation into an EIP is a process of continuous improvement

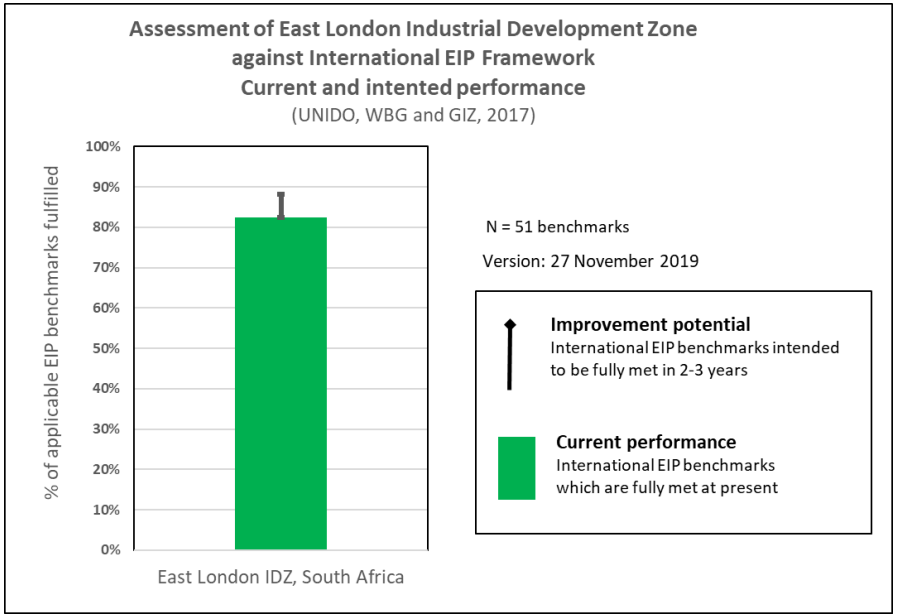
Where are we now, where do we want to be, and how do we get there?“



Practical example: East London Industrial Development Zone, South Africa



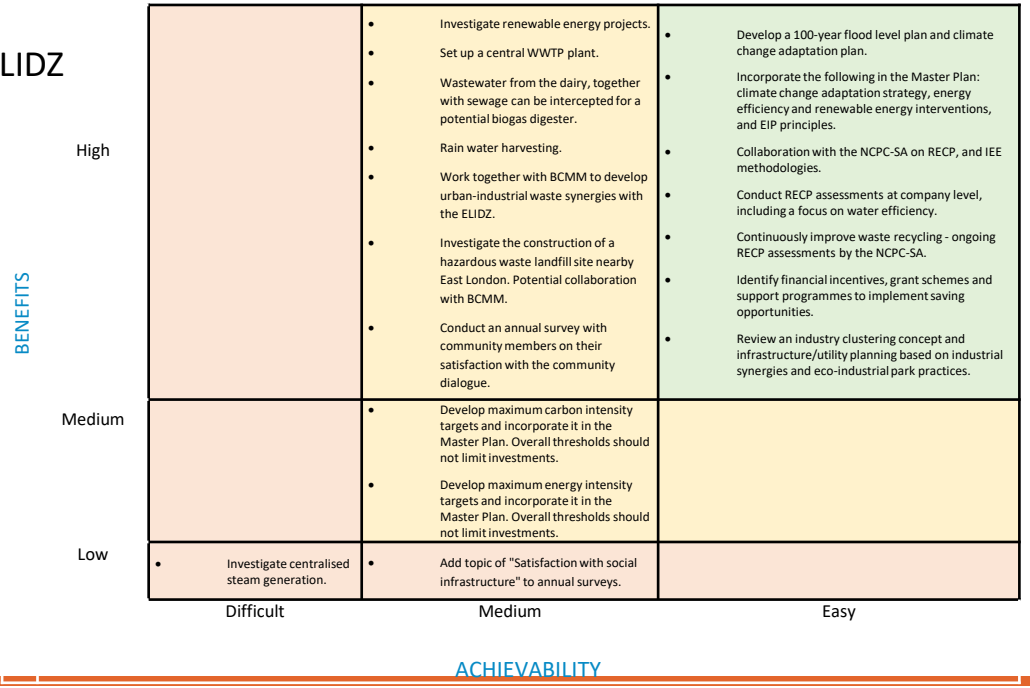
Practical example: East London Industrial Development Zone, South Africa



Practical example: East London Industrial Development Zone, South Africa

Summary of prioritized EIP opportunities for ELIDZ

Benefits and Achievability



Practical example: East London Industrial Development Zone, South Africa

Action plan (selected section only)

Topic		Proposed actions – Subject to further discussion with ELIDZ and companies				
			Key short-term actions	Lead role	Support	Timeline
1	Development and promotion of ELIDZ as a leading EIP example in South Africa	A	Review and decide which priority EIP opportunities identified for ELIDZ are worthwhile to assess further. • EIP opportunities identified and prioritized through review of ELIDZ against International EIP Framework and smart solutions (November 2018) (Section 3.1) • Industrial synergy opportunities identified and prioritized at workshop at ELIDZ, April 2018 (Figure 8)	ELIDZ	NCPC-SA	Q1 2020
		B	Discuss and agree on scope of work to further develop most promising EIP opportunities for ELIDZ and its tenant companies	ELIDZ	NCPC-SA	Q1 2020
		C	Develop marketing strategy / material positioning ELIDZ as an emerging EIP in South Africa, including the associated economic, environmental and social benefits to the IDZ, tenant companies, and the community.	ELIDZ	ELIDZ communications / marketing team NCPC-SA UNIDO	Q2 2020
2	Business development to support reprocessing of waste plastics by Clariter	A	Finalize agreements between the IDC, ELIDZ, and the Eastern Cape Non-Automotive Cluster to release IDC funding for SMME developments.	ELIDZ	Clariter	Q4 2019
		B	Allocate available land and develop support services for SMME cluster development.	ELIDZ	Clariter	Q2 2020
		C	Follow-up with UNIDO to seek support for Clariter in promoting the waste plastics recycling technology, identification of potential financial mechanisms/investors for commercialization, and create collaborations/synergies with other development projects on plastics recycling.	ELIDZ Clariter	UNIDO NCPC-SA	After successful piloting

Interaction Session

- Based on assessment in the previous interaction session,
- Select top 3 opportunities according to following indicators:
  - ✓ Achievability,
  - ✓ Benefits,
  - ✓ Interest,
  - ✓ Focus on Short-term
- Develop KPI's and monitoring plan

Summarize lessons learned and closing of training

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