

# Waste Minimisation Strategies in Singapore

**Senior Officials Meeting on 3R Initiatives  
6-8 Mar 2006**

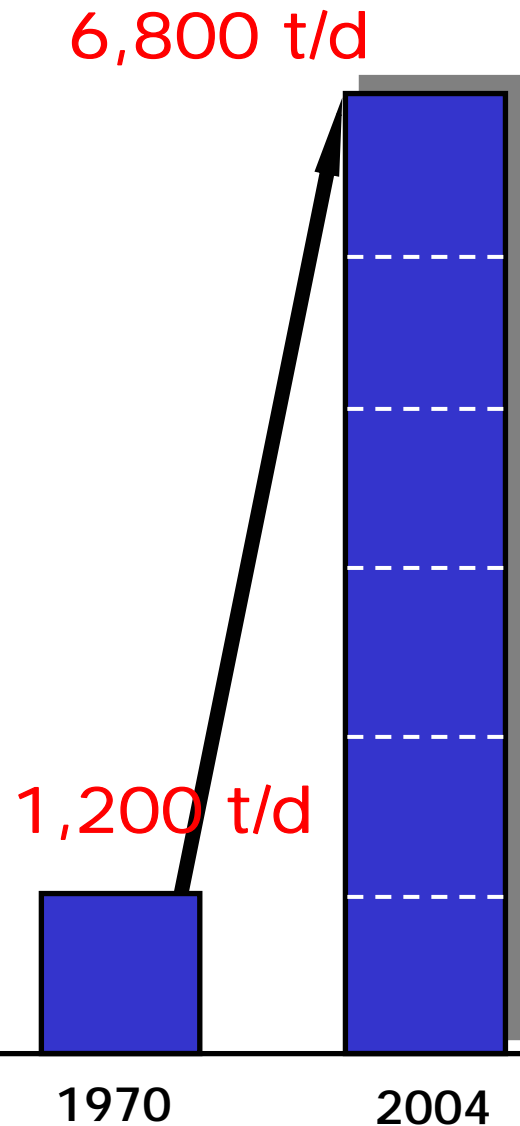
**Vincent Teo  
National Environment Agency  
Singapore**

# Challenges

- ❖ **Small land area**
  - ❖ One last sanitary landfill (an offshore landfill)
- ❖ **Economic growth**
- ❖ **Population growth**
- ❖ **Rising affluence**
  - ❖ High consumption pattern
  - ❖ Higher expectations



