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GLOBAL ECO-INDUSTRIAL PARKS PROGRAMME

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Swiss Confederation

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

Implementation of Industrial symbiosis in Viet Nam: Reuse glass powder for road leveling, Shared firefighting service and Reuse of treated wastewater

Nguyen Thi Tuyet Lan – Pham Anh Tuan

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PILOT ECO-INDUSTRIAL PARKS IN VIETNAM

DEEP C INDUSTRIAL ZONES
Hai Phong province

- Since 1997
- + 3400 ha
- + 10.000 employees
- $ 5 Billions
- 150 + project
- Europe Standards

HIEP PHUOC INDUSTRIAL PARK
KHU CÔNG NGHIỆP HIỆP PHƯỚC
Ho Chi Minh city

AMATA
CITY BIEN HOA
Dong Nai province

- Since 1994
- + 2500 ha
- + 60.000 employees
- $ 5 Billions
- 190 + project
- FDI recuited $ 5 Billions

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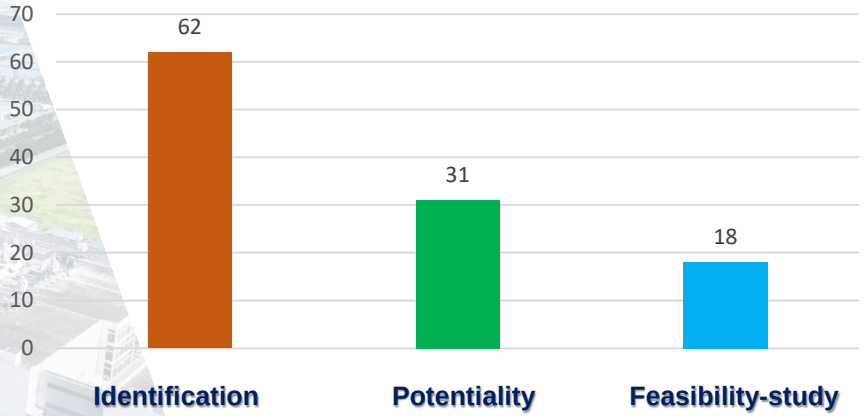
SUPPORT THE IMPLEMENTATION OF INDUSTRIAL SYMBIOSIS AND URBAN-INDUSTRIAL SYMBIOSIS

SUPPORT IMPLEMENTATION PROCESS

- Research and review potential opportunities
- Discuss with stakeholders to identify opportunities to conduct feasibility studies
- Feasibility study
- Discuss in depth and identify implementation opportunities
- Implementation support: technical, financial, legal aspects

RESULTS OF SUPPORT IN 03 INDUSTRIAL PARKS: DEEP C, AMATA AND HIEP PHUOC



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POTENTIAL FOR INDUSTRIAL SYMBIOSIS IN DEEP C

Industrial park and tenants

- Renewable energy: top roof solar;
- Sharing website;
- Training center;
- To provide skill workers to operate boilers;
- Composting from client's food waste;
- **Glass grinding powder is used as filling material**;
- Treated WW will be used as raw water.

Urban and Industrial park

- **Firefighting service sharing**;
- Social housing for employees;
- Health care service center;
- Domestic wastewater treatment with Hai An district;
- Oil spill response.

GLASS GRINDING POWDER FOR RECLAMATION

Oppotunity

- Deep C: Need leveling material; Demand: 2M tons/513ha.
- Deep C'tenant (Flat Ltd., Co): Dispose glass grinding powder (GGP). Volume: 3000 tons/year

Regulations

- Decree 08/2022/ND-CP dated on 10/1/2022
- Certificate of conformity

Economic/Environmental efficiency

- Save money for waste treatment.
- Resources efficiency.

Collaboration

- To sign agreement and;
- To plan for transferring GGP

SHARING FIREFIGHTING SERVICE WITH URBAN

1. Deep C sources:

- 03 Firefighting trucks
- Skill Firefighting team: 19 people;
- Duty mode: 24/7;
- All cost relating Firefighting will cover by Deep C.

2. Collaboration: To sign agreement on sharing Firefighting services

3. Social and environmental efficiency

- Minimize loss of life and property.
- Minimize cost for handling environmental pollution after fire.

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AMATA POSSIBILITIES HAPPEN
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CURRENT SITUATION IN AMATA BIEN HOA IP (VIETNAM)

AMATA discharge 3 million m^3 of treated wastewater annually.

Excellent treated wastewater quality for recycle and reclaim

- ✓Trace amount of heavy metal
- ✓Low organic and nutrients content
- ✓Low salt content

No.	Parameters	Unit	Result
1	pH		7.0 – 7.8
2	Color	mg/L (Pt –Co)	<20
3	SS	mg/l	<15
4	BOD	mg/l	<15
6	COD	mg/l	<35
7	Total nitrogen	mg/L N	<17
8	Total Phosphate	mg/L P	<3
9	Chloride	mg/L CL	<200
10	Copper	mg/L Cu	<0.5
11	Zinc	mg/L Zn	<0.5
12	Nickel	mg/L Ni	<0.02

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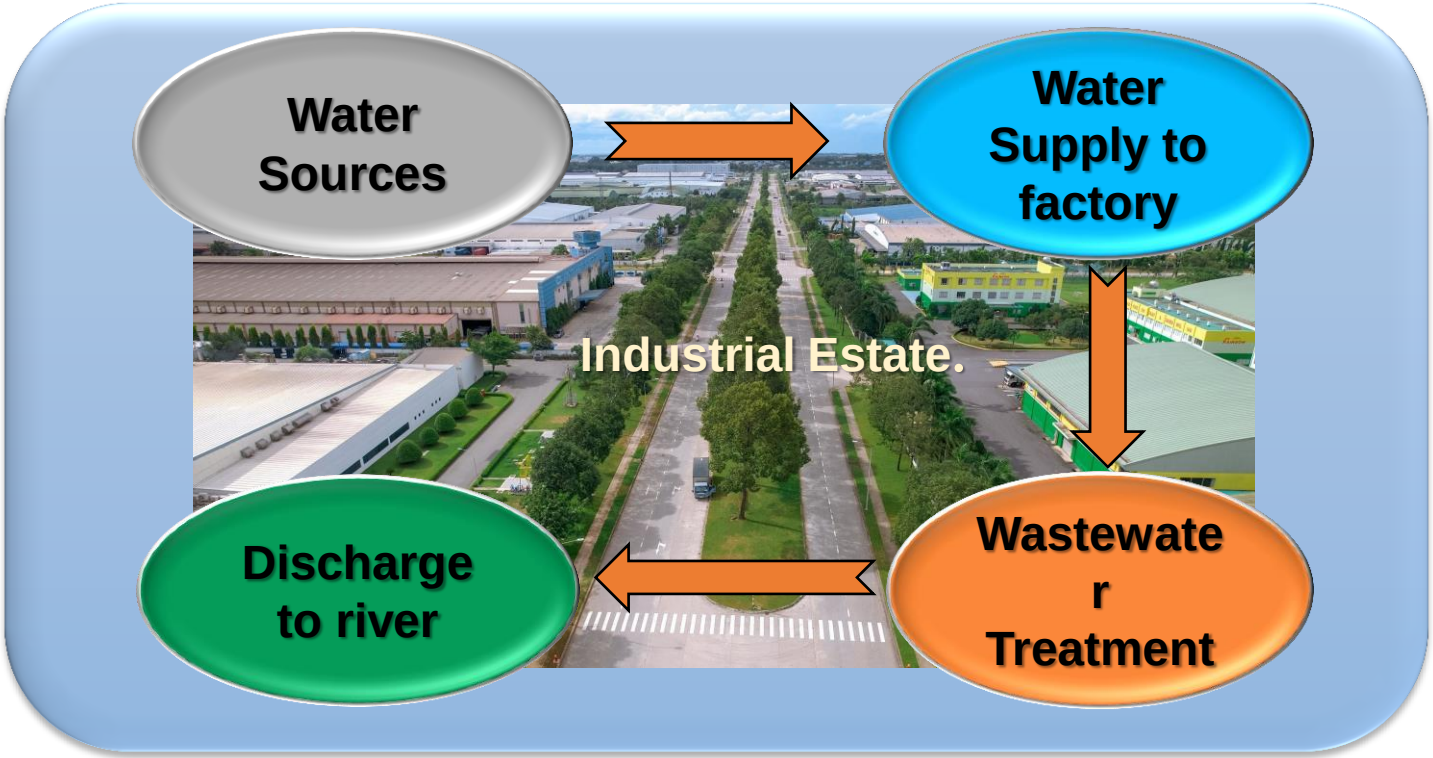
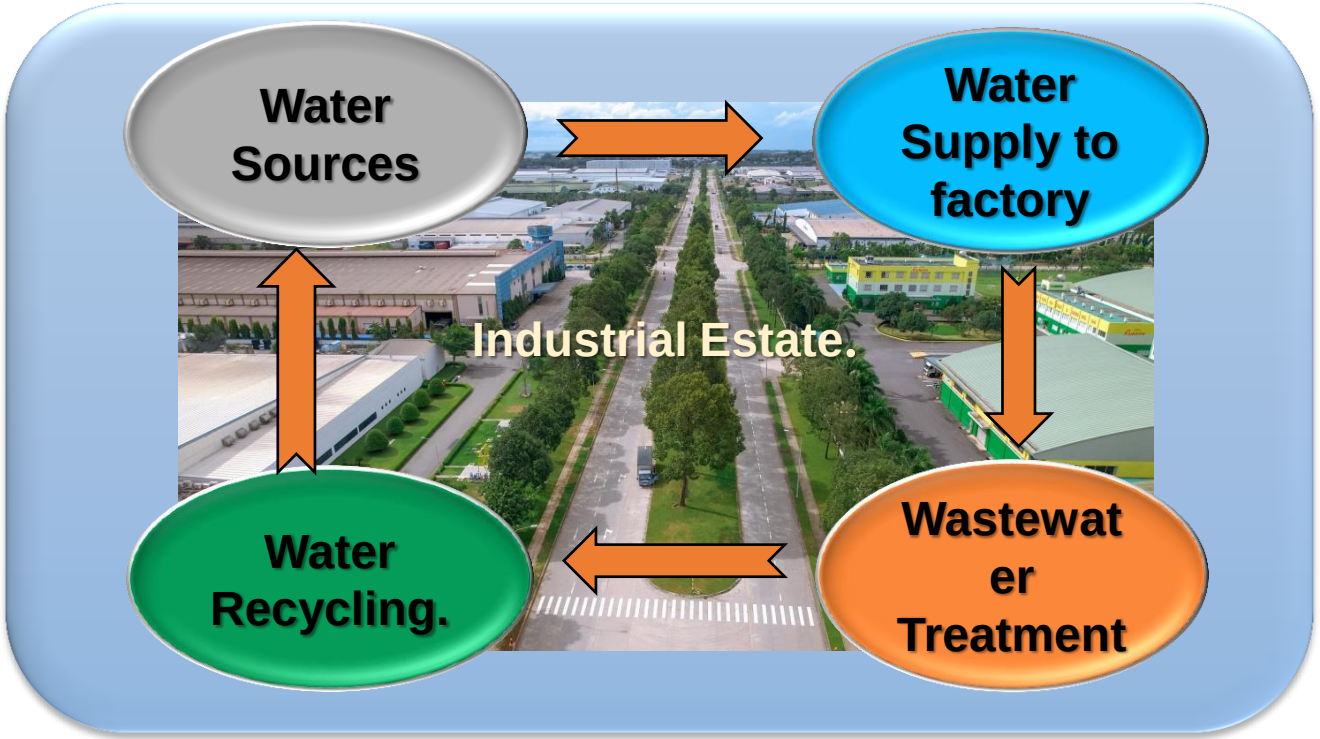
VIET NAM GEI GLOBAL ECO-INDUSTRIAL PARKS PROGRAMME AMATA WATER

LINEAR CONSUMPTION.



CIRCULAR ECONOMY SYSTEM



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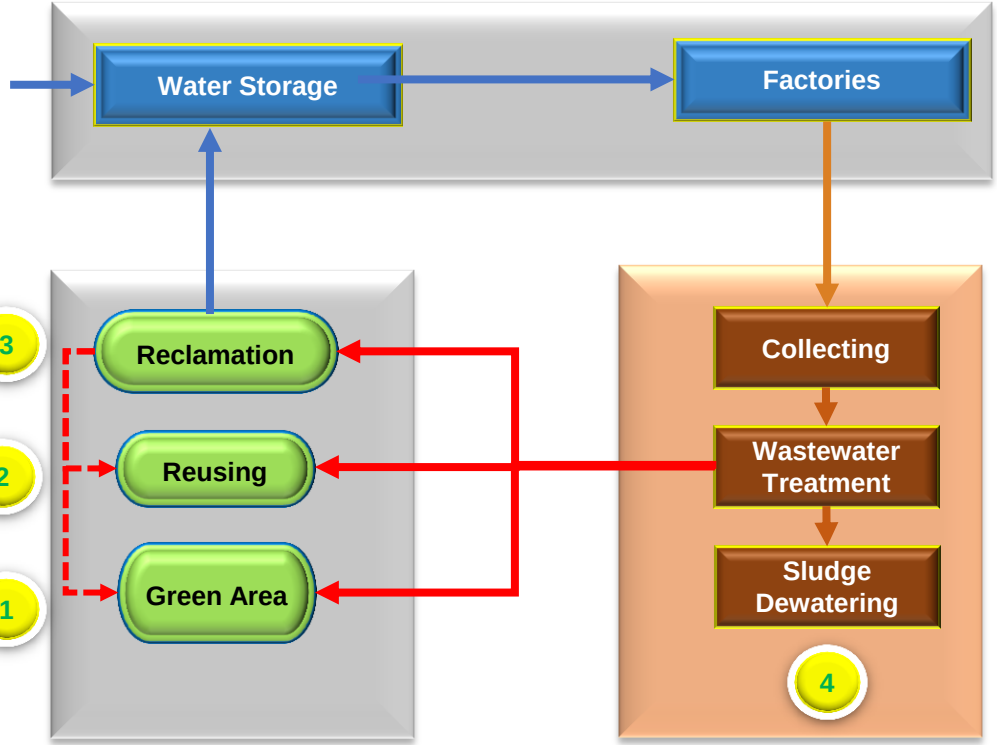
GENERAL CONCEPT AMATA BIEN HOA IP

Reclamation

Green Area

Reusing



MATRIX OF REUSE TREATED WASTEWATER

	Technical	Legal	Economical	Midset
(1) Green Area	Yes	No	Yes	Ready
(2) Reusing	Yes	No	Yes/no	Ready
(3) Reclaim	Yes	No	Yes/No	Need to change

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HOW TO BE POSSIBLE!?

(1) Reuse for green area in IP

- Legal – need the limitation & loading for reuse the treated wastewater for non-food gardening or adaptation the common practice in developed countries
- Legal – price

(2) Reuse in production process

- Legal – guideline how to reuse
- Legal – price
- Economical – where and capacity

LESSONS LEARNED

- It is needed to identify the industrial symbiosis opportunities.
- Suitable for currrent regulations
- Economic/social/environmental efficiency.
- Strong Collaboration and role of coordination
- Resources.

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THANK YOU FOR YOUR ATTENTION