

## Session 2B: Steering the Growth of Industrial Parks



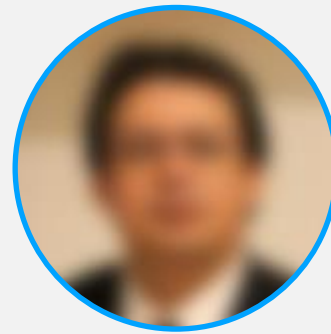
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GIZ Germany, Session Moderator



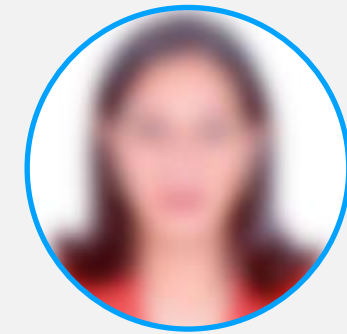
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Industrial Development Group  
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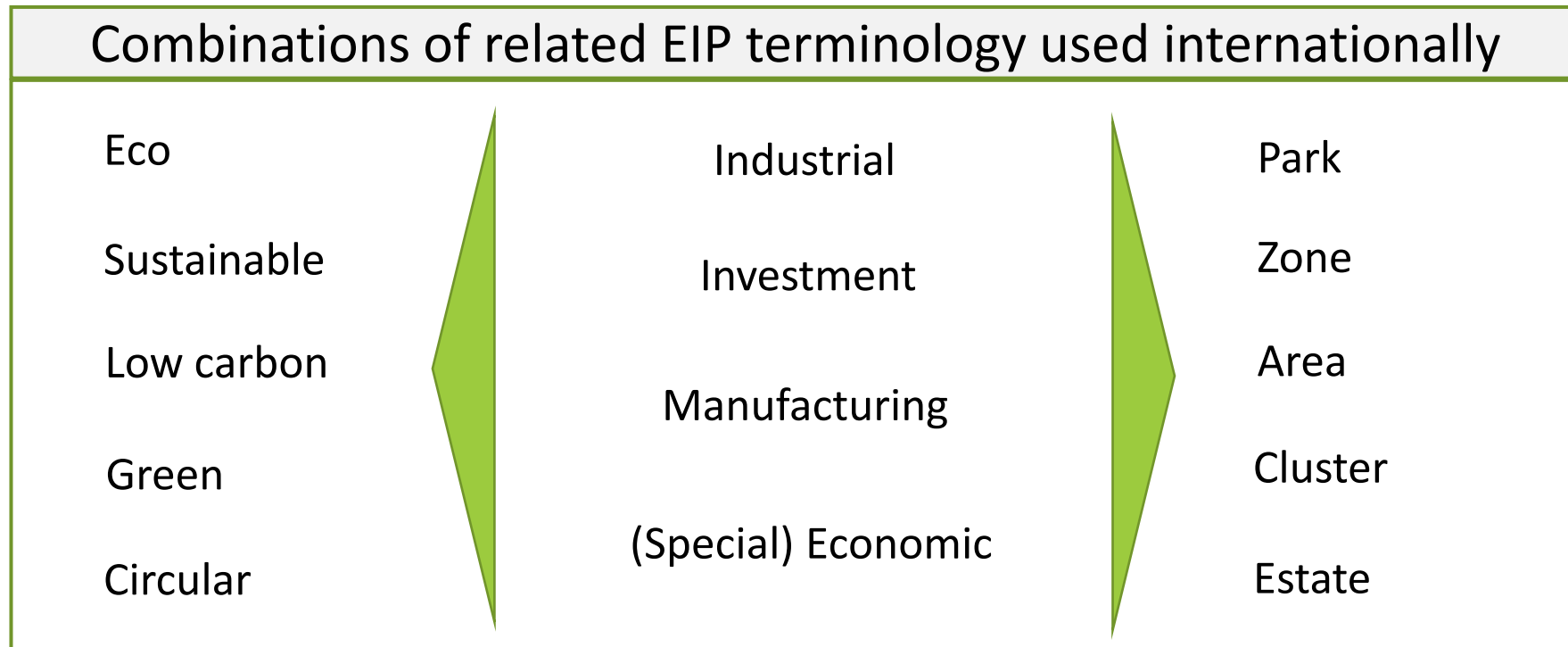
# PLANNING OF ECO-INDUSTRIAL PARKS (EIP<sub>s</sub>)

Sustainable Industrial Area Conference

Cairo, 5-7 June 2023

Dick van Beers (UNIDO)

**Different terminologies are used internationally**  
**But all based on same principles and concept**



- No up-to-date Master Plan - Master Plan is more than just a lay-out map!
- Unique value proposition for industrial park is not clear
- Park is planned based on unrealistic market demands
- Insufficient consideration of economic, environmental and social aspects
- Lack of stakeholder engagement in park planning
- Limited consideration of industry clustering and synergies
- Limited integration of utilities and infrastructures
- Buffer zone is not planned or secured properly
- Lack of consideration of long-term development scenarios



**Eco-industrial  
park approaches  
help to address  
these challenges**

## Review possible site locations for an industrial park

- Optimal location of industrial park is critical to success of industrial park

## Develop feasibility study for developing a new industrial park or optimising an existing park

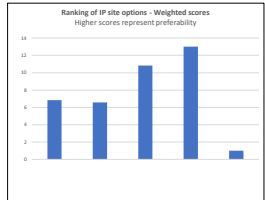
- Covering technical, economic, environmental and social aspects
- Need for short-, mid-, and long-term focus
- Business case need to be based on realistic scenarios

## Define unique selling proposition of industrial park

- What are the targeted investors / industries?
- Why should they invest in industrial park?
- How do you attract these industries?