# The Solid Waste Challenge



# Singapore's Strategies...

**Strategy 1 - Volume Reduction**

**Strategy 2 - Waste Recycling**

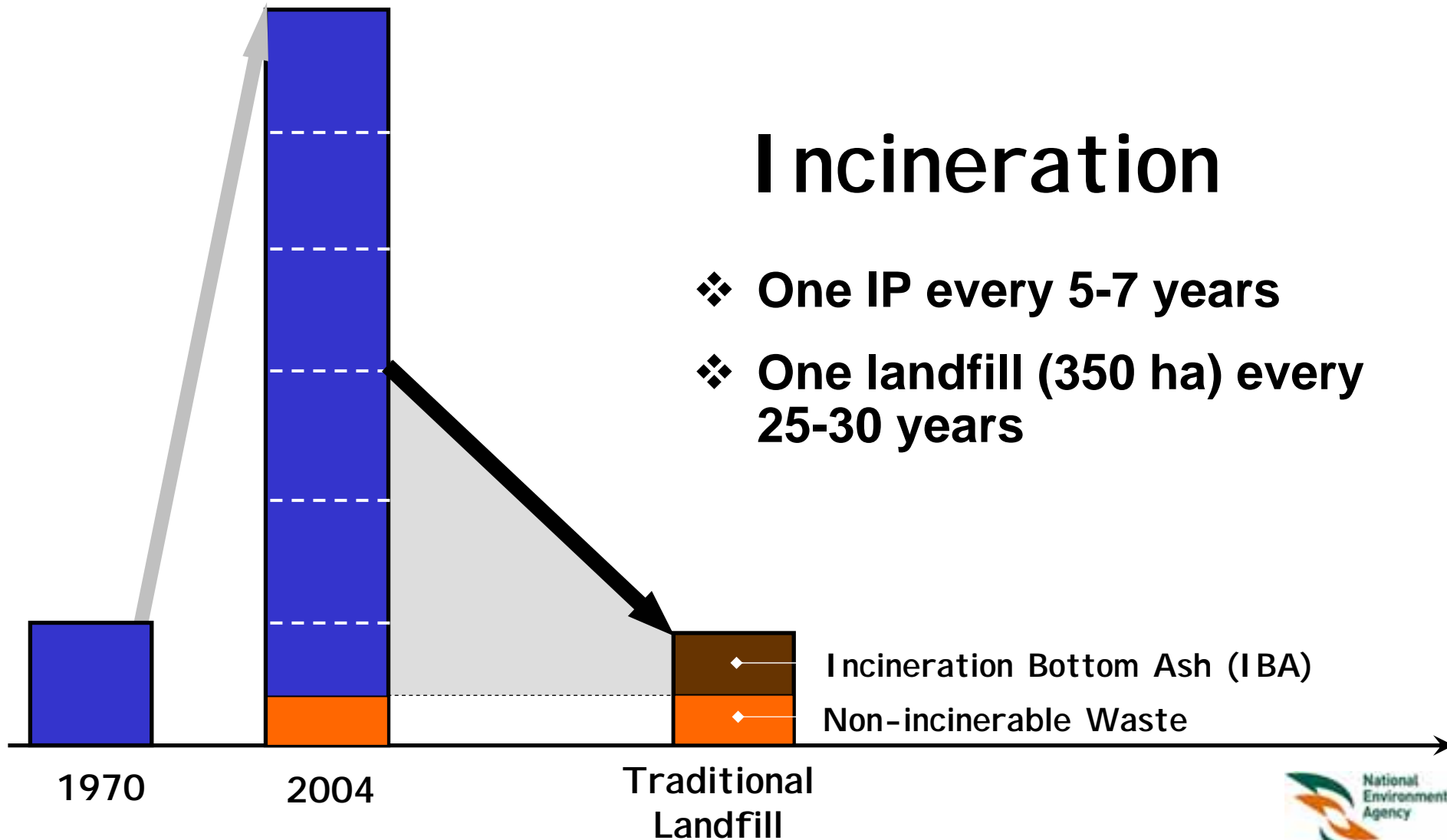
**Strategy 3 - Reduce Landfilled Waste**

