

# The Promotion Case and Results of Urban Mining in Taiwan: ESTP

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October 21, 2011

# Outline

1. Introduction of Urban Mining in Taiwan
2. Background of ESTP Project in Taiwan
3. The Examples of Urban Mining in ESTPs
4. Conclusion



# 1. Introduction of Urban Mining in Taiwan

- "Waste Disposal Law" published in 1974.
- "Four in One recycling program" implemented since 1997.
- "Resource Recycling Act" published in 2002.
- "Environmental Science and Technology Park Project" approved in 2002.



# 2. Background of ESTP Project in Taiwan



# EIPs in Taiwan: ESTP

- The concept of **Kalundborg Park** and the strategy of **Eco-town**;
- Enhancing internal **environmental technologies** and **resources recycling**;
- According to article 24 of **the Resource Recycling Act**;
- ESTP project was started to execute **since 2002 to 2011**.





Taoyuan



Hualien

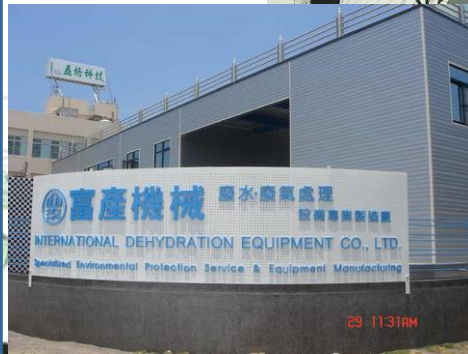


Tainan



Kaohsiung

# Kaohsiung



# Hualian



# Tainan

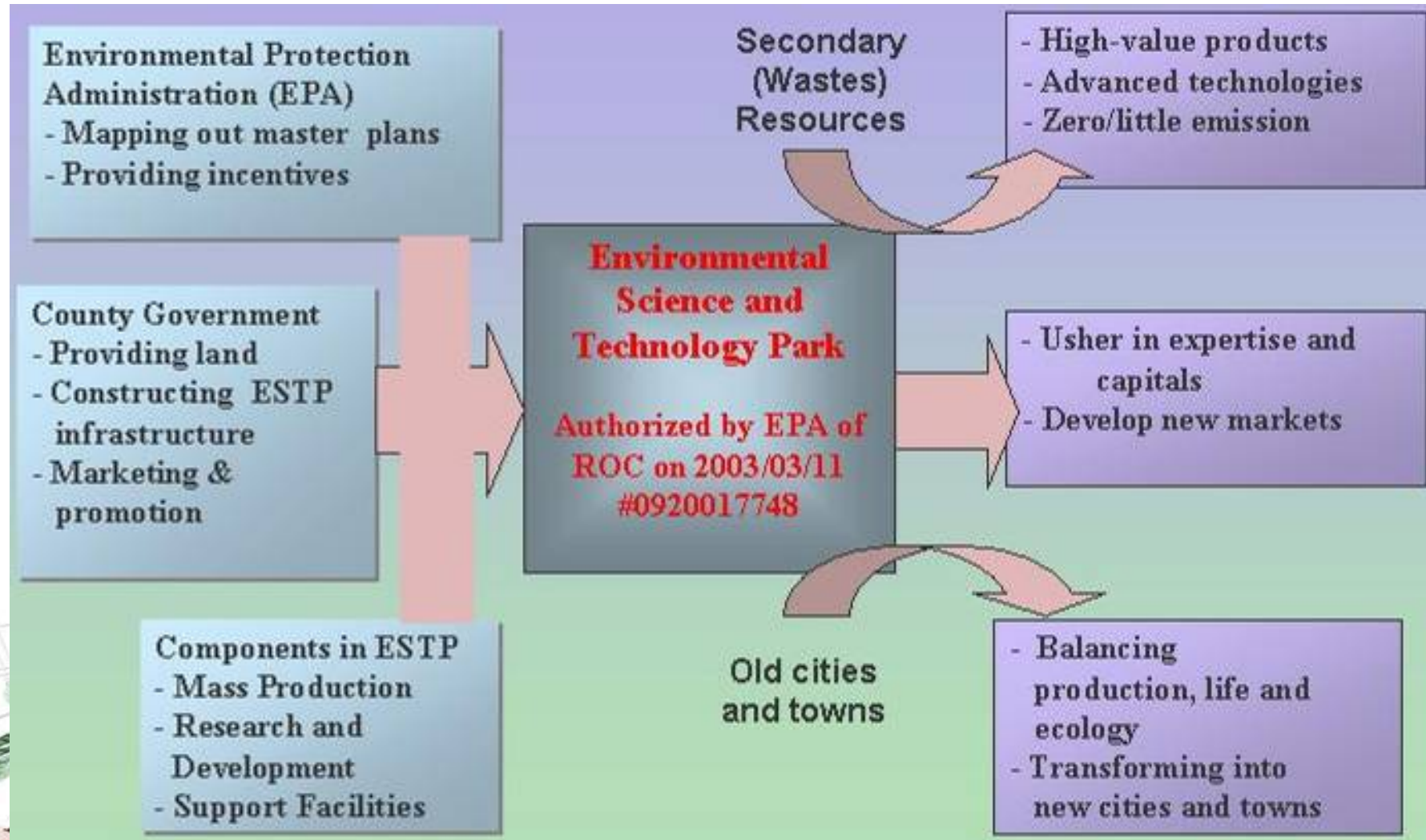


# Taoyuan





# The Framework of ESTPs



# Brief Description of ESTP

The total area of four ESTPs is 123 hectares, with US\$ 185 million budget, initiated by EPA.



## US\$ 108 million

### To local government:

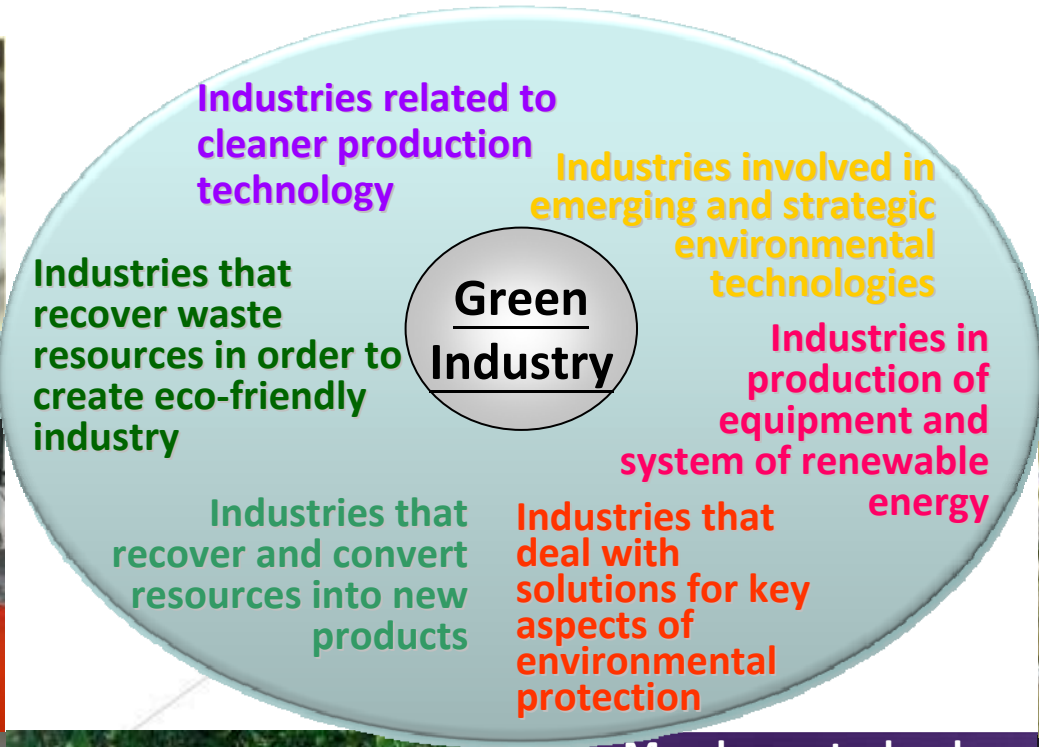
- park planning
- infrastructure construction
- sustainable township development

## US\$ 77 million

### To qualified applicants:

- land rents subsidy
- production subsidy
- R&D subsidy

# Scope of Introduced Industries



# 3. The Examples of Urban Mining in ESTPs



# Current Status of Introduced Industries

Park location	Kaohsiung	Hualian	Taoyuan	Tainan	Total
<b>Introduced industries</b>					
Industries related to cleaner production technology (28.2%)	10	11	5	3	29
Industries that recover waste resources in order to create eco-friendly industry (11.7%)	3	1	3	5	12
Industries that recover and convert resources into new products (33.0%)	11	3	9	11	34
Industries involved in emerging and strategic environmental technologies (1.9%)	2	0	0	0	2
Industries in production of equipment and system of renewable energy (12.6%)	3	6	2	2	13
Industries that deal with solutions for key aspects of environmental protection (12.6%)	7	4	2	0	13
Total	36	25	21	21	103



# The Companies related to urban mining in Taiwan ESTP

Park	Company name	Process and product
Kaohsiung	WRC Pacific	Recycling of wastewater sludge from the electroplating processes to produce Zn and Cu concentrate
	Hong Jing Resources	Recycling of spent catalyst from petrochemical refineries to recover rare metal, such as Mo, V, and Ni
	Logos Tech. Development	Recycling of waste lead-acid battery from motorcycle/auto recycler or repair plant to retrieve the pig lead
	Zhao HC	Separating automatically spent cable to obtain copper and plastics
Hualien	Ya-Ching Electrical	Recycling of spent printed circuit board to get copper and glass fabric cloth
Taoyuan	Zhi-Peng Tech.	Recycling of waste battery to get useful materials
	C.T. Recycled Tech.	Recycling of waste fluorescent tubes to produce mercury, fluorescent powder and glass, etc
	Sus Recycling Tech.	Recycling of waste from semiconductor and electronics industry to produce precious metals
	Katec Creative Resources	Using high-temperature melting technology to recover hazardous waste to produce metal material and construction aggregate
	Super Dragon Tech.	Recycling of waste household appliances to obtain valuable metals and use epoxy resin to make new artist piece
	Jih-Huan Tech. and Research	Using cyclone furnace technology to treat clinical waste and waste printed circuit boards to obtain valuable metals and high-quality slag solidified body
	Hung-Cheng Tech.	Using high-temperature melting technology to recover waste sludge from electroplating wastewater to extract copper
Tainan	Solar Tech.	Using recycled electronic waste to manufacture gold
	AMES Solar Applied Silver Materials	Recycling of silver waste catalyst to manufacture silver
	Guang Ho Rare Materials Industry	Recycling of waste from LCD/LED factories which contains indium to create indium ingot
	Hong Yuan Environmental Tech	Recycling of waste CD/VCD, battery and information appliances to get valuable metals

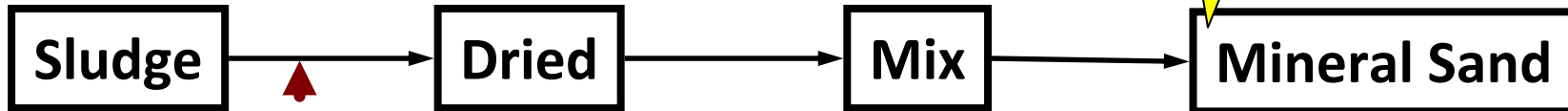
# The Symbiotic Networks (1) of Kaohsiung ESTP

(Word Resource Company Pacific: an **US Company**)

FY 2007 1,400 tons,  
FY 2008 10,000 tons,  
FY 2009 10,000 tons,  
FY 2010 17,500 tons



**CO<sub>2</sub> reduction:**  
FY 2007 1,300 tons,  
FY 2008 10,800 tons,  
FY 2009 12,000 tons  
FY 2010 20,000 tons



recovery of waste steam

478,800 Mcal/month

**FY 2007 630 tons,  
FY 2008 5,100 tons,  
FY 2009 5,300 tons  
FY 2010 9,100 tons**

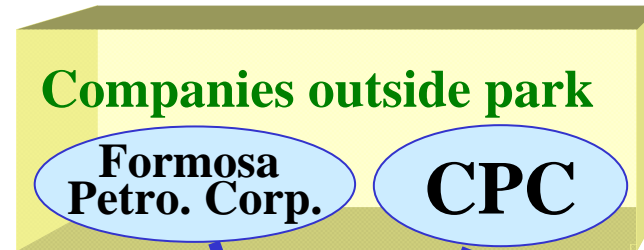


Gangshan municipal incinerator

# The Symbiotic Networks (2) of Kaohsiung ESTP

## • Hong Jing Environment Company

**CO<sub>2</sub> reduction:**  
FY 2008 25,200 tons,  
FY 2009 27,500 tons,  
FY 2010 29,200 tons



Spent Catalysts

FY 2008 7,000 tons,  
FY 2009 7,000 tons,  
FY 2010 7,000 tons



Retrieve

Mo, V, Ni

FY 2008 5,400 tons,  
FY 2009 5,800 tons,  
FY 2010 6,300 tons

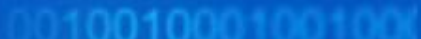
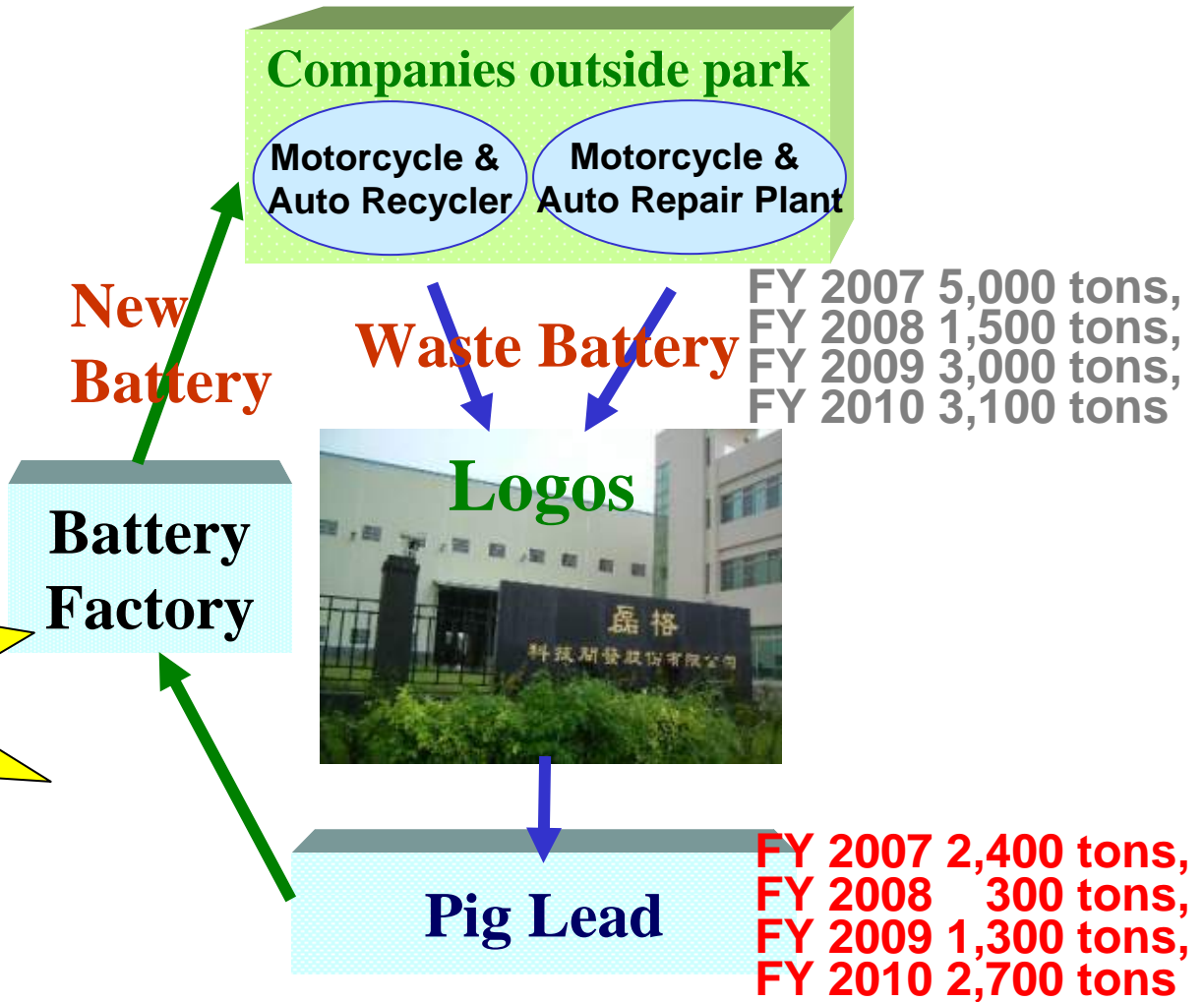




# The Symbiotic Networks (3) of Kaohsiung ESTP

•Logos  
Technology  
Development  
Co.,Ltd.

**CO<sub>2</sub> reduction:**  
FY 2007 6,170 tons,  
FY 2008 25.0 tons,  
FY 2009 3,050 tons,  
FY 2010 6,369 tons



# 4. Conclusion



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## Benefits of ESTPs

- Enhancing resource recycling and vitalizing urban mining;
- Fostering green industry and promoting industry eco-friendly;
- Supporting green energy industry and reducing carbon emission.



## Future Work of ESTPs

- Transferring the principal management authority to local government;
- Providing sustainable operation and management model of ESTP;
- Promoting industrial symbiosis and urban mining continuously.



# Contact

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**ESTPs Project Office of EPA:**

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Thanks for Your Attention!

