



# An International Framework for Eco-Industrial Parks

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# Global context

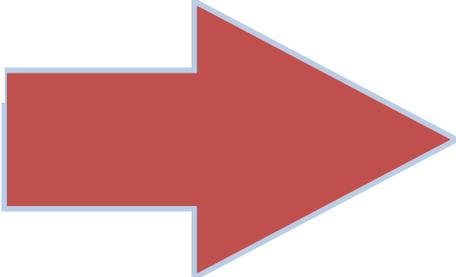


- Industrial parks are key to industrial development and economic growth of developing countries
- They are known by different names and cover industrial areas, industrial zones, industrial investment regions, special economic zones, industrial corridors, etc.
- UNIDO, WBG, and GIZ are supporting governments and industrial park practitioners with the development of Eco Industrial Parks or alike.
- Countries and industrial park stakeholders are increasingly requesting ‘standards’ or benchmarks to ensure that envisioned industrial development is sustainable and inclusive.

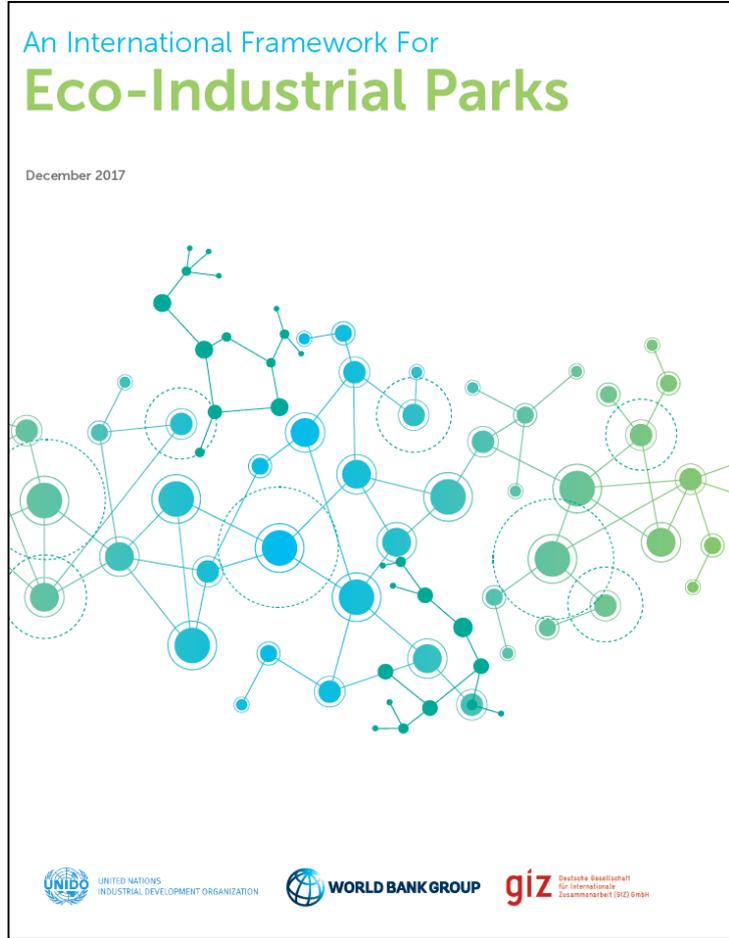
# Eco industrial parks: towards an international framework

## Joint cooperation

## Towards a common framework



Time-line of joint cooperation



# Rationale for a consolidated Framework

- International experience demonstrates that the EIP concept is a valid and sustainable approach to ensure environmental protection and socially fair and responsible business practices in existing and new industrial parks.
- This framework constitutes a natural progression, and builds on the work carried out by UNIDO, WBG, GIZ and the wider international community.
- Having a consolidated EIP assessment framework and performance criteria are important because they can assist stakeholders with the following decisions and actions:
  - Public and Private sectors decision making;
  - Performance improvement;
  - Better allocation and use of resources
  - Marketing advantages