**Strategy 4 - Waste Minimisation**

**Long term goals:**

**Towards zero landfill & zero waste**

# Strategy 1: Volume Reduction



# Incineration



❖ **90% of waste is disposed of by incineration**

❖ **Volume of waste is reduced by 90%**

❖ **4 IPs (Waste-to-Energy plants) with total capacity of 8,200 t/d**

❖ **Energy is recovered for electricity generation**

❖ **Scrap metal is recovered for recycling**

# Semakau Landfill

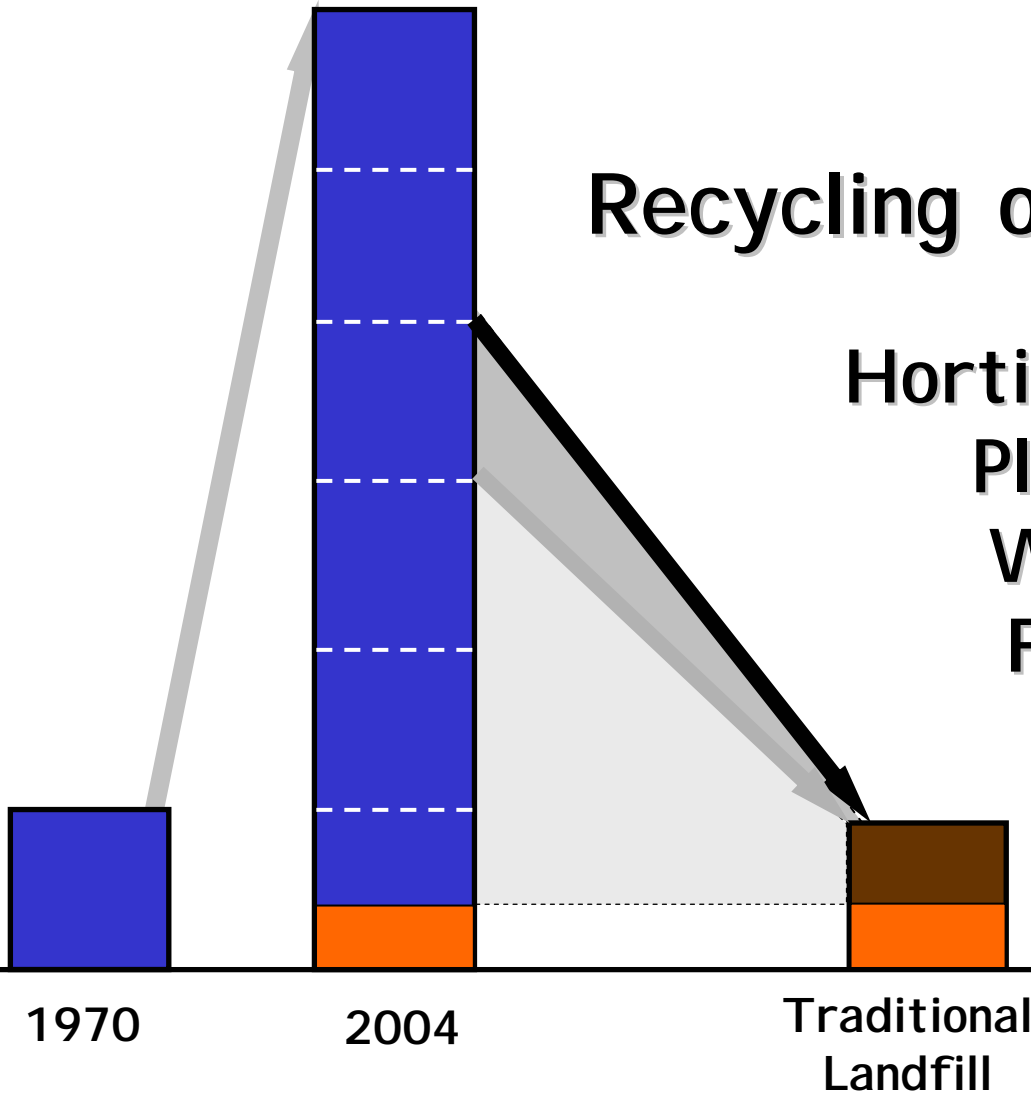
- ❖ **600 tonnes/day non-incinerable waste**
- ❖ **1,400 tonnes/day incineration ash**
- ❖ **Commenced operation on 1 Apr 99**
- ❖ **Capacity: 63 million m<sup>3</sup>**
- ❖ **Area: 350 ha**
- ❖ **Cost: S\$610 mil**



