Reuse, Reduction and Recycle of Construction and Demolition Waste
My Presentation

• What is Construction and Demolition Waste
• Challenges
• Management Strategy
  • Reduce
  • Reuse
  • Recycle
• Recommendation
My Presentation

- What is Construction and Demolition Waste
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What is Construction Waste

- Site Clearance
- Excavation
- Demolition
- Tunneling
Annual Generation of Construction Waste in Hong Kong

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Fill</th>
<th>C&amp;D Waste</th>
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<tbody>
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</table>

Quantity (million tonne)
Inert Construction Waste

6 to 7 Million Tonnes/Year + Mega Infrastructural Projects to 2016
Tuen Mun Fill Bank

Tseung Kwan O Fill Bank
Reasons Leading to Current Situation

- Low cost in exploiting natural resources
- Low cost of aggregates from Mainland
- Site redevelopment after relocation of airport
- Fast redevelopment of site for quick financial return
- Inherited bad “use and throw away” habit
- Poor waste management concept
- No reclamation project under planning
- **Total reclaimed area 6824ha**
  香港填海面積 - 6824 公頃

- **27% of population**
  27%的人口

- **70% of office floor area**
  70%的總辦公室樓面面積

- **New towns, e.g. Shatin, TKO**
  新市鎮例如沙田、將軍澳
Reclamation from 1985 to 2009
從1985至2009年間的填海面積
Public Fill 建築填料

Urgency to Handle Surplus Public Fill:
處理建築填料的迫切性:

- Land development (from rezoning, resumption and redevelopment) also generates Public Fill

  ➢ 土地發展(從更改用途,收地及重建)也會產生建築填料

- Despite successful implementation of “Reduce, Reuse and Recycle” in the past few years, construction activities still generate about 6 to 7 million tonnes surplus public fill each year

  ➢ 儘管在過去幾年成功實施「減少、重用和回收」建築填料，每年建造業仍然產生剩餘建築填料約600萬至700萬公噸
My Presentation

• What is Construction and Demolition Waste
• Challenges
• **Management Strategy**
  • Reduce
  • Reuse
  • Recycle
• Recommendation
Management Strategy

1. Avoid
2. Minimise
3. Recycle
4. Treat
5. Dispose
Management Strategy

• Reduce the generation of construction waste

• Maximise reuse and recycling

• Reduce intake of mixed waste at landfills
My Presentation

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Reduce

• C&D Management Plan and Waste Management Plan
Reduce

• Low Waste Construction Designs and Technologies

- Lean Construction
- Balanced Cut and Fill
- Modular Construction
- Reuse of Construction Waste
Reduce

• Raw Materials Management
Reduce

• Waste Management Charging Scheme

<table>
<thead>
<tr>
<th>Government Waste Disposal Facilities</th>
<th>Type of Construction Waste Accepted</th>
<th>Charge per tonne</th>
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<tbody>
<tr>
<td>Public fill reception facilities#</td>
<td>Consisting entirely of inert construction waste</td>
<td>$27</td>
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<tr>
<td>Sorting facilities#</td>
<td>Containing more than 50% by weight of inert construction waste</td>
<td>$100</td>
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<tr>
<td>Landfills@</td>
<td>Containing not more than 50% by weight of inert construction waste</td>
<td>$125</td>
</tr>
<tr>
<td>Outlying Islands Transfer Facilities@</td>
<td>Containing any percentage of inert construction waste</td>
<td>$125</td>
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# operated by CEDD  @ operated by EPD
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Reuse
Reuse

• Reclamation in Hong Kong
**Public Fill 建築填料**

**Delivery to the Mainland for Reuse 運往內地重用**

- 170 km away from HK, 22 hours Round trip 離香港170公里，來回22小時
- 65 nos. vessels per day 每日65艘遠洋船運送
- Consume 19,000 litres more diesel per day 每日消耗額外19,000公升柴油
- Extra 50 tonnes carbon emission per day 每日碳排放量增加50公噸
- Cost $27 per tonnes more than local reclamation 比本地填海每公噸多$27
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Recycle

• Selective Demolition
• Proper Sorting
Temporary C&D Materials Recycling Facility in Tuen Mun Area 38

- Preliminary Sorting
- Primary Crushing
- Secondary Crushing
- Impurity Removal Facilities
- Stockpiles
Private Construction Waste Recycling Facility in Hong Kong

Recycled Products

Primary Crushing

Secondary Crushing

Sieving into different sizes
Potential Applications

Pipe Bedding

Seawall / Backing

Pipe Surround / Haunching

Filter

Recycled Aggregates

Rock Infill for Gabion

U-Channel

Road Sub-base

Concrete Production up to Grade 35

Paving Block

Chipping Stone
Problems in Promoting Use of Recycled Aggregates

- Lack of local experience
- Lack of confidence - view as inferior materials
- Uncertainty in quality
- Appropriate specifications still under development
- Unsteady in supply
- Imported natural aggregate is cheaper
- Over-specifying
- Not catered in planning and design stages
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Recommendations

- Promotion activities to the industry
- Incentive to the market to encourage the use of recycled aggregates
- Arrange demonstration projects
- More supply points (recycled plants) of recycled aggregates
Thank You!

Thank You!