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**PROJECT
CHAMBERS**

Solid Waste Management in Hong Kong Infrastructure and Policy Past, Present and Future

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- The Situation Prior to 1989
- Pollution in Hong Kong: A Time to Act 1989
- Waste Disposal Plan for Hong Kong 1989 to 1998
- Waste Reduction Framework Plan 1998 to 2007
- “Making Choices for our Future”
- Policy Framework for the Management of Municipal Solid Waste 2004 to 2014
- Hong Kong Blueprint for Sustainable Use of Resources 2013 – 2022
- A Food Waste and Yard Waste Plan for Hong Kong 2014 – 2022
- Waste Blueprint for Hong Kong 2035
- Conclusions 1989 to 2035

Past

Present

Future



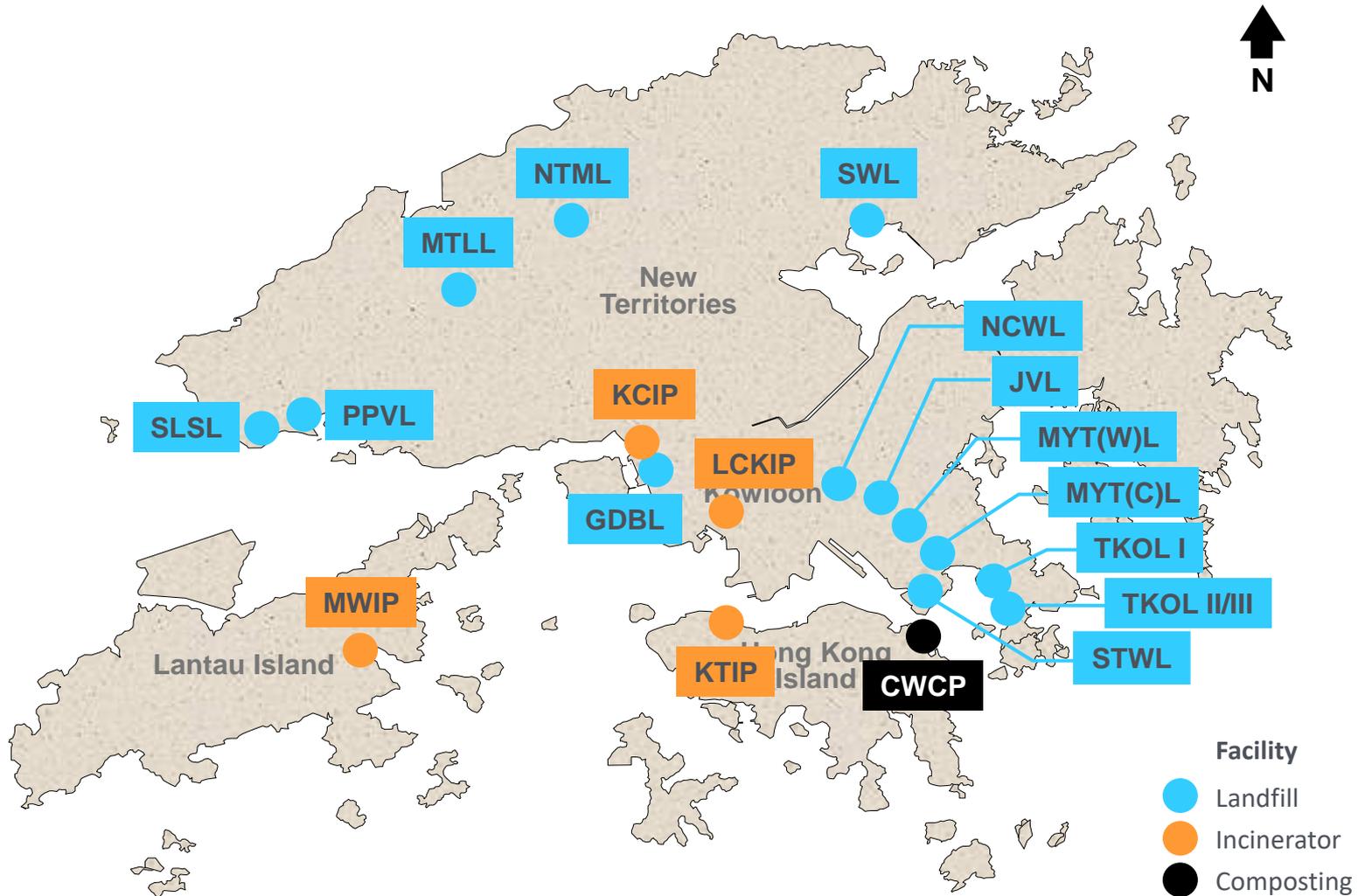
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The Situation Prior to 1988

