

INTERNATIONAL EXPERIENCE IN EIP TRANSITION: CASE STUDIES FROM GEIPP

15 September 2022, Ho Chi Minh City

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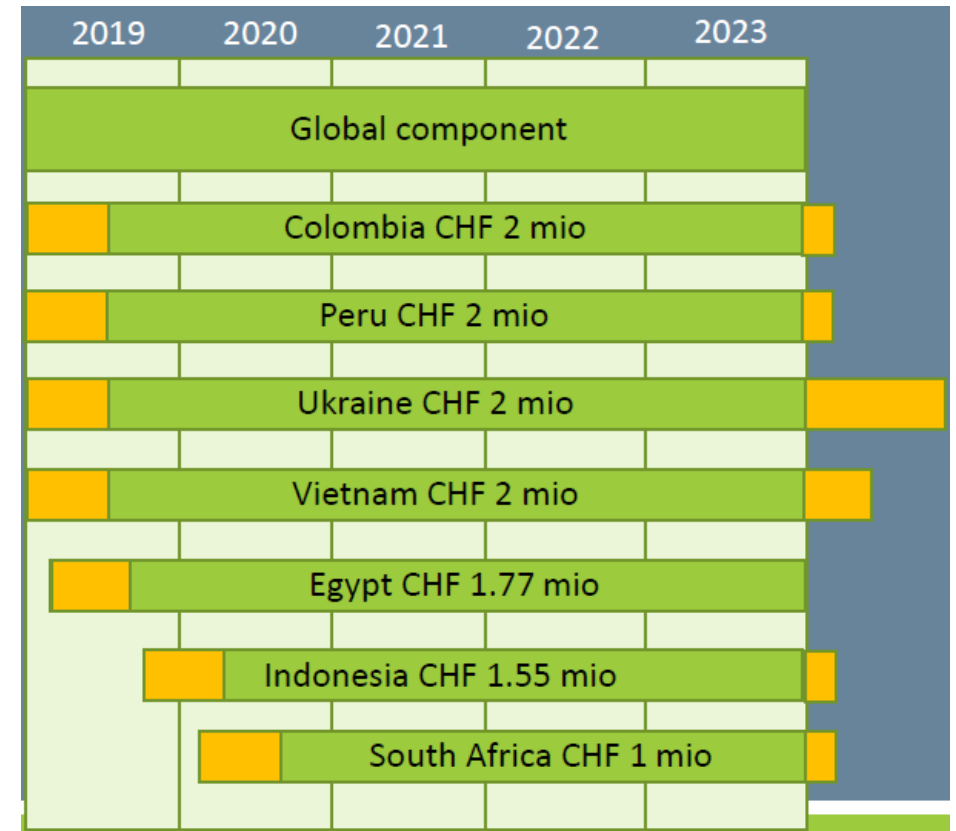
- Several independent country projects, with a similar structure
- Different world regions and stage of development of industrial parks
- Different project size
- Different periods of implementation