1. Identify potential industrial sites
2. Short-list potential industrial sites
3. Multi-criteria analysis of short-listed sites
4. Decision making through multi-stakeholder processes



### Reasons for IP selection by investors

#### Local factors:

- Raw material supply – „Verbund“
- Permits (availability, speed, political support, ...)
- Brownfield liabilities
- Logistics
- Skilled labor
- Cultural fit (most underestimated factor!)
- Access to knowledge (Universities, Research Institutes, ...)
- Time to market
- Expat living conditions

# OVERVIEW OF UNIDO'S ECO-INDUSTRIAL PARK TOOLS

## Planning tools Park level

### Master Plan EIP Review Tool

Guide sustainability review  
of existing Master Plan

### EIP Concept Planning Tool

Assist in sustainable design  
of an industrial park

## Implementation support tools Park level

### EIP Assessment Tool

Assess park against International EIP  
Framework and identify EIP opportunities

### EIP Management Services Tool

Strengthen and advance services provided  
by park management to tenant companies

### Access to Finance Tool

Identify, review and access available  
financing options for feasible EIP initiatives

### Industrial Symbiosis Identification Tool

Support the identification of waste  
exchanges between companies

## Implementation support tools Country level

### EIP Selection Tool

Select parks with high potential for EIP  
development and successful EIP projects

### EIP Policy Support Tool

Support EIP policy development and  
implementation processes

## Monitoring tools Park level

### RECP Monitoring Tool

Monitor and report results of RECP  
assessments in industrial parks

### EIP Opportunities Monitoring Tool

monitor and report impacts from EIP  
opportunities in industrial parks

UNIDO's EIP Toolbox is available online:  
<https://hub.unido.org/eco-industrial-parks-tools>

**A master plan is more than a lay-out map of industrial park!**

**A master plan is a comprehensive document that guides planning, development and operation of industrial park**

- Need integration with urban/regional plans
- Reviewed every 3 years or after significant developments

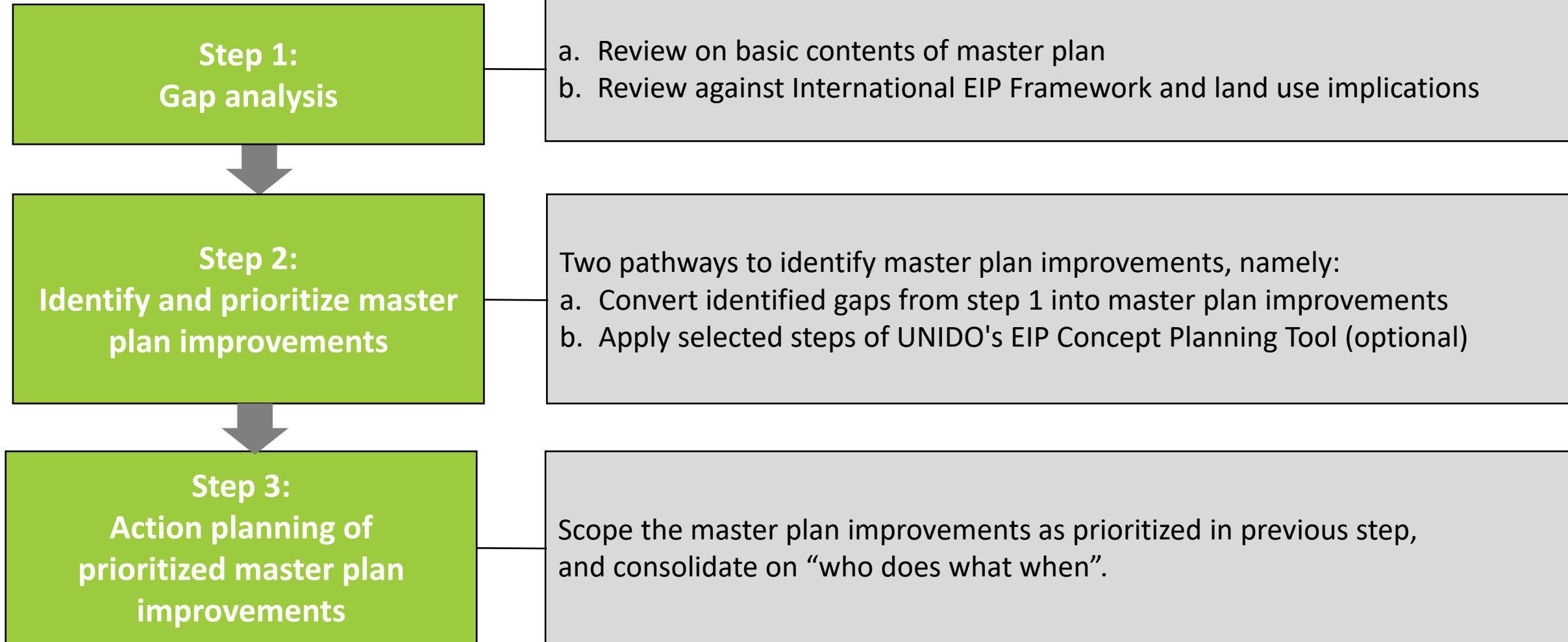
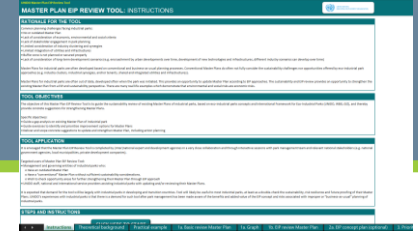
**Different terminologies are used internationally**

- E.g. Master plan, structure plan, development plan



## **Key contents of a Master Plan**

- Overview of the industrial park
- Business case and unique selling proposition
- Management and governance model
- Infrastructure and service needs assessment
- Legal compliance review
- Land use break-up and zoning of the site
- Basic and technical infrastructures
- Environmental infrastructures
- Social infrastructures
- Arrangements to regulate the development and use of land within industrial park
- Plans and thematic layers in the required scale