- The first environmental legislation that was enacted in recent times was the “Clean Air Ordinance” in 1959
- Followed by numerous policies and legislation that tackled other types of pollution
- The first piece of waste management legislation was enacted in 1980 – the Waste Disposal Ordinance
- The intention is that waste be disposed of in an environmentally acceptable manner
- Numerous subsequent amendments and Regulations

- Historically, most of the waste generated in Hong Kong was either landfilled, incinerated, or discharged untreated into our waters. A limited quantity of waste was composted at a composting plant at Chai Wan
- Disposal was carried out at 13 urban and rural landfills (now known as the “old landfills”), which did not have the required pollution control installed
- These sites varied from the 2ha, 161,000m³ Ngau Tam Mei Landfill (NTML) to the 68ha, 15.2Mm³ Tseung Kwan O Stage I Landfill (TKOL I)
- Overall, waste management was far from satisfactory

The Old Facilities



Problems with Incineration

- The operation of these old facilities was far from satisfactory
- The municipal incinerators (in Kwai Chung, Lai Chi Kok and Kennedy town) were of 1960's design and had limited air pollution control, often resulting in large visible smoke plumes
- Rural communities (e.g. those on Lantau) also incinerated their own waste in rural incinerators with no pollution control
- As a result, these incinerators acquired a deservedly bad reputation