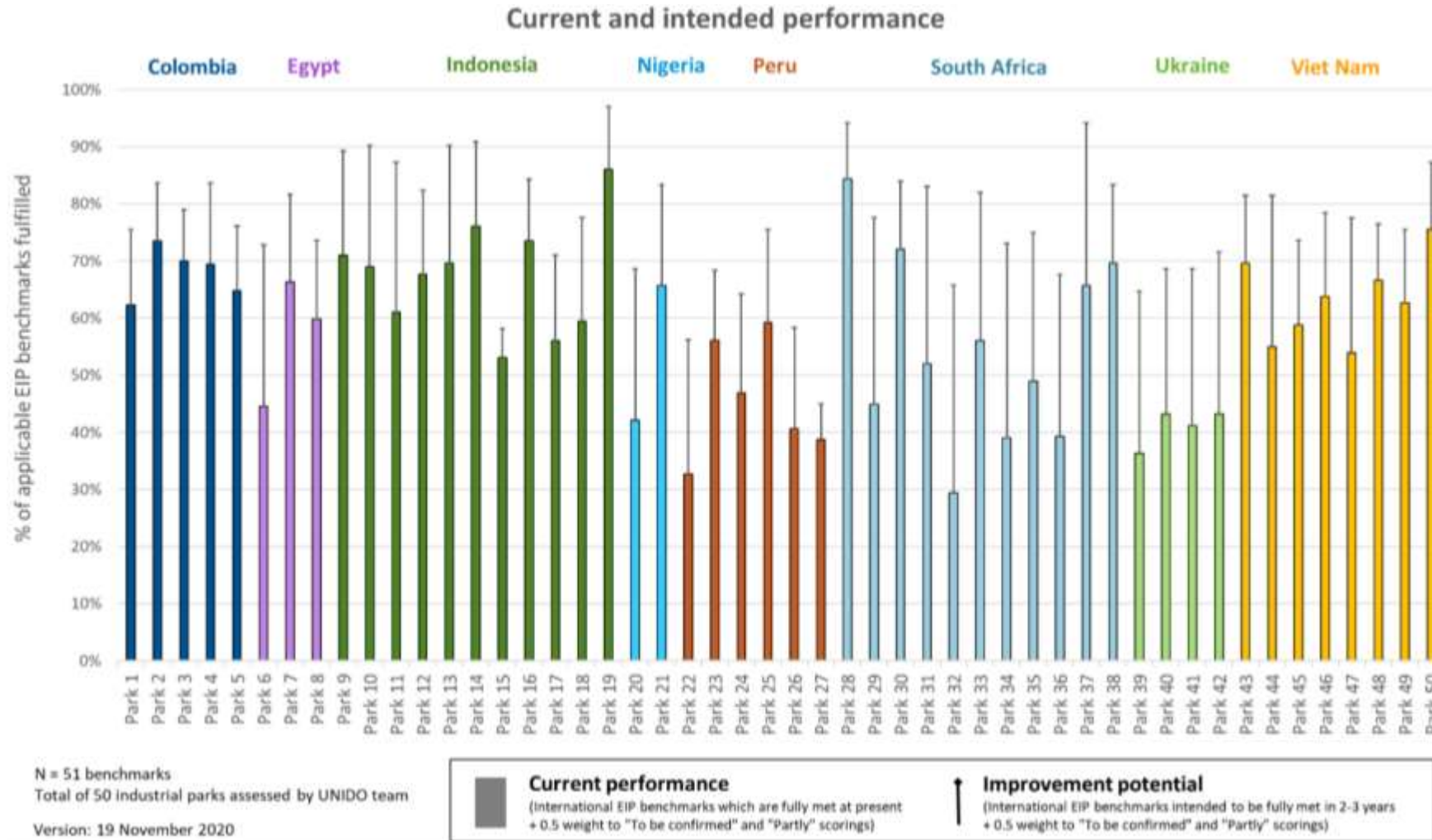


UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

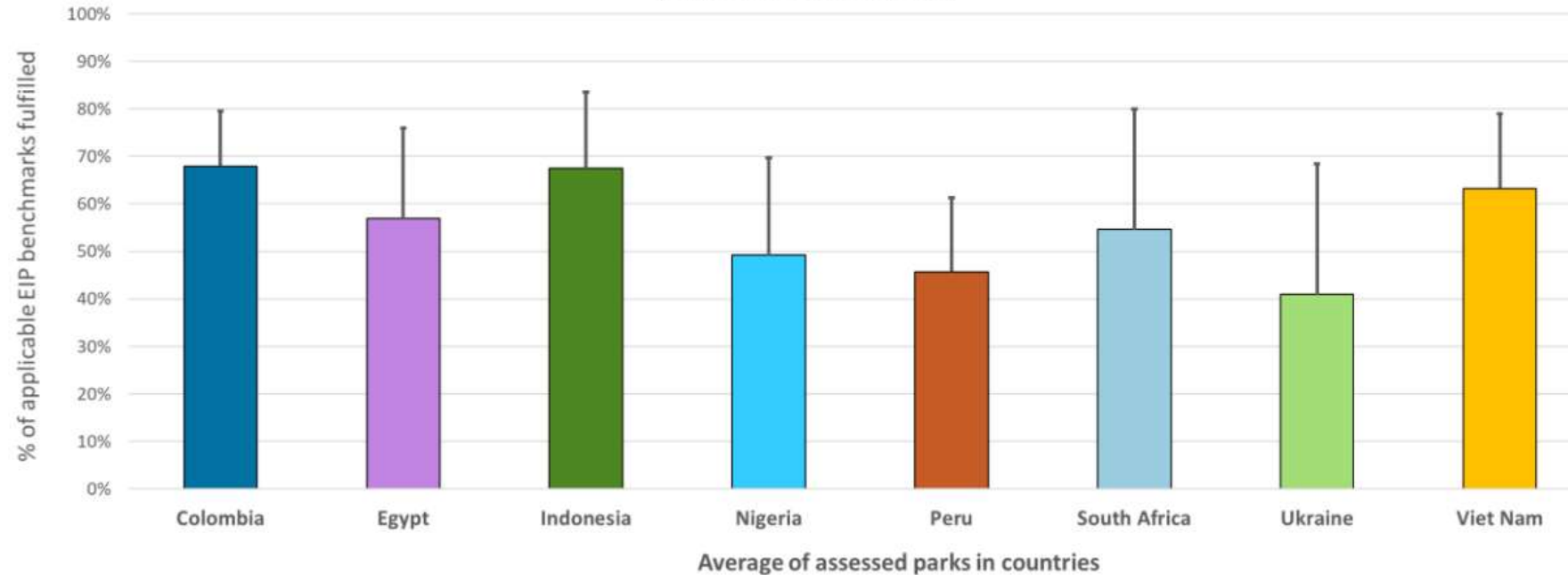


Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra



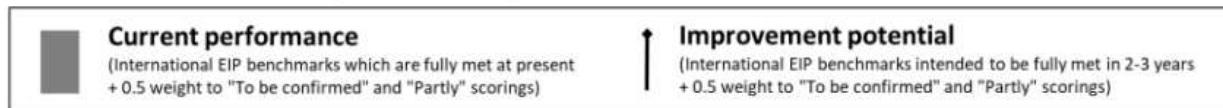


Current and intended performance against International EIP Framework
(UNIDO, WBG and GIZ, 2017)