# Aim & Scope of The Framework

## Aim

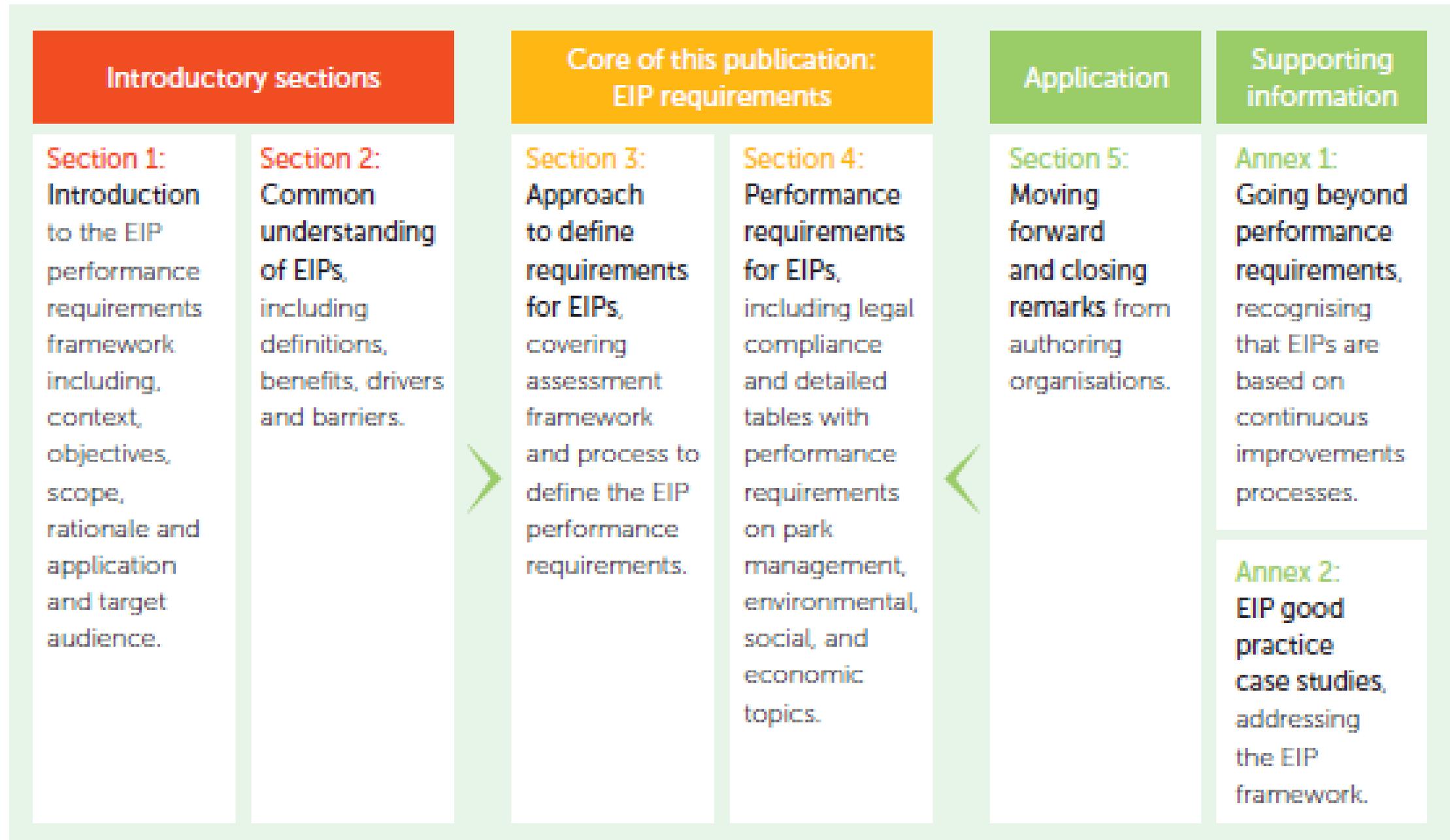
The international framework for EIPs, aims to:

- i. Assist relevant stakeholders in developing and transitioning to EIPs;
- ii. Consistently approach, encourage, and recognize EIPs; and
- iii. Improve the performance, sustainability and inclusiveness of the industrial sector, and move toward an international standard for EIPs.

## Scope

- This framework adopts an inclusive approach, and provides a common understanding of EIPs to assist stakeholders.
- Given the diversity of industrial parks, and the regulatory regimes in which they operate, sensitivity in the application of this framework is required.