# Strategy 2: Recycling

## Recycling of Industrial Waste

Horticultural waste  
Plastic waste  
Wood waste  
Food waste





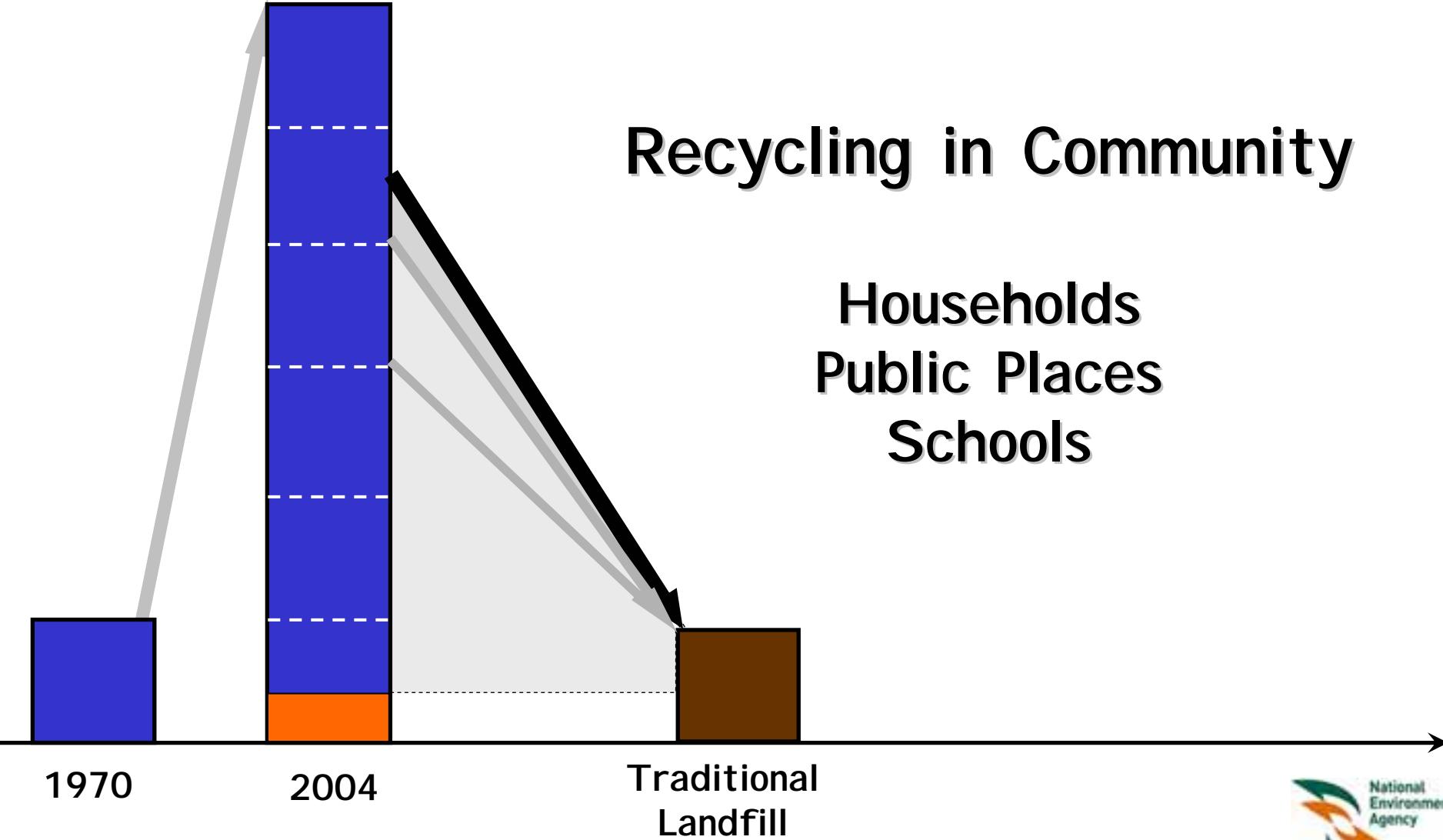
# Industry Development

- Industrial land sites for waste recycling facilities
- Innovation for Environmental Sustainability (IES) Fund – S\$20mil
- MOU with tertiary institutes

# Strategy 2: Recycling

## Recycling in Community

Households  
Public Places  
Schools



# National Recycling Programme

- ❖ **Recycling for households in high-rise flats and private landed properties**