N = 51 benchmarks
Total of 50 industrial parks assessed by UNIDO team

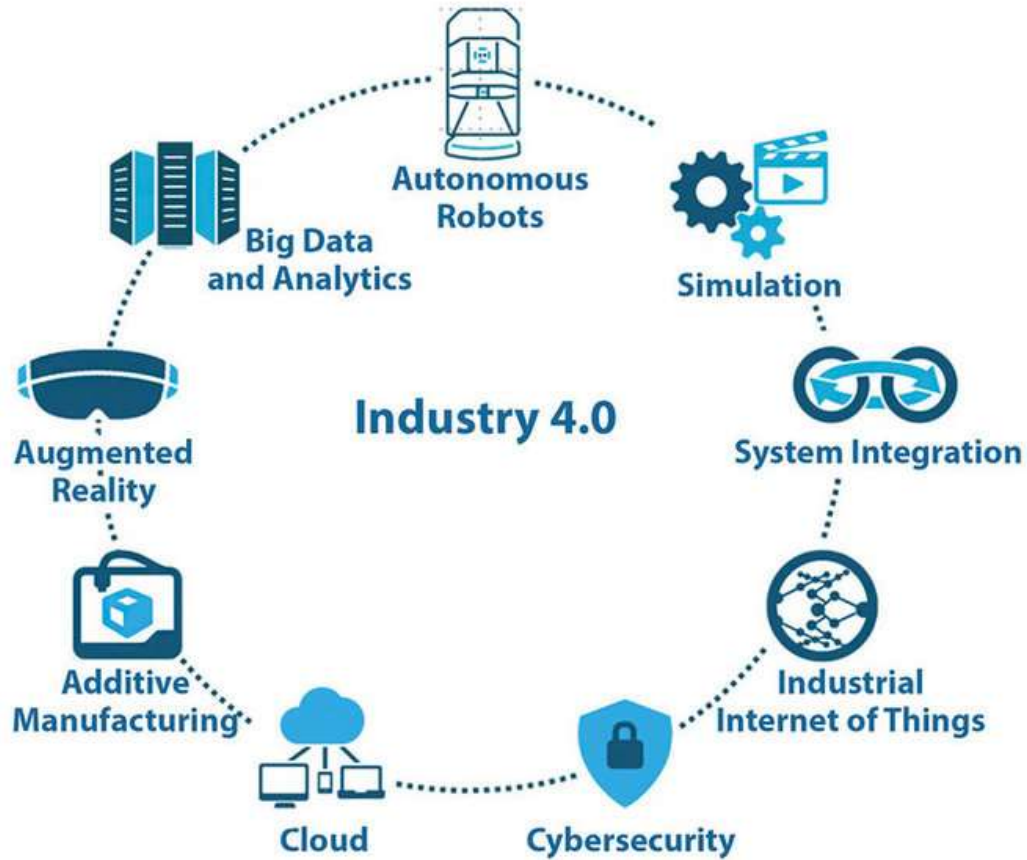
Version: 19 November 2020



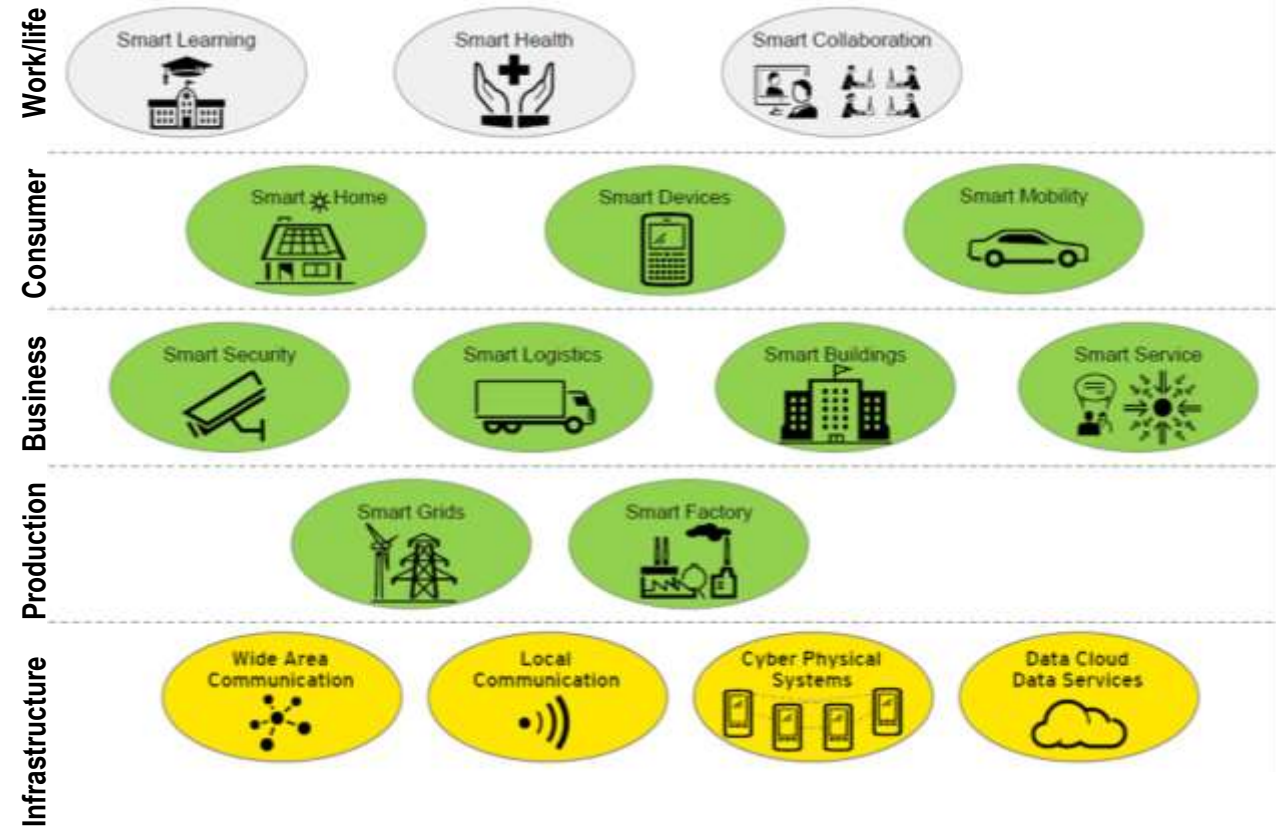
Global EcoIndustrial Parks Programme (GEIPP)				
Environmental benefits				
		2020 Values	2021 values	2022 values
1	Energy efficiency Kilowatt hours saved through energy efficiency	0	1 982 705	8 409 532
2	Renewable Energy additionally produced in kilowatt hours	0	0	621 000
3	Water efficiency Cubik meters water saved	0	21 775	26 556
4	Waste reuse and recycling Metric ton material saved	0	12	12
5	Climate change benefits tCO2 Eq. / year	0	1 243	4 889
Social performance and capacity building				
1	Number of SME-staff trained (tenant companies)	168	540	1 176
2	Number of industrial park management-staff trained	100	466	807
3	Number of involved staff from relevant governmental agencies	162	972	1 360
4	Number of trained service providers	30	618	874
5	Number of EIPs activities by enterprises	0	14	18
Economic Performance				
1	Number of initiatives of provider of business services.	6	223	292
2	Number of actual investments in RECP/EIP indentified options	0	11	22
3	Amount of actual investments on RECP/EIP identified options (USD)	0	316 800	1 417 124
4	Amount of actual investments on RECP/EIP related measures via co-financing	0	0	0
5	Total green Investments additionally triggered in USD	0	316 800	1 417 124
Policy				
1	Conducive policies and regulations implemented and enforced	1	5	6

June 2022

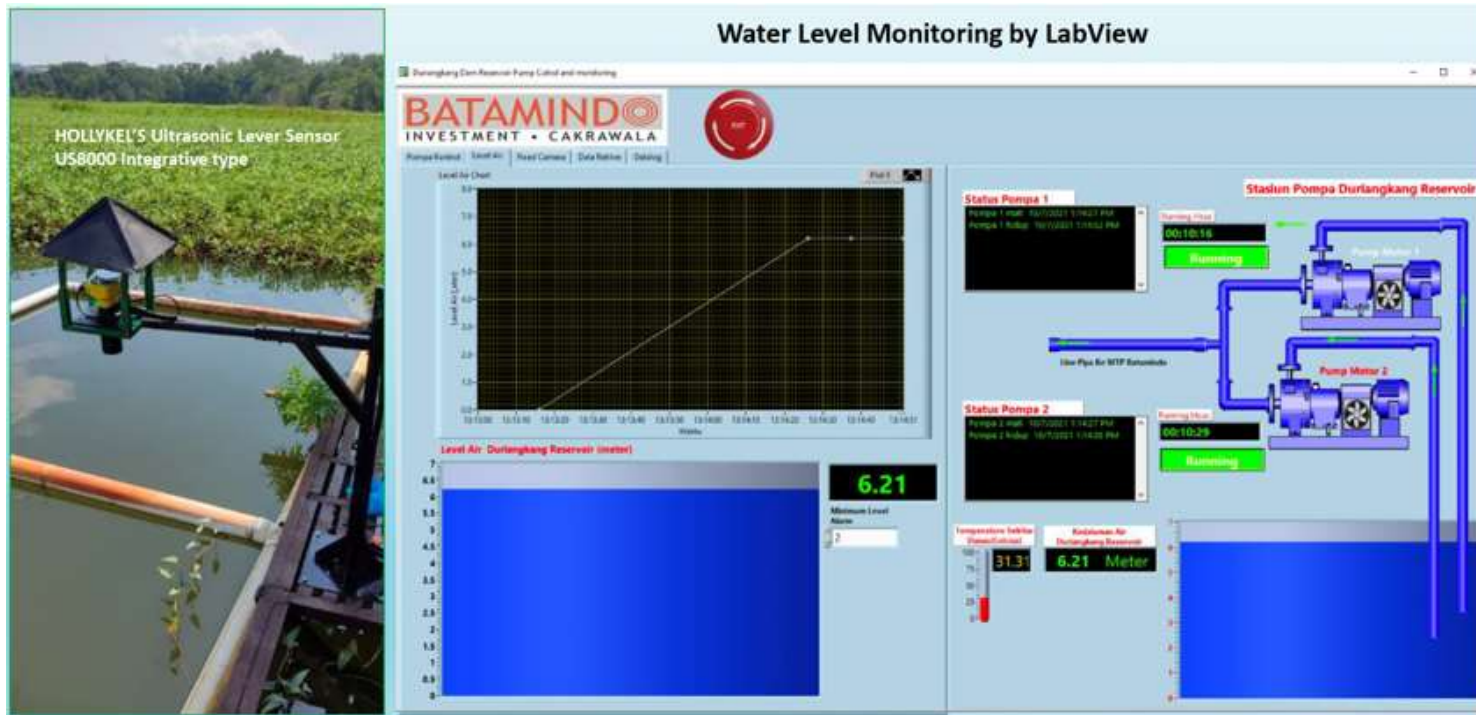
NEW TECHNOLOGIES - ENABLERS FOR INDUSTRY 4.0