Problems with Incineration



Urban Incinerator – Kennedy Town



Urban Incinerator – Kwai Chung



Urban Incinerator – Lai Chi Kok



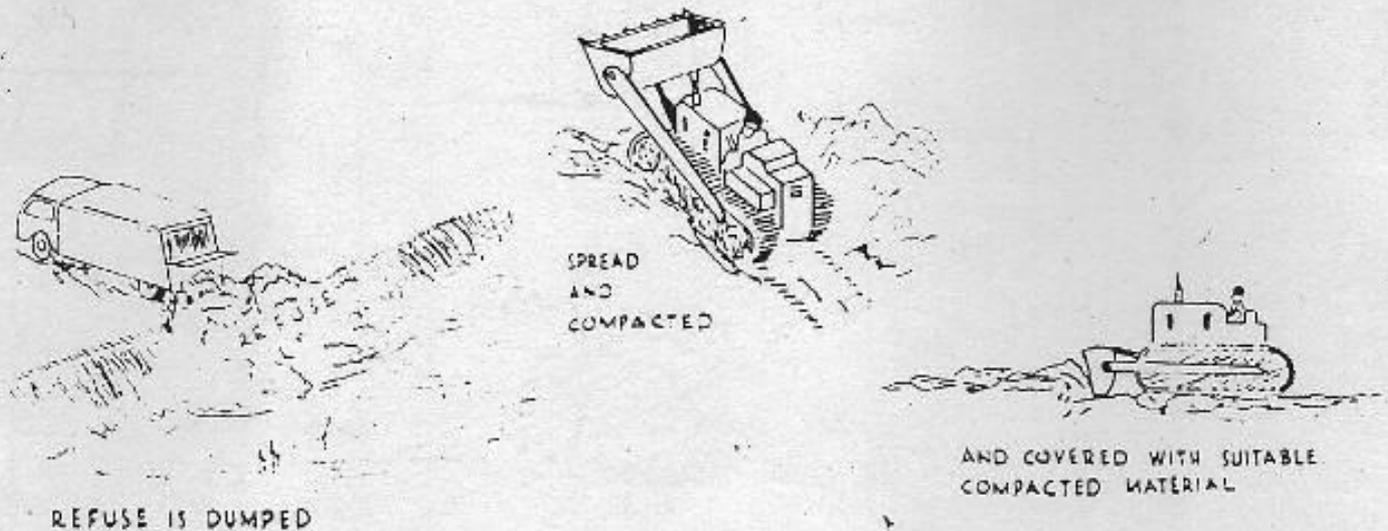
Rural Incinerator – Lantau

Problems with Landfill

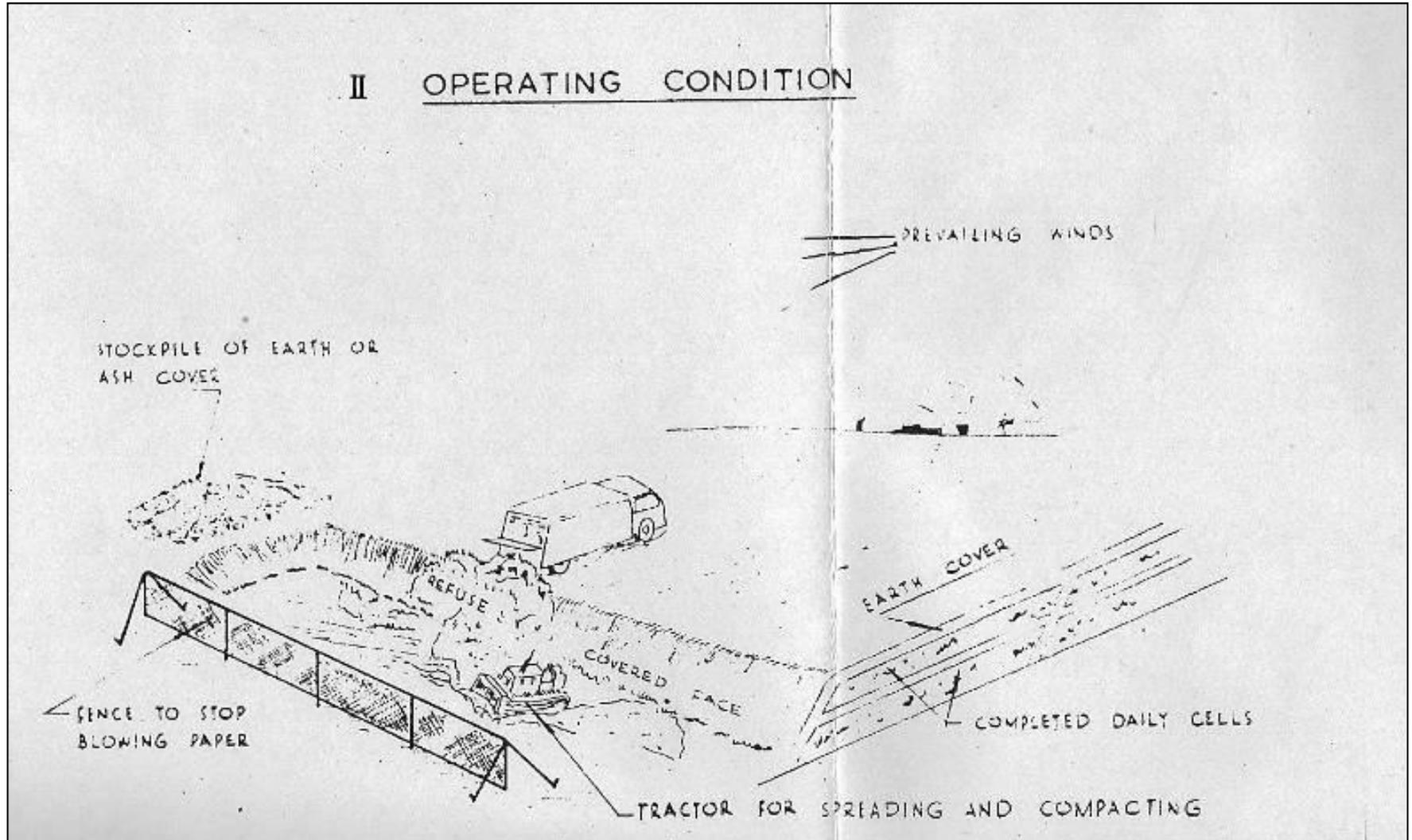
- The operation of the landfills was similarly unsophisticated
- The following drawings dating back to the early 1970's and referring to filling operations at NTML ("best practice" at the time)