- ❖ **Door-to-door collection every fortnight**



- ❖ **Residents given recycling bags/bins**

- ❖ **56% participation rate**

# Other Programmes

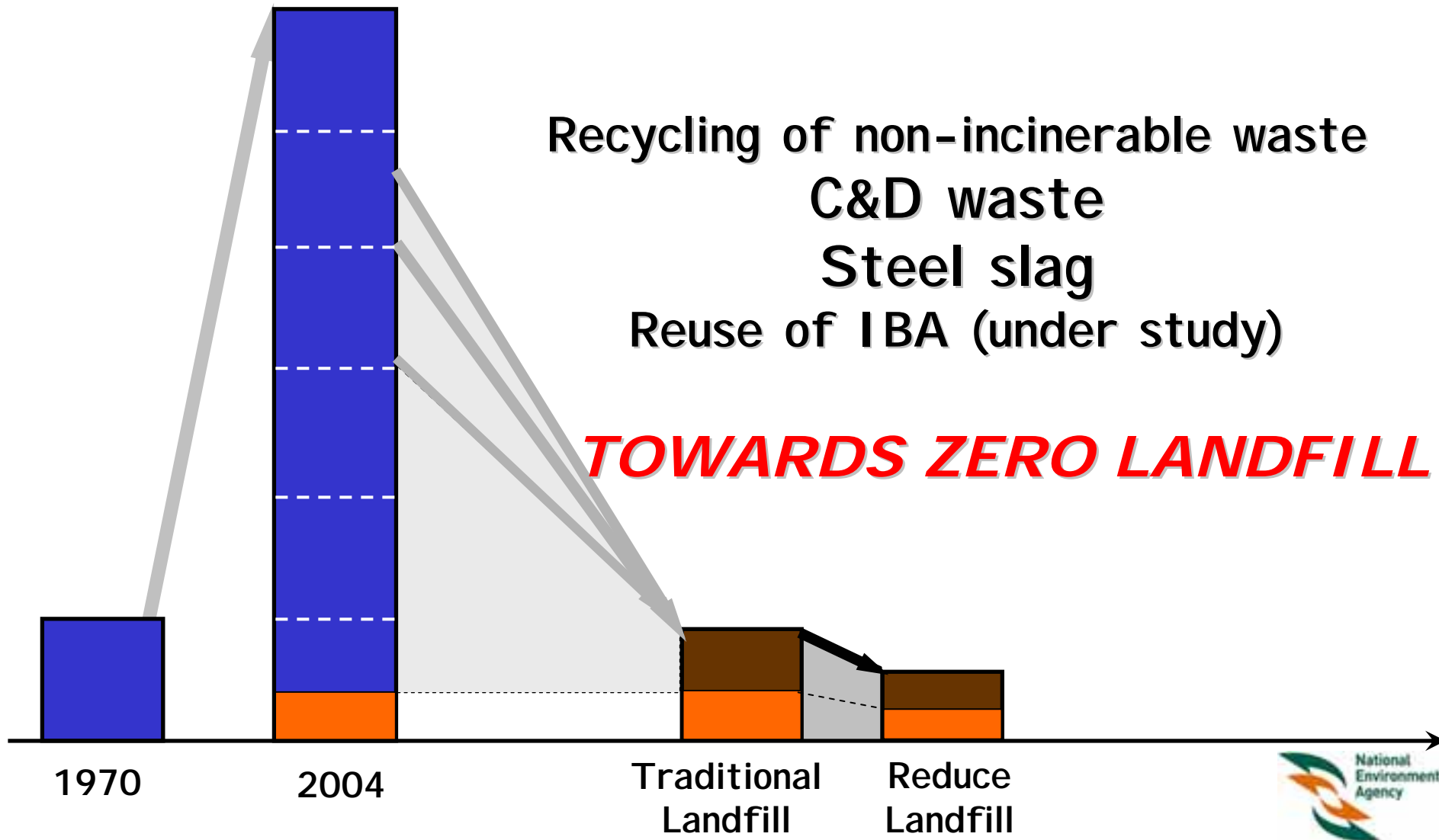
School Recycling Corner Programme  
-78% of schools have facilities