## Sustainability review of Ancon Industrial Park Master Plan (Peru)

### Recommendations based on master plan review

- **Water:** Optimise water supply and recycling system in Ancon IP in order to reduce seawater desalination requirements and maximise reuse of water to highest value applications
- **Criteria:** Set sustainability criteria for industries and business to locate in and operate in Ancon IP
- **Park management:** Set up self-sustainable park management entity to develop and operate Ancon IP
- **Clustering:** Refine Ancon IP precincts to encourage industrial synergies and shared utilities
- **Climate change:** Facilitate development climate change adaptation strategy for Ancon IP
- **SMEs:** Develop a strategy to attract (green) SMEs and micro enterprises to Ancon IP
- **Energy:** Identify areas in Ancon IP most suitable for renewable energy generation
- **Waste:** Consider and plan for a centralised facility to process and recycle wastes and by-products from Ancon IP and regional urban developments



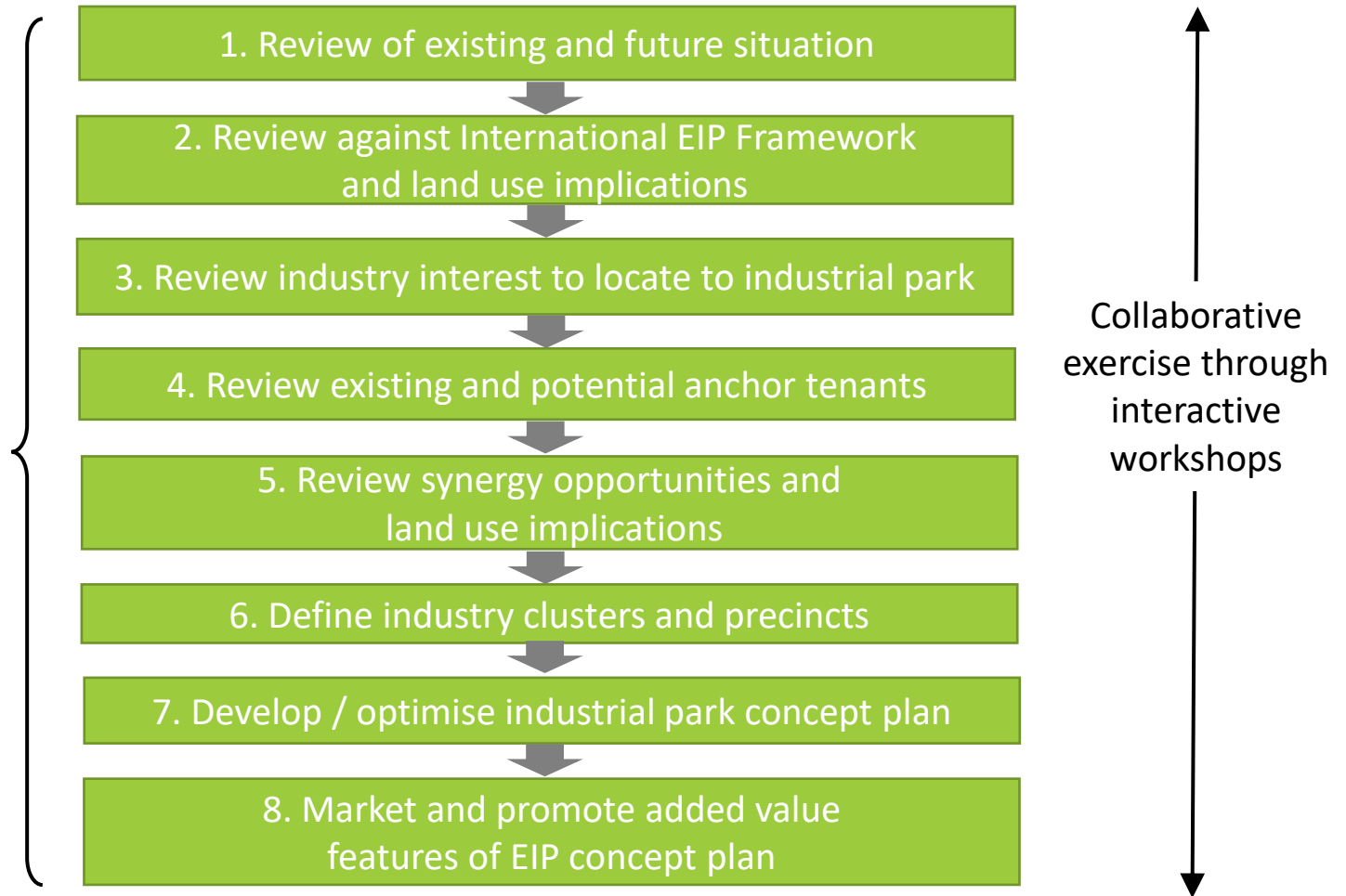
# EIP CONCEPT PLANNING



## Planning opportunities:

- Understand industrial land demands
- Attract synergistic anchor tenants to industrial park
- Encourage industrial synergy development
- Optimise industry zoning and clustering
- Optimise existing and future infrastructures and utilities
- Reduce economic, environmental and social risks
- Increase competitiveness of industrial park
- Communicate added value features of EIP concept plan to stakeholders

## Steps to capture these opportunities:



UNIDO EIP Concept Planning Tool (V1)

## EIP CONCEPT PLANNING TOOL: INSTRUCTIONS

[CLICK HERE TO START](#)



### RATIONALE FOR THE TOOL

The objective of EIP concept planning is to assist in the sustainable and integrated design and operation of industrial parks from an economic, environmental and community perspective. In short, the EIP concept is about creating more resource-efficient and cost-effective industrial parks which are more competitive, attractive for investment and risk resilient.

The EIP concept plan should provide flexibility in the sustainable industrial development of the park and allowing for the development of the promising industry synergies identified, and subsequently industry clustering. It provides guidance on the types of industry clustering which can occur in an industrial park, rather than locking in clustering scenarios at this point in time with limited information on future companies to locate to the industrial park. As companies locate to an industrial park, specific and more detailed industry clustering scenarios should be assessed.