Problems with Landfill

I STAGES OF OPERATION



Problems with Landfill



The End of the Old

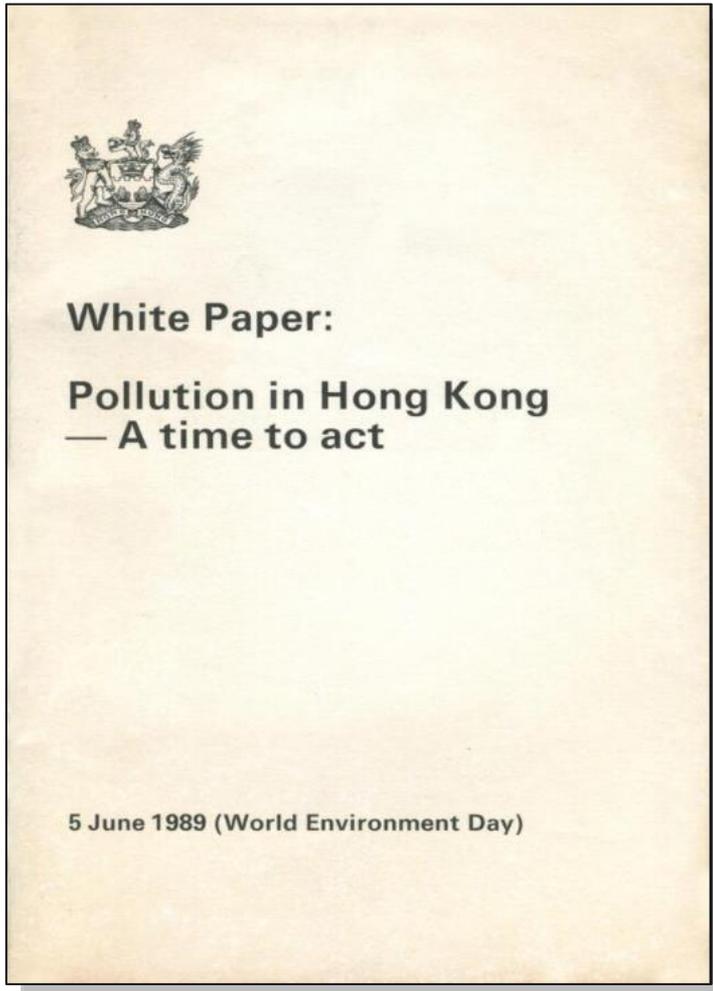
- It became evident in the 1980's that the existing disposal sites were grossly inadequate for the increasing waste quantities
- This problem was exacerbated by urban development encroaching upon the sites of some of the “old landfills”, even those that had originally been rural, and the changing public attitude on waste management
- Realising the pressing need, strategies for managing municipal and other waste were developed in the 1980s and eventually published in the Waste Disposal Plan for Hong Kong (WDP) in 1989



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Pollution in Hong Kong: A Time to Act 1989

Overview



At the opening of the 1988/90 LegCo session on October 1988, then Governor Sir David WILSON acknowledged that serious pollution was a by-product of Hong Kong's economic success.

This White Paper followed in 1989 and covered various areas of environmental concern for which action was needed, including Municipal Solid Waste (MSW).