Recycling in Public Places  
-5,700 bins network



# Strategy 3: Reduce Waste To Landfill

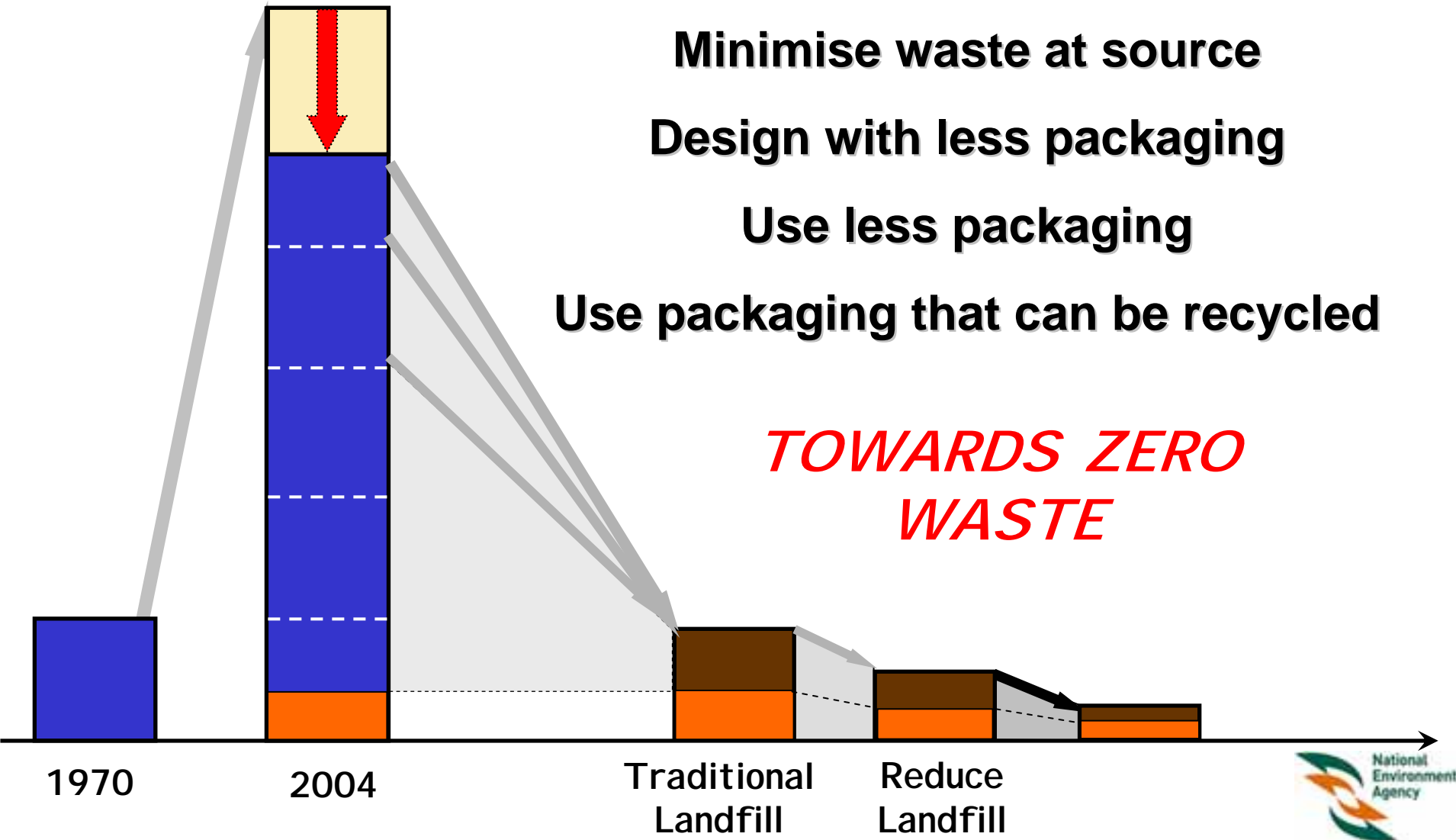


# Construction & Demolition Waste Recycling



**More than 