IMPACT AREAS



Installed remote monitoring system including CCTV for the water reservoir (DAM Duriangkang) to maintain the water level in the range (1.2 – 6.5 m)



- *Cyber-physical system integration*
- *Smart devices*
- *Internet of things*
- *Smart security*

Solar roof top power plant (472 KW Peak) installed and synchronized with captive power plant



Smart water metering and distribution

Before



After



- *Cyber-physical system integration*
- *Smart devices*



Installation of online monitoring system for effluent of the wastewater treatment plant.

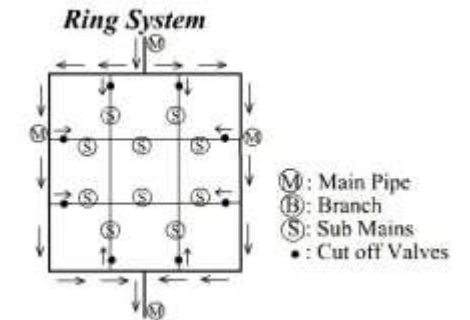
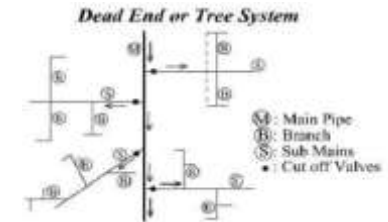
Installation of "Ring System" for water supply in the industrial park:

Before

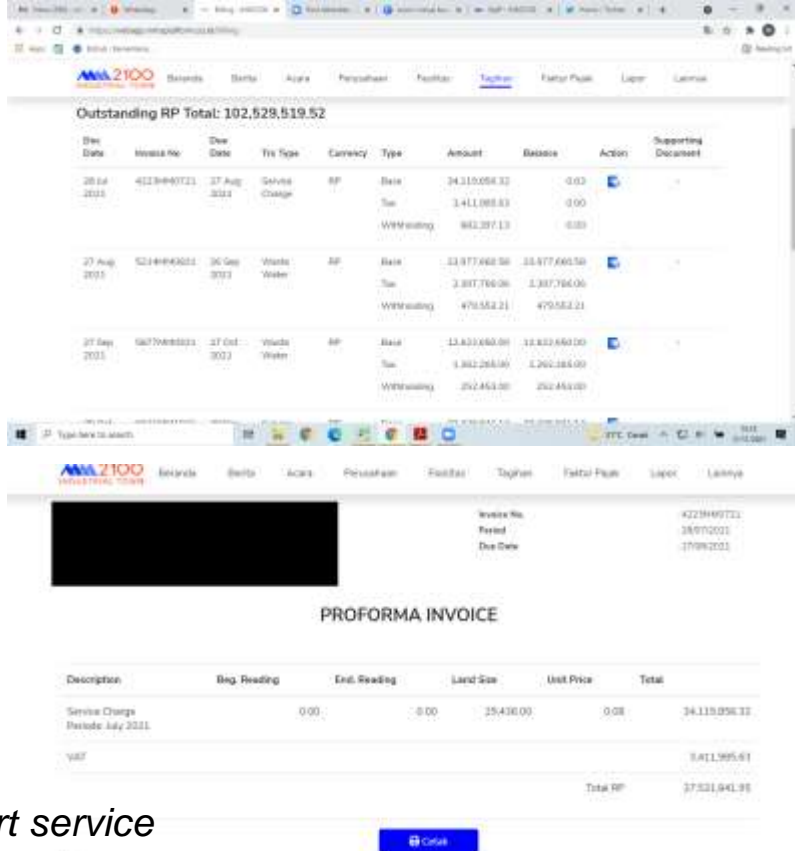
Before, for every water shut down/leakage/disruption the water pipe within one zone/region will require to be completely shutdown (within one region/zones: in average there are 7 zones, with each has 10-20 tenants), with ring systems now a complete shutdown can be avoided.

After

Easy detection of leaks and improves reliability of water supply to tenants by avoiding the downtime.



Digital invoicing system through mmweb (<https://webapp.mmsplatform.co.id/dashboard>)



Outstanding RP Total: 102,528,519.52

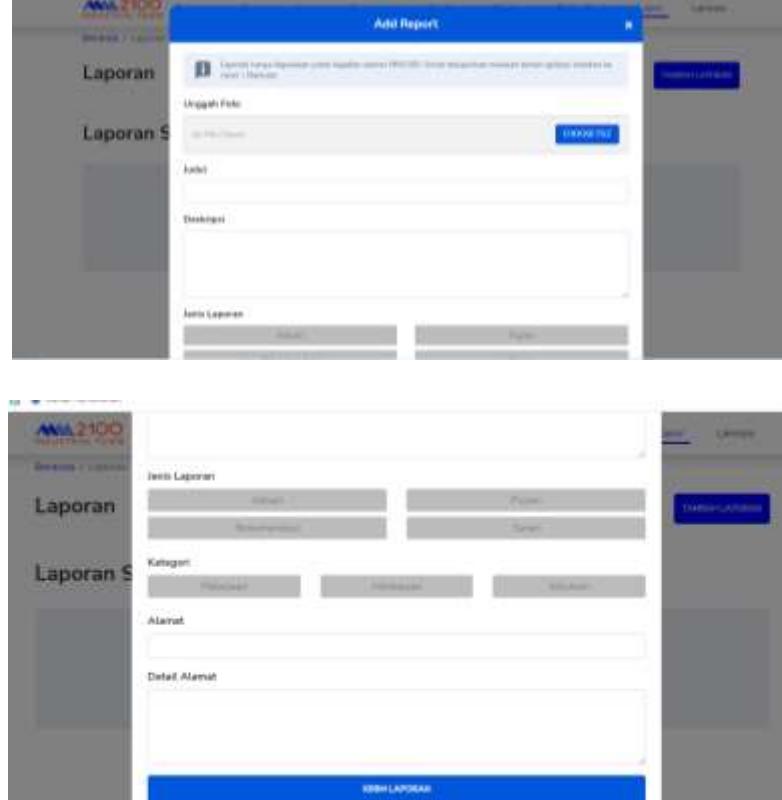
Doc Date	Invoice No	Due Date	Tax Type	Currency	Type	Amount	Balance	Action	Supporting Document
28 Jul 2023	4223440721	27 Aug 2023	Service Charge	RP	Base	34,115,056.32	-0.00		
					Tax	3,411,088.83	-0.00		
					Withholding	842,397.13	-0.00		
27 Aug 2023	5234440021	30 Sep 2023	Water	RP	Base	21,977,662.50	21,977,662.50		
					Tax	2,307,766.00	2,307,766.00		
					Withholding	479,582.21	479,582.21		
27 Aug 2023	5677440021	27 Oct 2023	Water	RP	Base	11,822,660.00	11,822,660.00		
					Tax	1,362,288.00	1,362,288.00		
					Withholding	252,453.00	252,453.00		