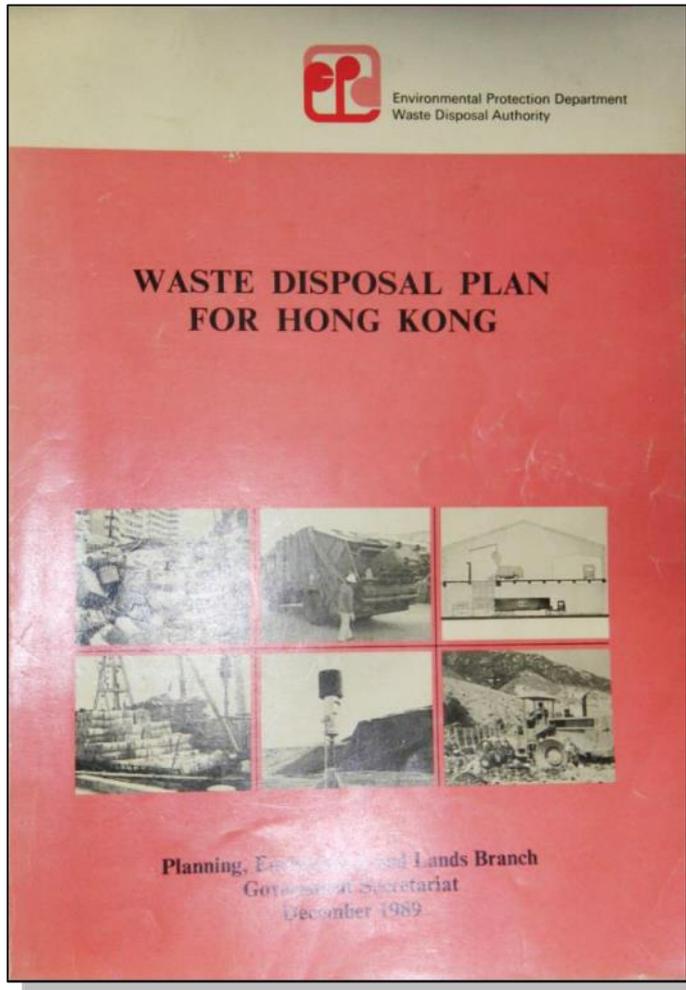
For the first time the White Paper stated **“Polluters will also have to pay”**.



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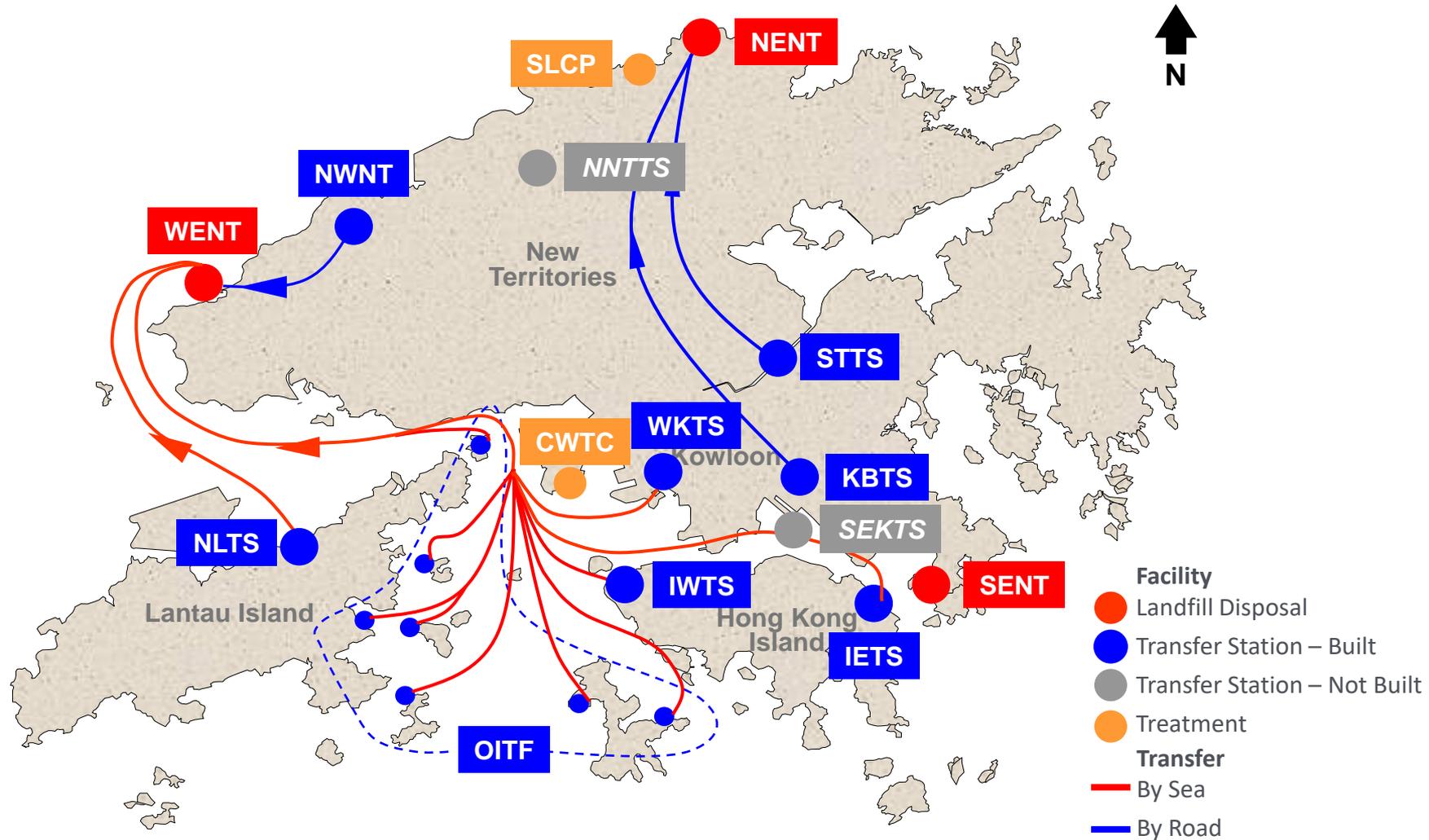
Waste Disposal Plan for Hong Kong 1989 to 2001