# The Publication structure



# A common understanding of EIP's

## Combinations of related EIP terminology used internationally

Eco  
Sustainable  
Low Carbon  
Green  
Circular

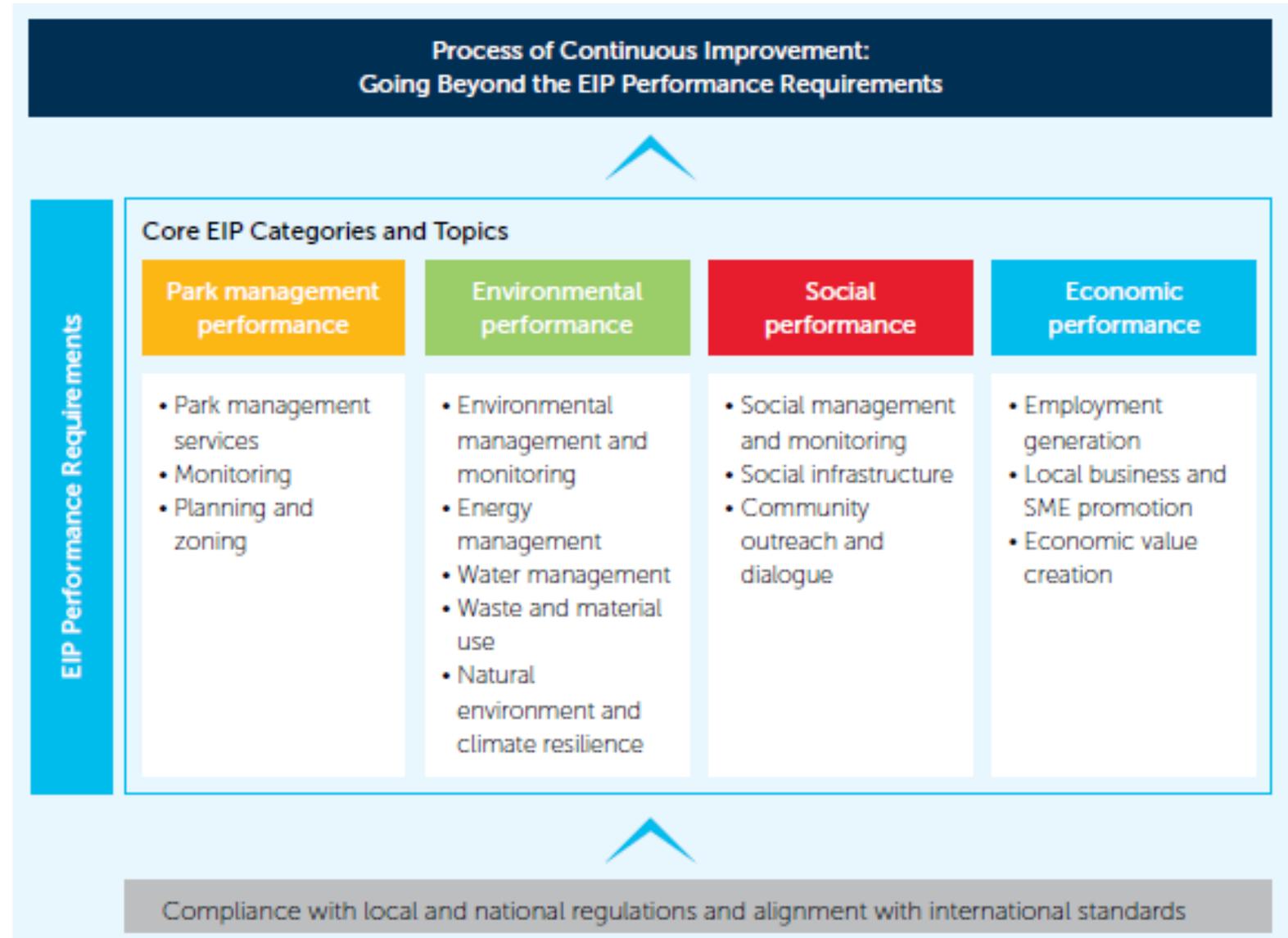


Industrial  
(Special) Economic  
Technological  
Investment  
Manufacturing



Park  
Zone  
Area  
Cluster  
Estate

# EIP Performance requirements



# Regulatory compliance

- **Compliance** with **national and local regulations** is an **absolute requirement** for all industrial parks, regardless of their specific geographic location and characteristics.