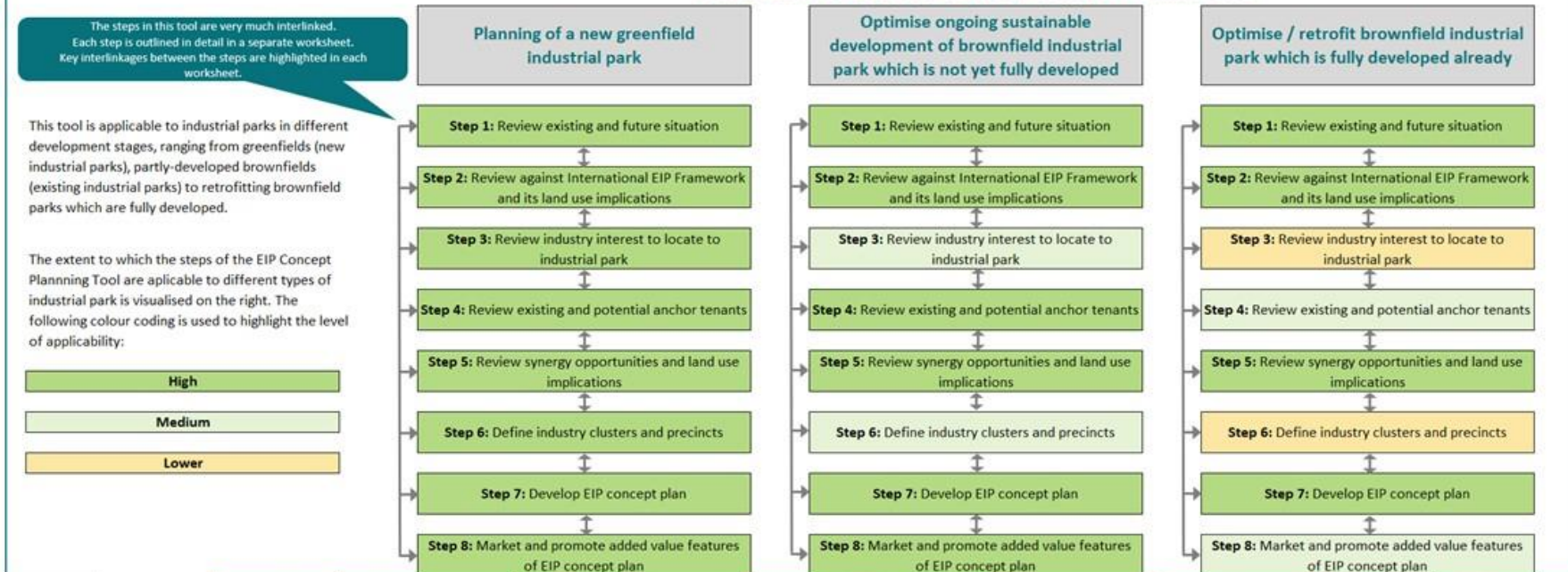
The strategic clustering and integrated planning of companies, infrastructures and utilities is a core element to allow for the development of industrial synergies within industrial parks and with its surrounding regions, as well as a mechanism to reduce the need for utility infrastructure and associated costs.

### TOOL OBJECTIVES

The objective of this tool is to assist in the sustainable and integrated design and operation of industrial parks from an economic, environmental and community perspective by providing a systemic approach to incorporate demand-driven eco-industrial park opportunities into the concept planning of greenfield parks and brownfield parks.