Overview

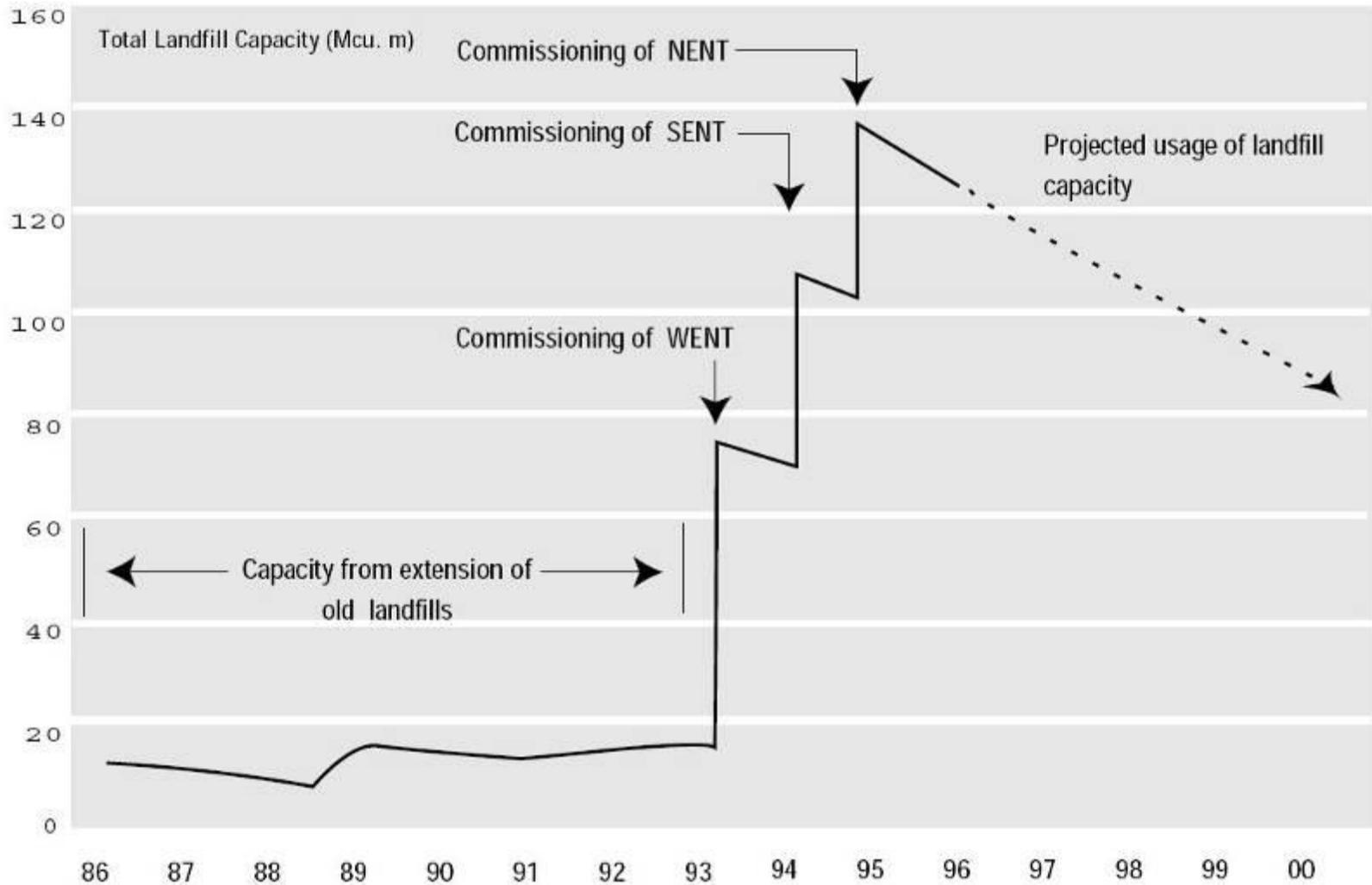


The WDP, published in 1989, set out the MSW disposal strategy for Hong Kong and contained strategies covering various waste types that fell within the ambit of the WDO, with details on their collection and disposal methods as well as proposed disposal sites