PROFORMA INVOICE

Description	Req. Reading	End. Reading	Land Size	Unit Price	Total
Service Charge Period: July 2023	0.00	0.00	25.436.00	0.08	34,115,056.32
					3,411,088.83
					842,397.13
					38,368,542.28
					37,521,941.95

• Smart service

Setting MM2100 app for information and complaint



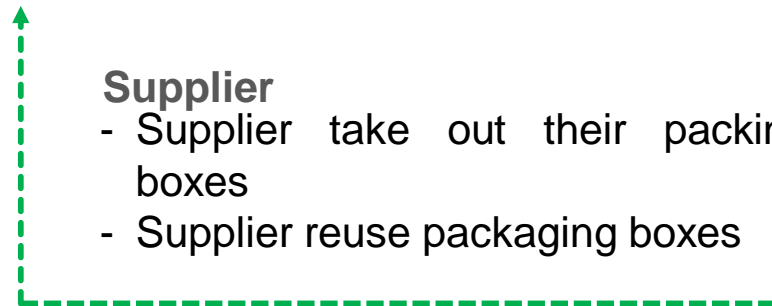
The image shows two screenshots of the MM2100 mobile application's 'Add Report' form. The top screenshot shows the form with fields for 'Unggah Foto', 'Jenis Laporan', 'Deskripsi', and 'Jenis Laporan' with buttons for 'Ajukan' and 'Pilih'. The bottom screenshot shows the 'Jenis Laporan' dropdown menu with options like 'Perbaikan', 'Pajak', 'Sewa', 'Kategori', 'Alamat', and 'Detail Alamat'.

Schneider Electric, Batamindo Industrial Park, Indonesia (Tenant company of Batamindo Industrial Park): Return Packaging Boxes



Supplier

- Supplier send material use carton box



Supplier

- Supplier take out their packing boxes
- Supplier reuse packaging boxes



Segregate box based on supplier



Factory

- Factory receive material from supplier
- Factory distribute material in packaging boxes to production line

- **EXISTING POLICIES AS A BARRIER TO EIP IMPLEMENTATION**
 - BARRIERS TO THE PROMOTION OF CIRCULAR ECONOMIES
 - OTHER BARRIERS CREATED BY EXISTING POLICIES
- **ABSENCE OF POLICIES AS A BARRIER TO EIP IMPLEMENTATION**
 - BARRIERS FROM AN IMPROPER IMPLEMENTATION OF THE PARK'S MASTER PLAN
 - BARRIERS FROM A FAILURE TO PASS LAWS' IMPLEMENTING REGULATIONS
 - OTHER BARRIERS CREATED BY THE ABSENCE OF POLICIES
- **SUPPORTIVE POLICIES TO HELP EIP IMPLEMENTATION**



Industrial symbiosis can involve the following:

- » One factory selling its wastewater to another factory, which, after the necessary cleaning (if any), will reuse the water in its processes or as a cooling or heating medium.
- » One factory selling its solid waste to another factory, which, after some processing (if any), will use the waste as a raw material in its production processes.
- » One factory selling its waste energy (often in the form of low-grade heat or hot water) to another factory, which will use it as a source of energy for its processes.

Wastewater

Description/Requirement	Prerequisites/Evidence – Performance Indicator
Water-... re-use plans are important to reducing total water consumption and manage water use. ... The park and firms should have systems in place to increase water ... reuse.	Park management entity has operational plans to increase water reuse in next five years. This would be achieved by ... reuse of industrial effluents ...
The industrial park has provisions in place to appropriately ... recycle and reuse treated wastewater.
The park and firms have systems in place to in-crease water ... reuse.	Proportion of total industrial wastewater from firms in the park that is reused responsibly within or outside the industrial park.

Indonesia has enacted laws which prohibit the reuse of industrial wastewater for any other use. The lawmakers are primarily concerned with the reuse of industrial wastewater in agriculture – soil contamination from the pollutants in the industrial wastewater – or in homes – health and safety concerns for the consumer. But the prohibition is a blanket one, covering all possible reuses!



There is a relatively simple way of removing this barrier. The original law can be amended to say that the reuse of industrial wastewater is prohibited unless and until it meets certain quality criteria; these quality criteria are then published in later government regulations.

Solid waste (non-hazardous)

Description/Requirement	Prerequisites/Evidence – Performance Indicator
Waste generated in the production process is recovered, as far as possible, through sorting, cleaning, conditioning etc., so that it can be used as raw material for other firms in and outside of the park.	...
A waste management plan with a program/ mechanism in place to promote and encourage reuse and recycling of materials by firms in the park (for example, raw materials for process and non-process applications)	Proportion of non-hazardous, solid industrial waste generated by firms that is reused-recycled by other firms, neighbouring communities, or municipalities.
The park management and firms are obliged to consider circular economy principles and practices (e.g. ... making extensive use of secondary/recycled materials generated in the park).	...
Circular economy practices (e.g., Industrial Symbiosis Networks, Exchange Platforms for waste and secondary raw materials, for reuse and recycling, etc.) are in place and used by firms. ...	Proportion of manufacturing firms adopting circular economy practices, including engagement in Industrial Symbiosis Networks in the park; or actively exchanging secondary raw materials, or waste, ...

In **Colombia**, the rules establishing the Free Trade Zones (FTZs) are a barrier to implementing industrial symbiosis projects where the waste is generated in the zone and is being sent to a reuser located outside the zone, or vice versa. FTZs are parks where raw materials or parts are imported from another jurisdiction. These raw materials or parts are used to manufacture a product, which is then re-exported to another jurisdiction. All this taking place under specific customs regulations where neither the imported materials/parts nor the final products are subject to customs duties.