### TOOL APPLICATION - FROM GREENFIELD TO BROWNFIELD INDUSTRIAL PARKS

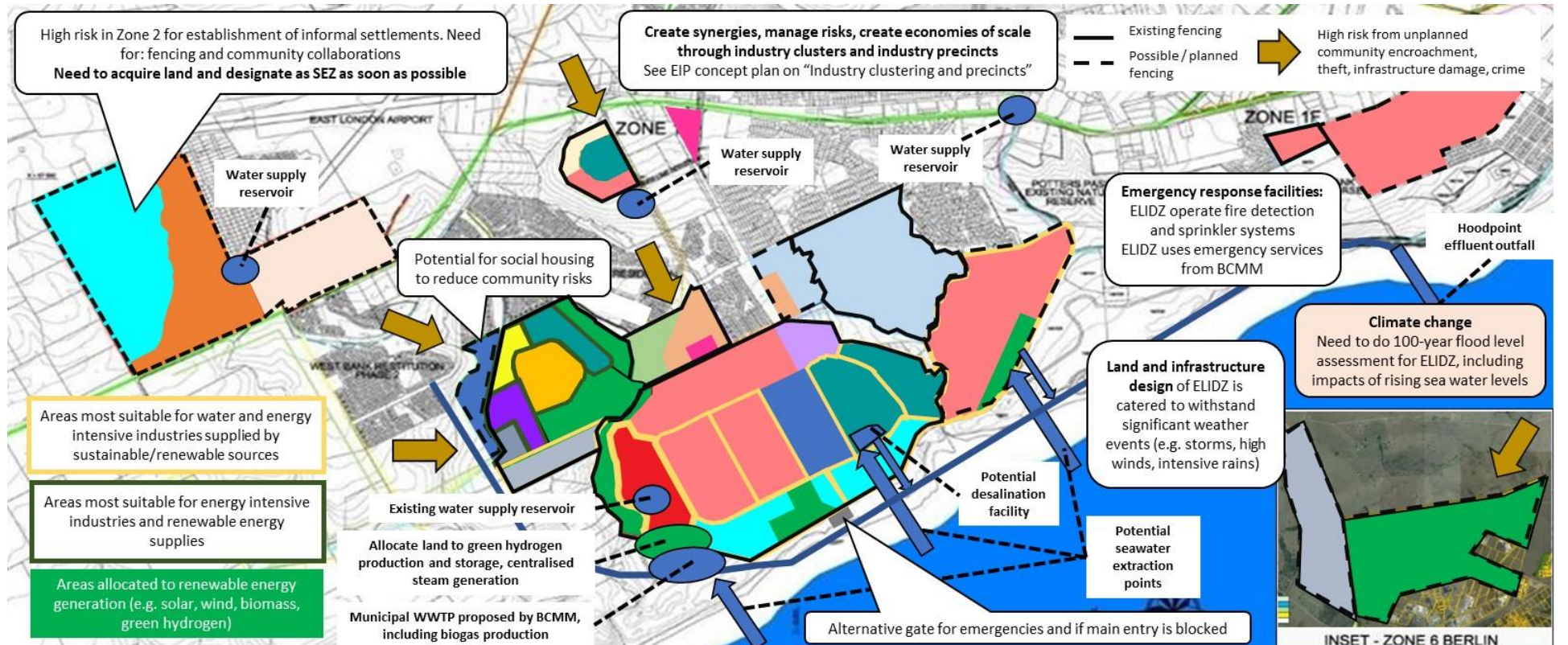
#### APPLICABILITY OF EACH STEP OF THE EIP CONCEPT PLANNING TOOL



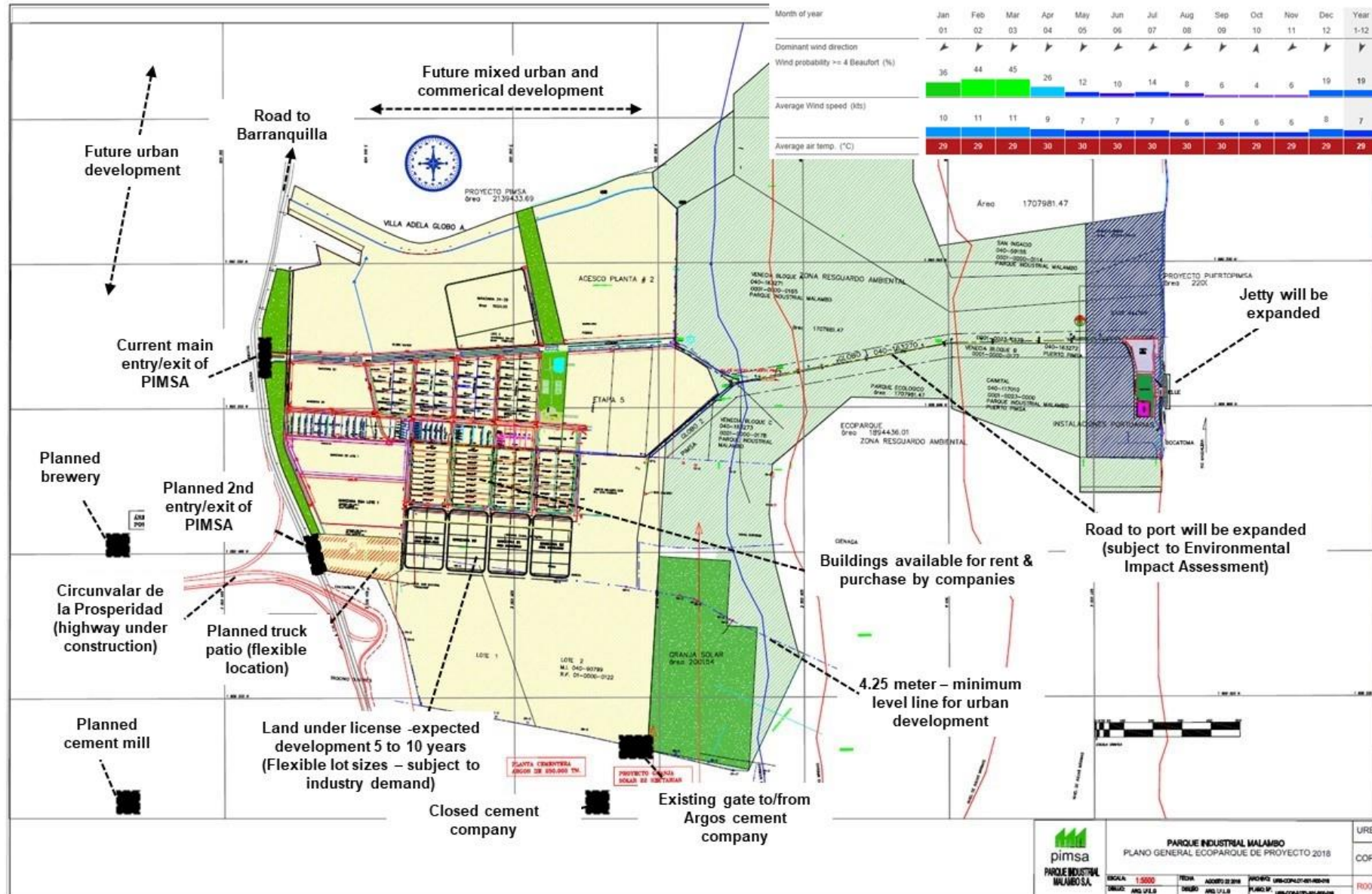
REFINE INDUSTRY CLUSTERING & PRECINCTS

Industrial cluster type	High electricity use	High water use	High heat/cooling demand	Other location criteria	Other location criteria
Automotive	XX	XX	XX	100ha (X)	EIA
Food processing	XX	XX	XX	5ha to 10ha	XX
Logistics	XX	XX	XX	2 to 10ha	EIA
Manufacturing	XX	XX	XX	2ha	EIA
High tech	XX	XX	XX	2ha	EIA

X = IMPORTANT    XX = VERY IMPORTANT







UNIDO EIP Concept Planning Tool (V1)

### REVIEW INDUSTRIAL PARK AGAINST THE INTERNATIONAL EIP FRAMEWORK AND ITS LAND USE IMPLICATIONS

Please provide your input into yellow cells

Name of industrial park:

Date of assessment:

Name of assessor:

GO TO GRAPH WITH RESULTS



GO TO INSTRUCTIONS



INTERNATIONAL EIP FRAMEWORK (2017)			REVIEW OF CURRENT CONCEPT DESIGN	
Topic	EIP benchmarks	Land use implications arising from EIP benchmarks	Is EIP benchmark incorporated in existing IP concept design?	Opportunities to be incorporated into PIMSA concept plan
Waste and material use	100% of firms in park appropriately handle, store, transport and dispose of toxic and hazardous materials.	Identify suitable location(s) of centralised hazardous waste collection facility in park.	Partly	Identify suitable location(s) of centralised hazardous waste collection facility in PIMSA
Social infrastructure	Essential primary social infrastructure has been adequately provided in the site master plan, and is fully operational in the park.	Identify types and suitable location(s) for primary social infrastructure in industrial park or its proximity.  For example, lavatories and public toilets, drinking water fountains, cafeterias within reach of the employees, childcare programs.	Yes	
Local business & SME promotion	Park management entity allows and promotes the establishment of SMEs that provide services and add value to park residents.	Identify optimal location(s) of SMEs (e.g. specific precinct dedicated to SMEs)  Define supporting infrastructures (e.g. rental buildings customised to needs of SMEs).	Partly	Identify optimal location(s) of SMEs (e.g. specific precinct dedicated to SMEs)  Define supporting infrastructure for SMEs (e.g. rental buildings customised to needs of SMEs).



## Potential industries to locate to PIMSA (snap-shot, not all-inclusive)

This qualitative assessment is based on intelligence of park management (PIMSA in this case) and any existing market studies.

Sectors suggested by PIMSA park management	Potential sub-sectors	Priority for PIMSA	Likelihood to locate to PIMSA
Metal	Steel fabrication and transformation (e.g. sheets, rods)	Very high priority	High likelihood
	Machining		
Food & beverages	Processing various	High priority	High likelihood
	Cold storage		
Logistics	Storage and distribution facilities	High priority	High likelihood
	Transport companies		
	Outlet stores		
Chemicals and pharmaceuticals	Fertiliser production and storage	Medium priority	Medium likelihood
	Fertiser mixing		
Agro industry	Cassava and starch production	Medium priority	Medium likelihood
	Other various		

Potential anchor tenants	Trigger or contribute to attracting industries			
	Supply synergies	Utility synergies	By-product synergies	Service synergies
<b>Existing anchor tenants in PIMSA - Example</b>				
Acesco (steel products fabrication)	<ul style="list-style-type: none"> <li>Downstream metal fabrication companies</li> <li>Producers or local suppliers of process chemicals and raw materials</li> <li>Warehouses</li> </ul>	<ul style="list-style-type: none"> <li>Industry feedwater facility supplying industry feedwater</li> <li>Energy facility supplying steam, electricity, heating/cooling</li> <li>Producer of utility gases</li> </ul>	<ul style="list-style-type: none"> <li>Company re-processing large volume inorganic by-products</li> <li>Company processing and supplying alternative fuels</li> <li>Utility company converting process CO<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub> into commercial gases</li> </ul>	<ul style="list-style-type: none"> <li>Joint industry training and education facility</li> <li>Waste management company collecting small(er) volume wastes in PIMSA</li> </ul>
<b>Potential anchor tenants - Example</b>				
Brewery	<ul style="list-style-type: none"> <li>Producers or local suppliers of process chemicals and raw materials</li> <li>Transport companies</li> <li>Technical support businesses</li> </ul>	<ul style="list-style-type: none"> <li>Water facility supplying low and/or high quality feedwater</li> <li>Energy facility supplying steam, electricity, heating/cooling</li> <li>Producer of utility gases</li> </ul>	<ul style="list-style-type: none"> <li>Company supplying alternative fuels</li> <li>Utility company converting CO<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub> into commercial gases</li> <li>Animal farm (e.g. to utilise residues of fermentation)</li> </ul>	<ul style="list-style-type: none"> <li>Joint industry logistic and transportation facility</li> <li>Waste management company collecting small(er) volume wastes in PIMSA</li> </ul>



### Impact of synergy opportunities on spatial planning - example



Synergy opportunities	Potential implication on land zoning of PIMSA
<p>Water factory supplying fit-for-purpose quality industry feedwater to PIMSA companies</p>	<ul style="list-style-type: none"> <li>• <u>Allow for location</u> of industry feedwater facility in PIMSA (e.g. Utility Precinct)</li> <li>• <u>Allow for co-location</u> of water intensive industries in close proximity of water facility</li> <li>• <u>Service corridors in PIMSA</u> to allow for potential pipelines for water exchanges between industry feedwater facility, water/energy intensive industries, ocean, WWTP, groundwater access point</li> </ul>