90% recycling rate**

# Strategy 4: Waste Minimisation



# Moving Upstream

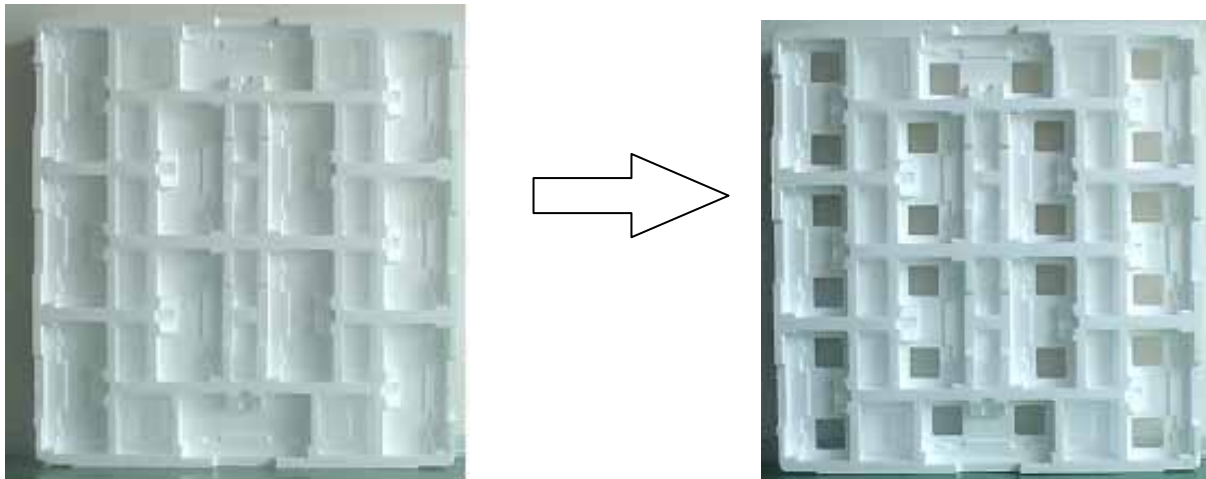
- Use fewer plastic bags
- “Why waste plastic bags? Choose reusable bags!” campaign