It may be impossible to allow the entry of a waste from the rest of the economy into the FTZ, but possible to allow a waste to exit the FTZ and to enter the rest of the economy.

The rules establishing FTZs would need to create a process whereby a generator of a waste in the FTZ can request special permission to send the waste to a reuser outside the FTZ, with the provision that the generator would need to pay customs duties on that transaction.

Barrier caused by Environmental Impact Assessment requirements



Description/ Requirement	Prerequisites/ Evidence – Performance Indicator
The industrial park demonstrates an understanding of the potential impact of park activities on priority ecosystem services in and around the vicinity of the park, and takes needed actions.	The park management entity has a plan in place to assess operational environmental impacts, and aims to limit the impact on prioritised local ecosystem services.

The critical issue is if only the park management entity should carry out EIAs for the park as a whole, or if instead each new tenant firm should also carry out EIAs for their individual business operations when they first locate in the park. Which option is chosen makes a considerable difference in the overall costs of carrying out EIAs. In the first case, since few if any of the tenant firms are in place at the beginning of a park’s life – when the EIA is carried out – park management entities base their EIA on predictions of what type of tenant firms will be entering the park. Whenever new tenant firms arrive (or old tenant firms leave), park management entities submit a formal update of the park’s EIA to the relevant authorities. The cost of this update is low. This is the procedure used, for instance, in **Indonesia** and **South Africa**. In **Peru**, each new tenant firm also has to bear the costs of undertaking an EIA specific to their business. In addition to the additional costs this approach imposes, having a series of individual EIAs would make it difficult for the authorities to ensure a coordinated response to the park’s overall environmental impacts.

In countries where the latter approach is used in their EIA laws, it is suggested that park management entities, or the investors in parks, initiate a dialogue with the government to modify these laws (or their implementing regulations) to adopt the former approach



Insufficient land for common areas in and adjoining the park

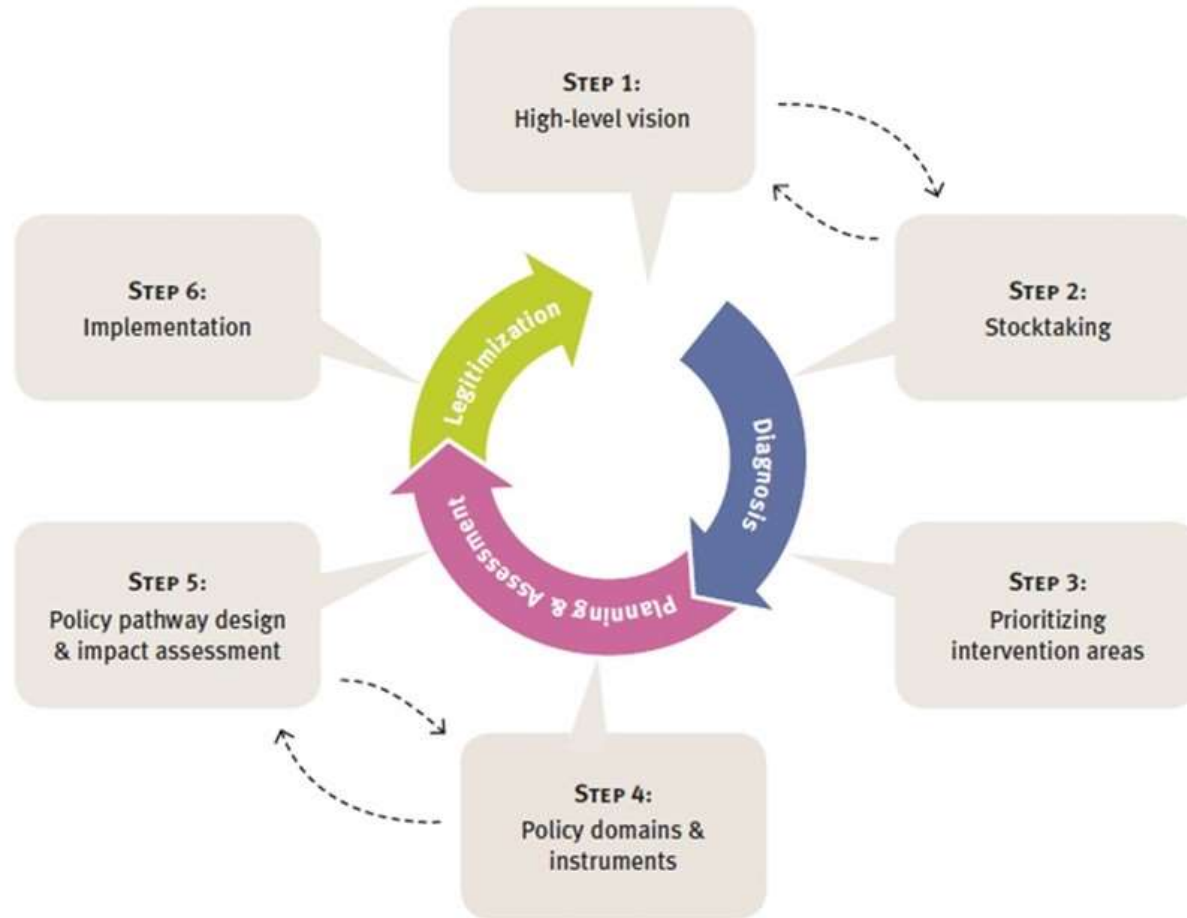
Description/ Requirement	Prerequisites/ Evidence – Performance Indicator
A master plan for the EIP is developed by park developers and is applicable to both planning and operations by park managers.	A Master Plan (or equivalent planning document) for any new and existing industrial park has been developed ..., including the following core elements: <ul style="list-style-type: none"> - ... essential and efficient infrastructure ..., utilities, transportation network; ... buffer zone around the park; ... - ...
The industrial park demonstrates an understanding of the potential impact of park activities on priority ecosystem services in and around the vicinity of the park, and takes needed actions.	The park management implements measures to protect biodiversity, and protects or creates natural/recreational areas in ... the park.

An issue flagged in **Indonesia** and **South Africa** is that, if industrial parks are not allocated sufficient land to house the common infrastructure, the buffer zones, and the zones for natural/recreational areas which an EIP needs, they have a natural barrier to becoming an EIP. It could be particularly problematic for existing IPs, which were established in the past.

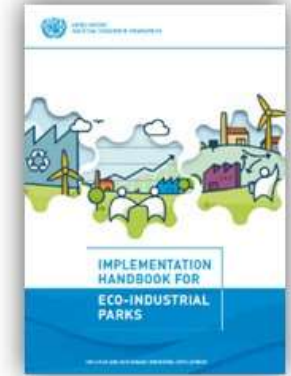
Careful consideration needs to be given at the planning stage of a park to ensure that the relevant government authorities allocate sufficient land to new parks, including the possibility of a future expansion of the park.