## Assessment of selected sectors against location criteria

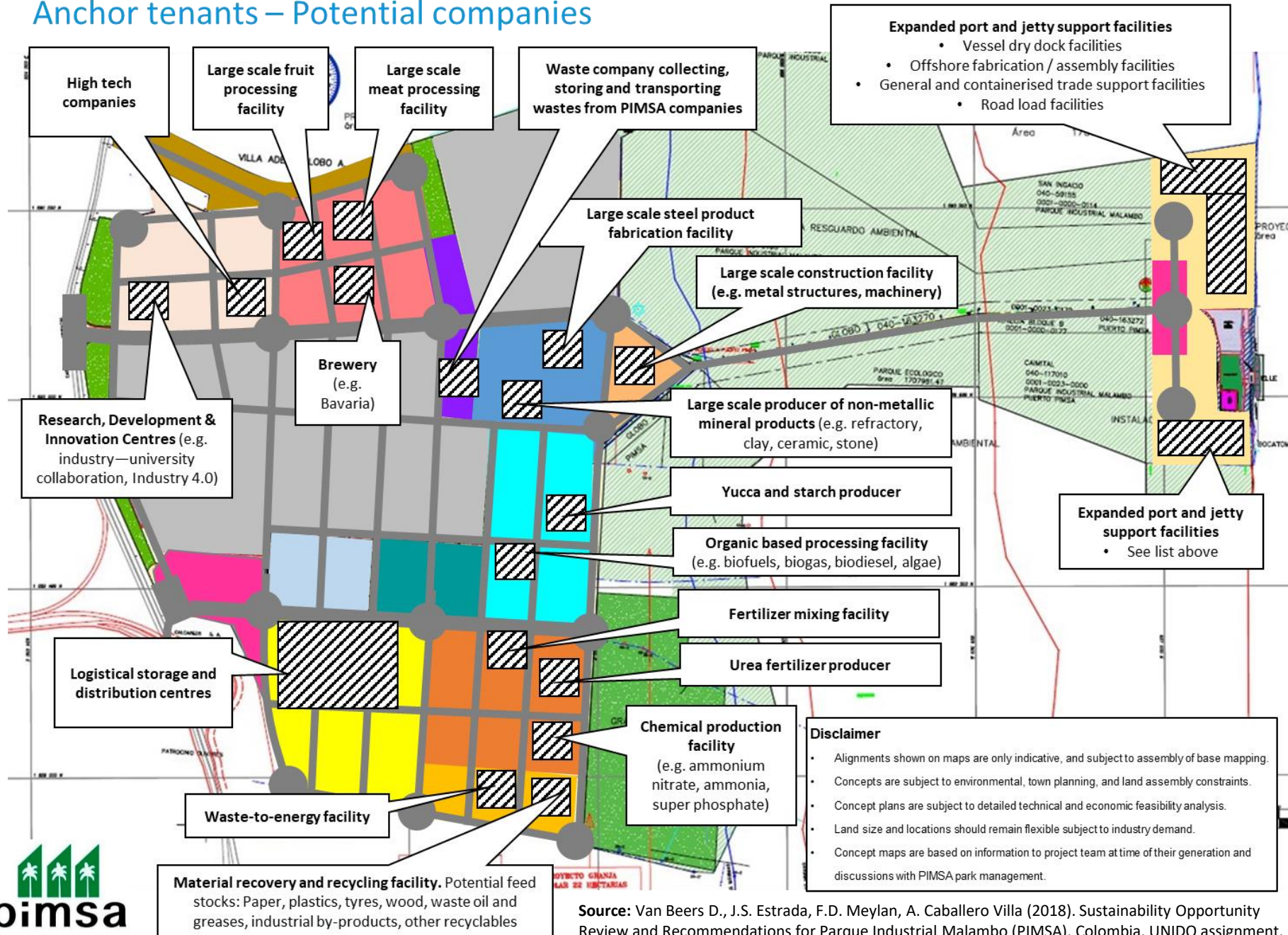
Selected sectors for PIMSA	Location criteria									
	High water use	High electricity use	High use heat, cooling steam, gas	Close access to highway	Access to wide roads	Close access to port	Potential risks and buffer zone	Lot size	Wastes & by-products	Other
Metal & mineral products fabrication	X	X	X		X	X	Noise, air emissions, hazardous materials	≥ 10,000 m <sup>2</sup>	Metal scrap recycling	
Food & beverage processing	X	X	X	X				≥ 2,000 m <sup>2</sup>	Facilities for organic waste, nutrient rich effluent	Away from chemical processing
Logistical companies				X				≥ 2,000 m <sup>2</sup>		High buildings on flat area, own truck patio, close to park entry
Etc										

X = Most likely (X) = Possible



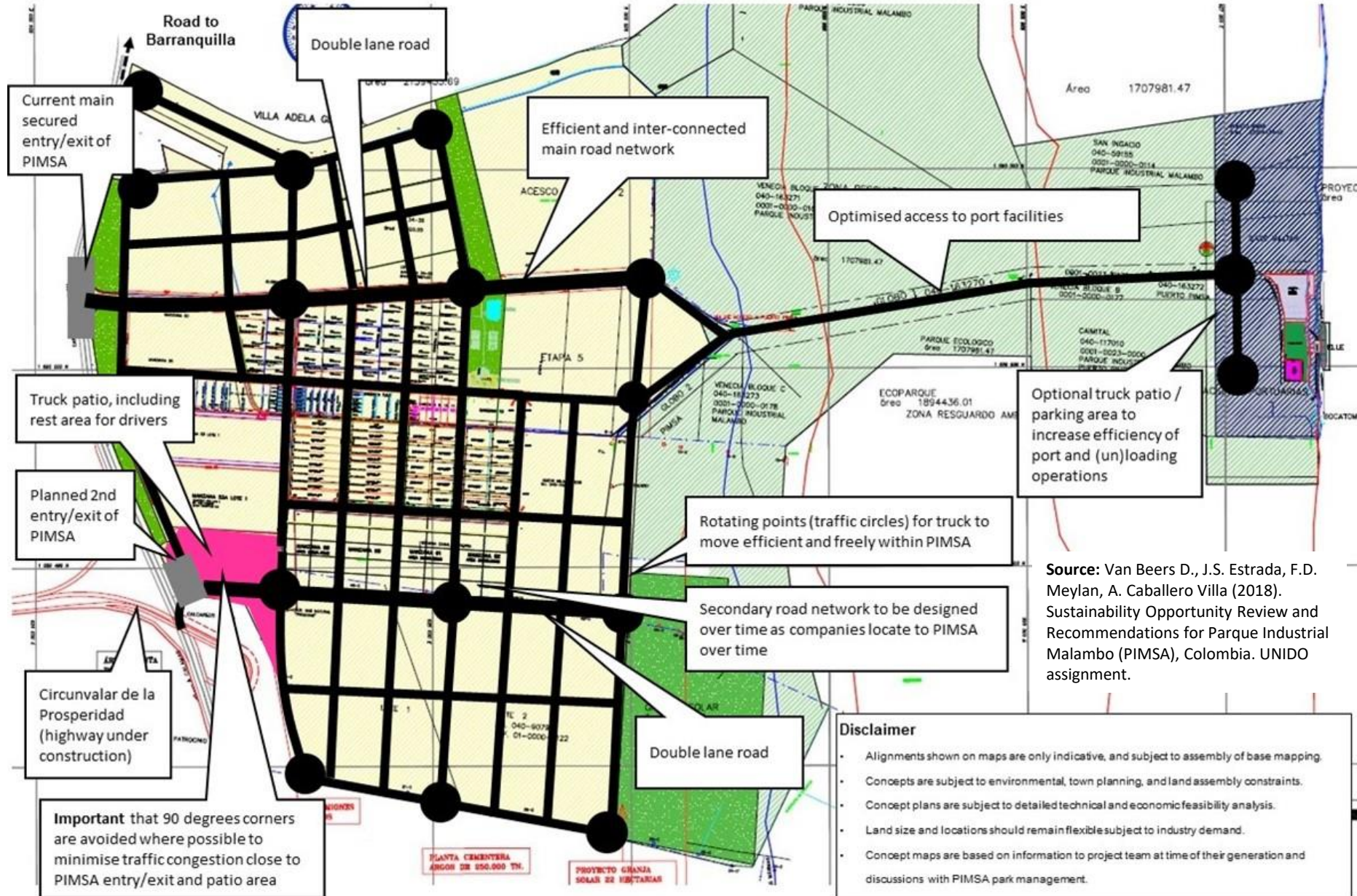
# Step 7: Optimise industrial park concept planning