# Moving Upstream

- Packaging agreement



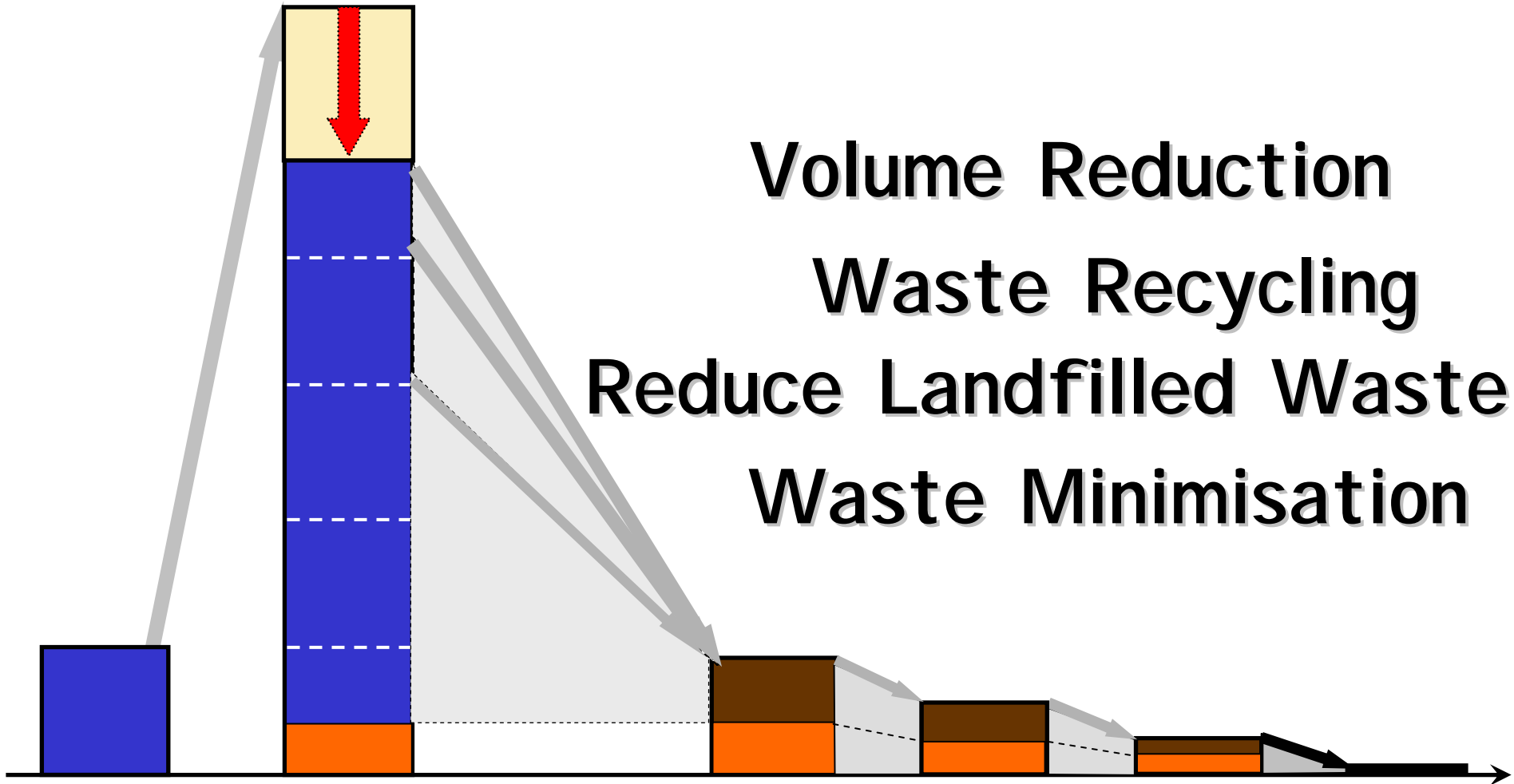
**Reduce raw material while maintaining functional integrity of packaging**

**Volume Reduction**

**Waste Recycling**

**Reduce Landfilled Waste**

**Waste Minimisation**



**Towards Zero Landfill, Zero Waste**

# Singapore Green Plan 2012

## Clean Land Targets

- Increase overall recycling rate to 60% by 2012
- Reduce need for new incineration plant, from current one in every 5-7 years to one in every 10-15 years
- Extend lifespan of Semakau Landfill to 50 years & strive “towards zero landfill” & “closing the waste loop”.

# SGP 2012 Outcomes (to date)

- Overall recycling rate increased from 40% in 2000 to 49% in 2005
- Reduced need for new incineration plant, from one in every 5-7 years to one in every 8-10 years
- Extended lifespan of Semakau Landfill from 25-30 years to 35-40 years

# Community Involvement

- 3P (People, Public, Private) Partnership-Ownership approach
- 3P Partnership Fund
- National Recycling Programme (NRP)
- Public recycling depositories
- “Why waste plastic bags? Choose reusable bags!” campaign



Thank You