POLICY CYCLE (FOR EIPS)



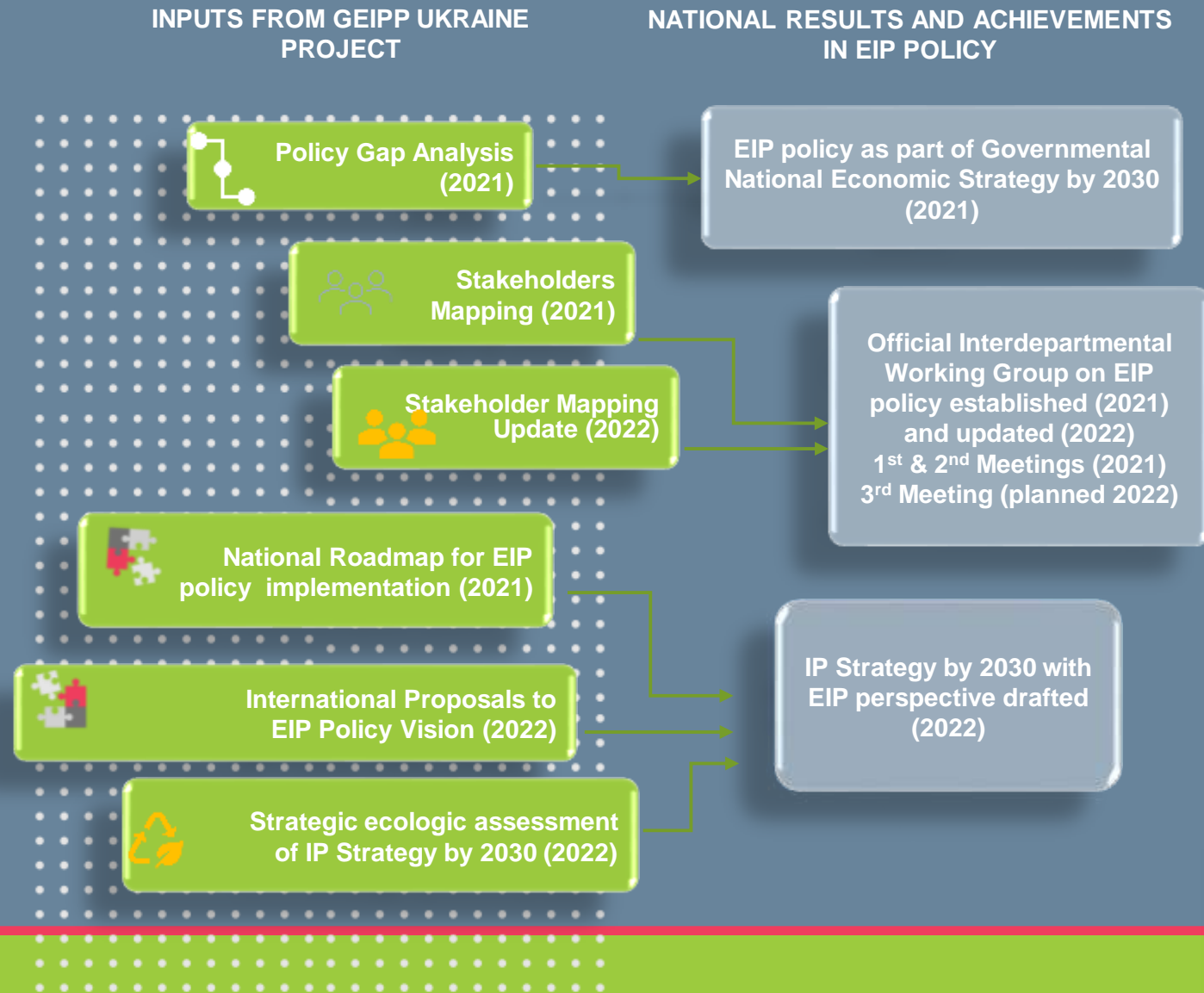
Source: UNIDO (2016), PAGE (2016)



Source: UNIDO (2017). Implementation Handbook for Eco-Industrial Parks.

www.unido.org/sites/default/files/files/2019-10/UNIDO%20Eco-Industrial%20Park%20Handbook_English.pdf.

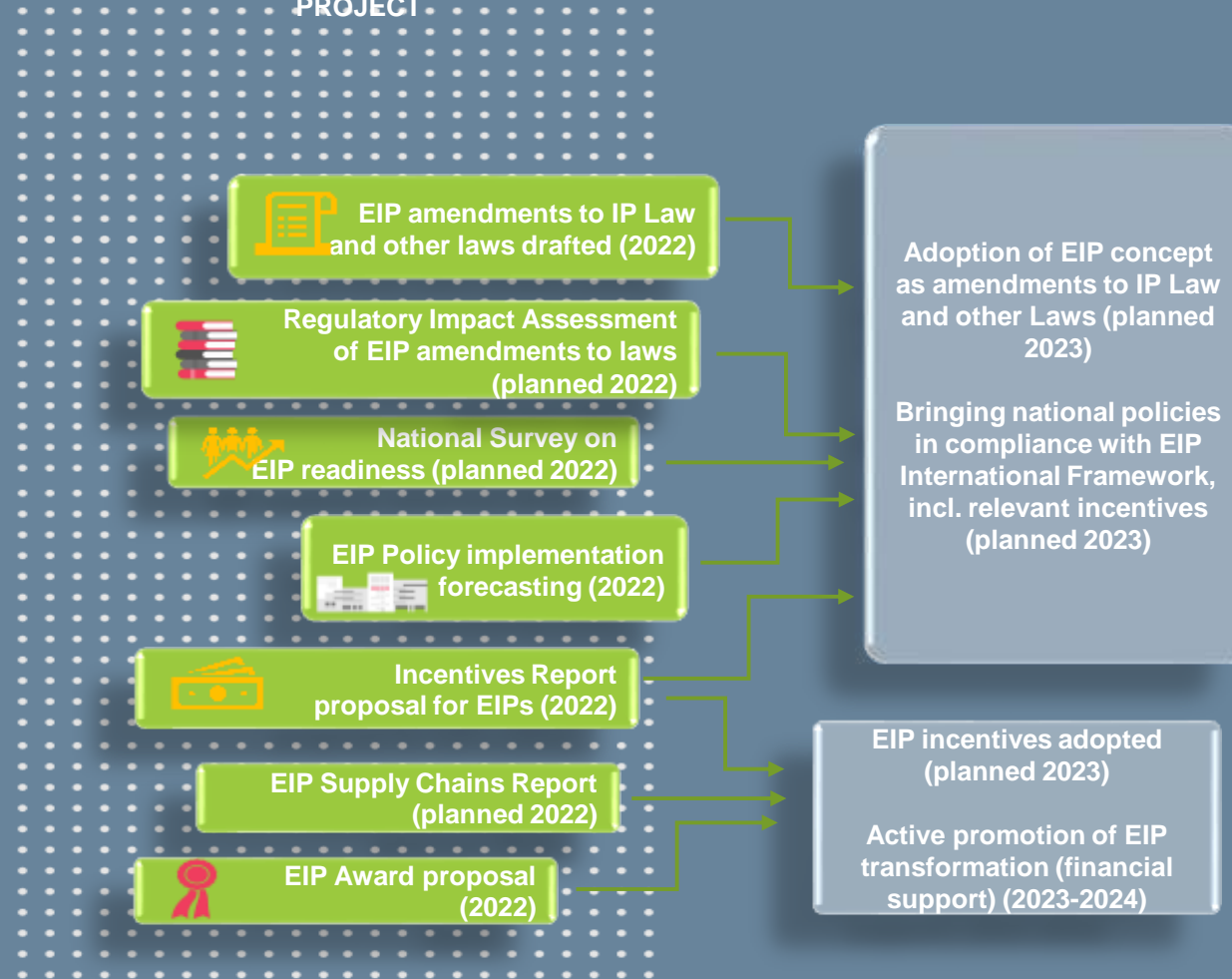
CASE STUDY: EIP POLICY DEVELOPMENT IN UKRAINE (1/2)