## Anchor tenants – Potential companies



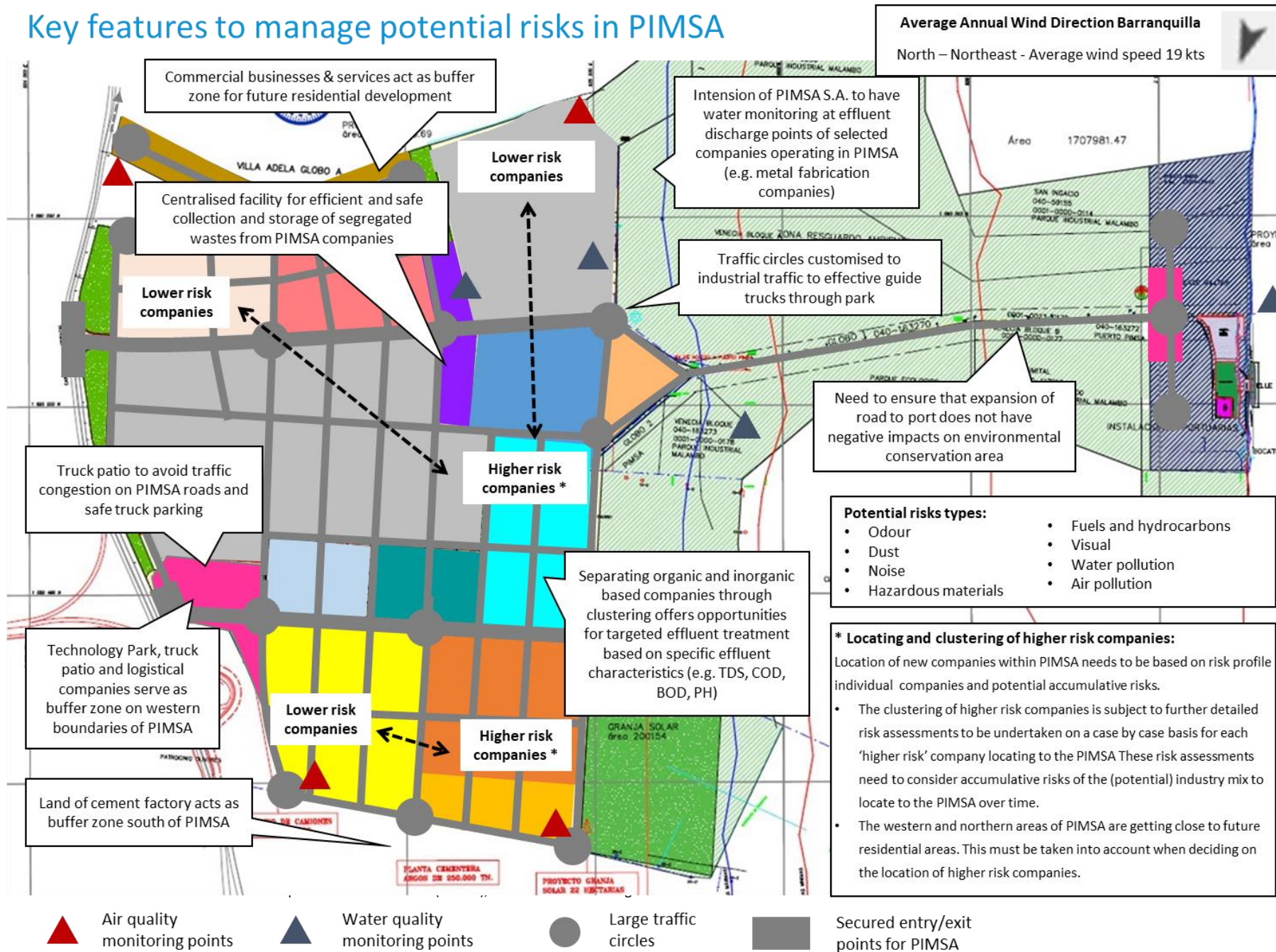
# Step 7: Optimise industrial park concept planning

## Main transportation network in PIMSA



# Step 7: Optimise industrial park concept planning

## Key features to manage potential risks in PIMSA





**Eco-industrial park work with Parque Industrial Malambo is featuring in a leading national economic newspaper**



**Eco-industrial park planning**

**Questions or comments?**

- 1. How can EIP concept planning help the revitalisation of industrial parks in Egypt / your country?**
- 2. What is potential for applying the EIP concept planning approach in Egypt / your country?**

## Acknowledgements

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