National regulations on Environment	National regulations on Social aspects
<ul style="list-style-type: none"><li>• Air emission limits (e.g. SO<sub>x</sub>, NO<sub>x</sub>, particulate matter);</li><li>• Water discharge limits (e.g. heavy metals, COD, BOD, pH);</li><li>• Waste management (e.g. labeling, storage, contaminants, treatment requirements, hazardous waste handling restrictions);</li><li>• Noise limits (e.g. maximum and ambient noise levels in Decibels);</li><li>• Protection of natural environments and biodiversity (e.g. sensitive marine environments, native forests, flora and fauna);</li></ul>	<ul style="list-style-type: none"><li>• Labour laws/regulations (e.g. working hours, child labour);</li><li>• Occupational Health and Safety (e.g. protective clothing and equipment, safety features of machines);</li><li>• Human rights (including women rights);</li><li>• Protection of indigenous people (e.g. Traditional, Tribal and other land-connected people);</li><li>• Anti-corruption (e.g. access to information, accountability, bribery, conflict of interest);</li><li>• Violence and crime prevention (e.g. cybercrimes, theft, violence against women, children, elderly);</li></ul>

# Defining performance requirements for EIPs

- Achieving a balance between meaningful and achievable EIP performance requirements is important for implementation in developing countries and transition economies.
- The EIP framework requirements include both prerequisites and performance requirements
- In setting the topics necessary to constitute an Eco-Industrial Park, careful consideration was given to the following:
  - Going beyond national compliance standards;
  - Addressing key environmental and social requirements;
  - Focus on impact areas that can be controlled or influenced by the park's management;
  - Practicality of topics and feasibility of implementation;
  - Align with competitive requirements

# EIP Park management

Assessment	Topics	Sub-topics
<b>Components and requisites</b>	Park management structure	Distinct park management unit, risk, accident, incident management, stakeholder dialogue, knowledge sharing and facilitation between companies, maintenance management, establishment of companies in park, training
	Spatial planning and zoning	Location of industrial park, Master Plan, land allocation to integrated and shared facilities, service and utility corridors
	Company level resource efficiency and cleaner production	Company level efforts and commitment
	Industrial symbiosis and synergies	Industrial synergies, industry clustering, anchor tenants
	Shared utility services, environment and social infrastructures	Essential infrastructure and utilities, public transport, road network
	Integration with local community and natural environment	Holistic and integrated process

# EIP Economic performance

Assessment	Topics	Sub-topics
<b>Economic performance</b>	Feasibility	Market demand
	Competitiveness	Long-term economic diversity, transformation of markets/sectors/technologies
	Micro, Small, and Medium Enterprises (MSME)	Development of MSMEs, informal sector
	Investment and incentives	Investment ready park for companies, incentives for green and sustainable industries

# EIP Environment performance

Assessment	Topics	Sub-topics
Environmental performance	Management and monitoring systems	Environment management system, energy management system
	Energy	Energy efficiency, renewable energy
	Climate change and greenhouse gases	Carbon intensity, climate change adaptation
	Water	Water supply, water treatment, water circularity
	Materials use	Dangerous and toxic materials, use of locally and responsibly produced materials
	Waste	Waste management, waste generation, waste and by-products reuse
	Natural environment	Native vegetation, reticulation, natural drainage systems, open space
	Built form	Building standards
	Subdivision works	Construction materials, earthworks

# EIP Social performance

Assessment	Topics	Sub-topics
Social performance	Management and monitoring systems	Social data management system, OH&S management system
	Employment	Local jobs, type of employment, housing for workers
	Grievance management	Petition and complaints
	Working and labour conditions	Working hours, trade Unions and NGOs, road and traffic safety, rest and lunch-time areas for workers
	Gender equality	Gender equity, gender needs, entrepreneurship, maternity leave
	Security and crime	Park security
	Social infrastructure	Social infrastructure for workers, social infrastructure for local community
	Local community well-being and outreach	Community services, resettlement of communities
	Culture and heritage	Heritage sites, historical names

# EIP Performance assessment scheme: Testing and lessons learnt from on-going projects





# Hoa Khanh Industrial Zone, Vietnam

- Location: Lien Chieu District in Da Nang City (396 hectares)
- Activities: 168 companies mechanics; assembly; food and seafood processing; forest products processing; construction materials; and electronics.
- **Park management:** functioning monitoring system but not yet centrally-managed services.
- **Economic performance:** 73,215 employees, 99% domestic SME workers.
- **Social performance:** Essential social infrastructure exists in the immediate vicinity; No public or collective transport system