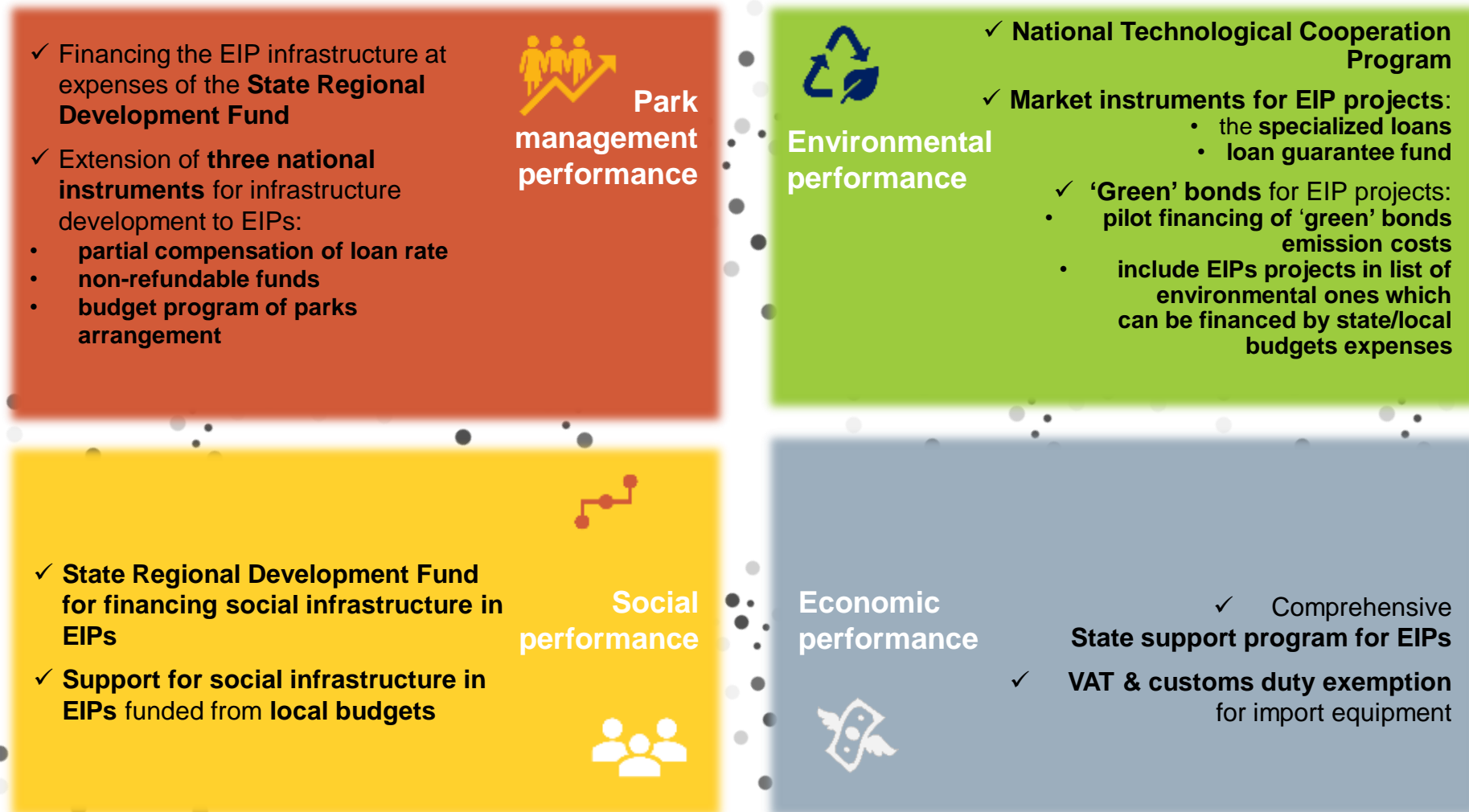


CASE STUDY: EIP POLICY DEVELOPMENT IN UKRAINE (2/2)

INPUTS FROM GEIPP UKRAINE PROJECT

NATIONAL RESULTS AND ACHIEVEMENTS IN EIP POLICY







Determining EIP
criteria and
compliance with
them



Developing
support
programs



Implement EIP
model by
amending legal &
regulatory
framework



Developing tools
(incentives) to
stimulate and
support EIPs



Including EIPs in the
curriculum of
higher educational
institutions

EIP CONCEPT in DRAFT NATIONAL ROADMAP 2022-2024 of IP STRATEGY



Establishment &
operation of resources
exchange platforms



Identifying the
most promising
economic
activities for
EIPs



Implementing
EIP
pilot project



- EIP government policies need to be customised to local situation
 - No “one-size-fits-all” approach
- Governmental eco-industrial strategies are often incorporated into various policies
 - Not necessarily captured in one policy
- Apply collaborative approaches
 - Industry organizations, companies, government
- Keep flexibility into industrial parks and policies
 - Need for market driven approaches
- Need for proactive and facilitating management agencies for industrial park
 - To encourage industry interactions
- Key roles of government
 - Law enforcement
 - Provide incentives and enabling conditions
 - Strategic planning of industrial parks
 - Promotion of multi-stakeholder dialogues



THANK YOU!

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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION