Toward an Ecological Port

Taiwan International Ports Corporation
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- Ecologistics in Kaohsiung Port
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Introduction

- Port transportation is vital to the economy and livelihood of Taiwan

Energy: 98% imported

Food: 70% imported
Introduction

- Ports are essential

**Diagram:**
- Import Warehouse
- Factory
- Export Warehouse
- Port

- Import: raw material
- Export: product
- Marine transportation
- Land transportation
- Unload
- Upload
Introduction

- Environmental issues: Air pollution as an example

- Marine transportation
- Cargo handling
- Land transportation

SO\textsubscript{x}, NO\textsubscript{x}, PM, CO\textsubscript{2}
EcoPort Establishment

- Balancing between economic development and environmental protection

2013: Pollution prevention

2014: Low-carbon measures

2017: Sustainable development

Comprehensive environmental planning

EcoPort certification

All 7 ports certified
EcoPort Establishment

Reduce environmental impact

- Low-sulfur fuel
- Vessel speed reduction
- Shore power for vessels
- Enclosed handling units
- Automatic gates
- Car washing lane

SOX, NOX, PM, CO2
Establishment of EcoPort

- Port City - Kaohsiung Port

Taiwan’s No.1 commercial port
1/2 national cargo throughput

Asia’s 1st EcoPort
Certified in 2014

Environmental friendly development
Biodiversity + economic & cultural development

Value-added service
Ecologistics = Lower carbon emission
Ecologistics in Kaohsiung Port

- Versatile ecologistics

Combined resources
efficient transportation

Low-impact development
reduce carbon emissions
Cargo: Combined resources, efficient transportation

Multi-country Cargo Consolidation

Past

Port A → Port D
Port B → Port E
Port C → Port F

Present

re-export + container sorting

Port A → Port D
Port B → Port E
Port C → Port F

Added-value

Expected Benefits

• Efficiency ↑
• Cost ↓
• Pollution ↓
**Cargo:** Combined resources, efficient transportation

- Free trade ports
- Industry cluster

**Result**
- Delivery distance ↓
- Product value ↑

- Components in
- Storage, delivery, processing, assembly, product QA/QC
- Out to downstream manufacture countries
Ecologistics in Kaohsiung Port

- **Cargo:** Combined resources, efficient transportation
  - Free trade zone

**Added Value**
- Added 31 tenants
- Continuous growth

**Traded Volume and Value in FTZ**

<table>
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<tr>
<th>Year</th>
<th>Trade Volume (10,000 tons)</th>
<th>Trade Value (NTD 100 million)</th>
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<tr>
<td>2010</td>
<td>38.2</td>
<td>204.5</td>
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<td>2011</td>
<td>58.4</td>
<td>300.1</td>
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<tr>
<td>2012</td>
<td>300.1</td>
<td>410.9</td>
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<tr>
<td>2013</td>
<td>61.5</td>
<td>695.4</td>
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<td>2014</td>
<td>77.0</td>
<td>77.0</td>
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<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Ecologistics in Kaohsiung Port

- **Travel: Public transportation integrated**

![Diagram showing travel options in Kaohsiung Port]

- **Cruises**
- **LRT** (Light Rail Transit)
- **MRT** (Metro Rail Transit)

Map highlights:
- **Penglai Port**
- **Terminal**
- **Bridge (planning)**
- **Orange line**
- **Red line** (Under preparation)
- **Yellow line**

Locations:
- **Chijin scenic area**
- **Zhongdao Commercial port area**
Ecologistics in Kaohsiung Port

- **Low impact development: Land rehabilitation**
  - Brownfield remediation
  - Remediation + Development

**Result**
- Avoiding 2nd time excavation
- Reduced truck transportation by 4,400 journeys

Combining remediation and basic infrastructure construction
Ecologistics in Kaohsiung Port

- Low impact development: Land rehabilitation
  - Brownfield remediation

Reclaim polluted soil → Result: Circular economy

Processed

Polluted Soil  New Bricks
Ecologistics in Kaohsiung Port

- Low-impact development:
  - Green Building Standard Terminal

- Silver certified

- Eco-friendy
  - Ecofriendly environment
  - New tourist attraction

- Result

- Greenery
- Water retention
- Reduce CO2
- Waste & Sewage
- Water resources
- Waste reduction
- Indoor quality
- Energy savings
Ecologistics in Kaohsiung Port

- Low-impact development: Ecological compensation

  - Wild birds reserve

Creative Coexistence

Result

- 10.6 ha nature reserve

Creative coexistence with nature
Low-impact development: Ecological compensation

- Wild birds reserve
- Increase natural habitat

Result
- Shelter for migratory birds

Ecologistics in Kaohsiung Port

Cyanoptila cyanomelana

Accipiter trivirgatus
Low-impact development: Ecological compensation

- Wild birds reserve

Biodiversity↑

Result
- Bird Species ↑

Number of Bird Species (before and after construction)

Before: 34
During: 30
After: 39
Low-impact development: Industry transformation

- Port city sustainable development

Expected results
- Versatile logistics
- Meeting the triple bottom line

Dayong
Ecologistics in Kaohsiung Port

- Low-impact development: Industry transformation
  - Port city sustainable development
  - Rejuvenation

Expected results:
- Versatile logistics
- Meeting the triple bottom line

Dayi
Ecologistics in Kaohsiung Port

- Low-impact development: Industry transformation
  - Port city sustainable development
  - Rejuvenation

Expected results:
- Versatile logistics
- Meeting the triple bottom line

Penglai
Ecologistics in Kaohsiung Port

- Low-impact development: Industry transformation
  - Port city sustainable development
  - Rejuvenation

Expected results:
- Versatile logistics
- Meeting the triple bottom line

Terminal

Port
Conclusions

- TIPC’s vision & goals for EcoPort

- Implement ecologistics and create a better living environment
- Establish environmental management regulations & increase competence
- Follow government policies & create Asia’s future bay area
Change the PORT,
Change the WORLD
Thank you for listening