## Environmental performance:

- Operator: Central Branch of Hanoi Urban Environment Company (URENCO).
- Centralized wastewater treatment plant of 5,000 m<sup>3</sup>/day capacity .
- Solid waste: 3,600 tons/month (94 % industrial waste), of which 55% is landfilled.
- RECP options achieved annual savings of US\$ 500,000.
- Annual savings:
  - Electricity savings: 1,034,300 kWh
  - Solid waste avoided: 2,571 tons
  - Water savings: 6,000 m<sup>3</sup>
- Next steps:
  - Collaborating with IFC and the University of Ulsan to identify industrial symbiosis options
  - Application of the Framework



# ALEAP Green Industrial Park, Telangana, India

## Social performance provisions:

- Location: Nandigama Village near Hyderabad of Telangana State in India
- Size: 82.55 acres
- Activities: Has nine zones catering to Garments, General engineering, Paper & packaging, Herbal products, Food products, Electronics, Plastics, Pharma formulations and Solar products.
- 170 women entrepreneurs, about 10,000 employment
- Designed with quality parameters – economic, environment, social, infrastructure, management
- Specially designed architectural elements, solar PV, green spines and laterals, walk ways
- **Safety & security** - fenced, CCTV cameras, access control for entry & exist gates,
- **Women specific** – creche, health centre, dormitories/rest houses, toilets, training centre
- **Amenities** – drinking water, food kiosks, canteens, bank, ATM,
- **Transport** – shuttles for internal and external connectivity, provisions for truck drivers
- **Recreational and socio-cultural infrastructure:** sports fields, amphitheater/auditorium, landmark area, green/landscaped leisure zones, art/sculptures etc.



# Turkey Green Organized Industrial Zones

- Turkey has around 300 organized industrial zones of different type (mixed use, specialized, private, etc.)
- In 2015, Government approached WBG for a comprehensive design of a national EIP framework to spur productivity and sustainability
- Pilot phase included 4 zones for technical analysis (Bursa, Izmir, Antalya, Ankara)
- Project has finalized technical analysis
  - Potential annual cost savings: over \$95.
  - Estimated capital investment: \$350M,
  - Payback period of only 3.7 years.
- Next step in implementing green OIZ framework and scaling investments.

## Economic performance focus:

- Efforts underway on ensuring economic provisions
- Turkish zones model focused on private operations model
- Project put extra emphasis to ensure revenue implications of OIZ framework
- Certain indicators Turkey performs well (eg. local employment, skills development programs). Fall short on linkages to local companies.
- Areas where revenue could be generated from EIP activities are:
  - green infrastructure services (recycled/reclaimed water, steam and waste heat, renewable energy, waste management etc.),
  - resource efficiency consultancy (water efficiency assessments, energy efficiency audits etc.) and related research/laboratory facilities,
  - industrial symbiosis networking between tenant firms,
  - tenant resource matching based on their inputs/outputs and material/feedstock needs



# Egypt



- Egypt is a priority country for UNIDO, WBG and GiZ and in particular for industrial parks development
- National counterparts: Ministry of Trade & Industry, Ministry of Investments & International Cooperation, Ministry of Environment, Industrial Development Authority, General Authority for Investments and Free Zones, Federation of Egyptian Industries, Egypt NCPC, etc.
- UNIDO:
  - Agro-industrial park in Qaloubiya
  - Plastic complex in Merghem
  - Global RECP Program
  - Global EIP program
- UNIDO, WBG and GiZ will provide a coordinated support to Government of Egypt to operationalize the national strategy related to industrial development

# Concluding remarks and future prospects

- Eco-Industrial Parks development offers an important and integrated approach to drive and scale up efforts by the private and public sectors for inclusive and sustainable industrial development.
- UNIDO, the World Bank Group, and GIZ welcome the opportunity to discuss options and available support on EIPs with interested stakeholders. They are committed to using performance requirements in their projects and programs.
- The development of internationally-accepted standards for EIPs is a long-term, multi-stakeholder process. The authoring organizations hope that the framework provided here can serve as an important step in developing an international standard for EIPs.
- Given the importance and complexity of this topic, these three organizations intend to refine this framework based on further pilot testing and on-going stakeholder consultations.



# Thank you

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UNIDO: Smail Alhilali, Email: [s.alhilali@unido.org](mailto:s.alhilali@unido.org)

WBG: Etienne Kechichian: [ekechichian@ifc.org](mailto:ekechichian@ifc.org)

GIZ: Roger Wolf, Email: [roger.wolf@giz.de](mailto:roger.wolf@giz.de)



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