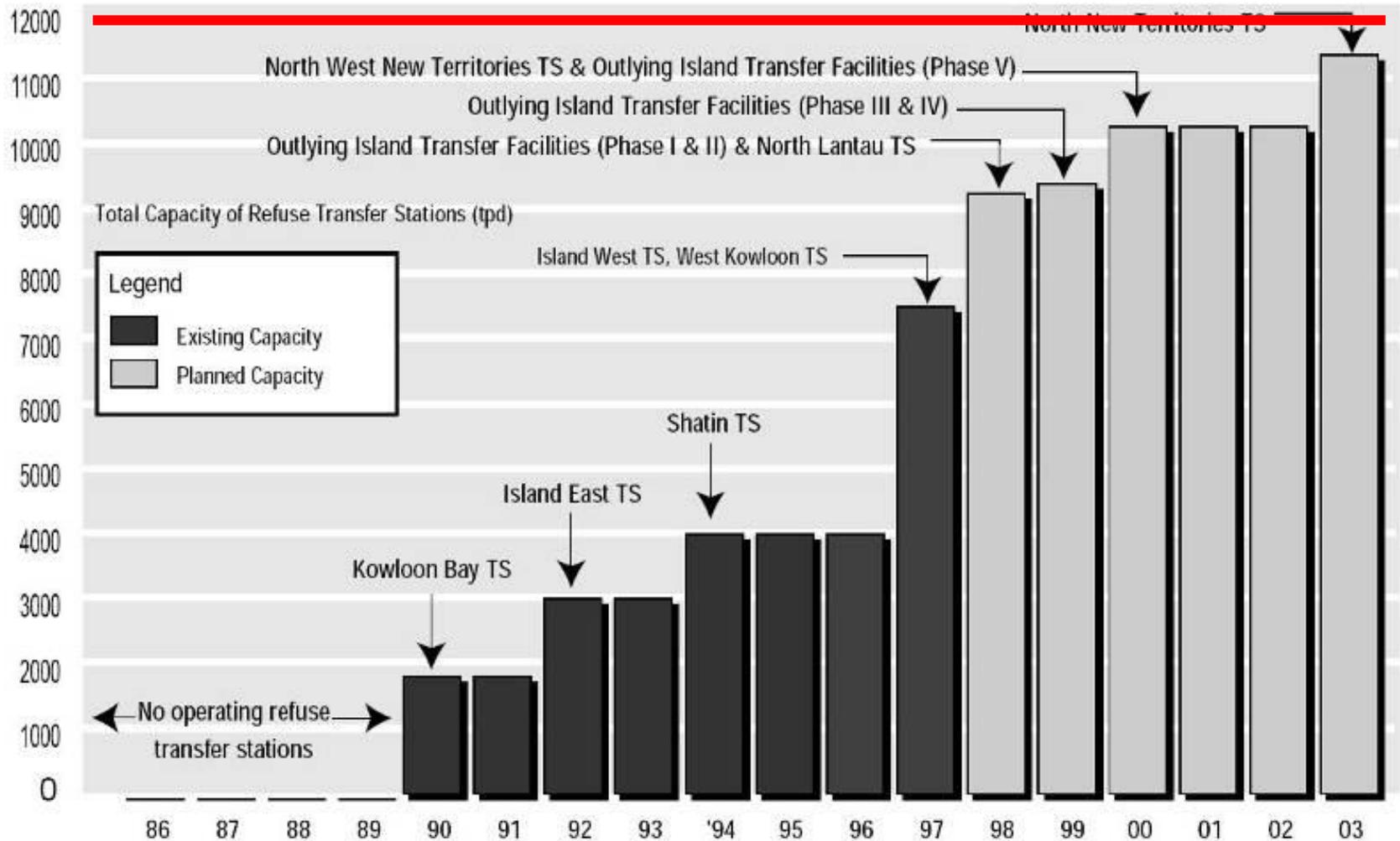
The New Facilities



Landfills – Capacity



RTS – Capacity



The Disposal System in Operation

Waste Containers from STTS Emptying at NENT



Conclusions

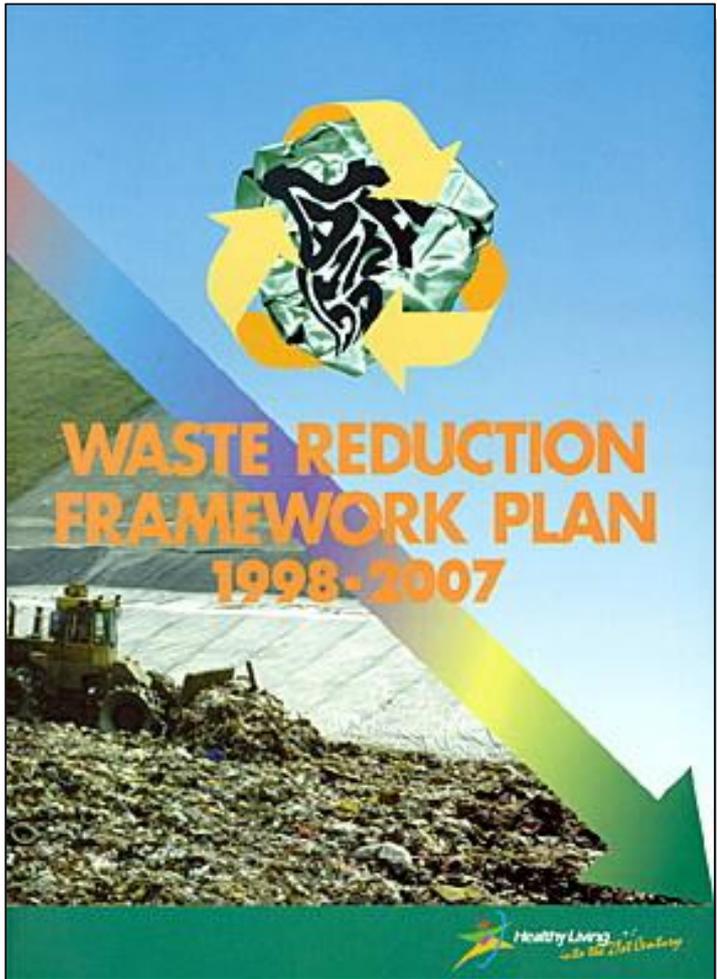
- As a result of the development of the new facilities, all major out-dated facilities were phased out
- Upon the commissioning of the strategic landfills in 1995, landfill capacity increased to almost 140Mm³
- This was supposed to cater for the disposal of waste up to 2013 but both WENT and NENT are still accepting MSW (Since January 2016, SENT Landfill accepts only construction waste)
- State-of-the-art collection and disposal facilities in-place, but no focus on reuse, recycling or treatment
- Waste reduction became the next focus of waste management policy in the 1990s – the “Waste Reduction Framework Plan 1998 to 2007”



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Waste Reduction Framework Plan 1992 to 2007

Overview

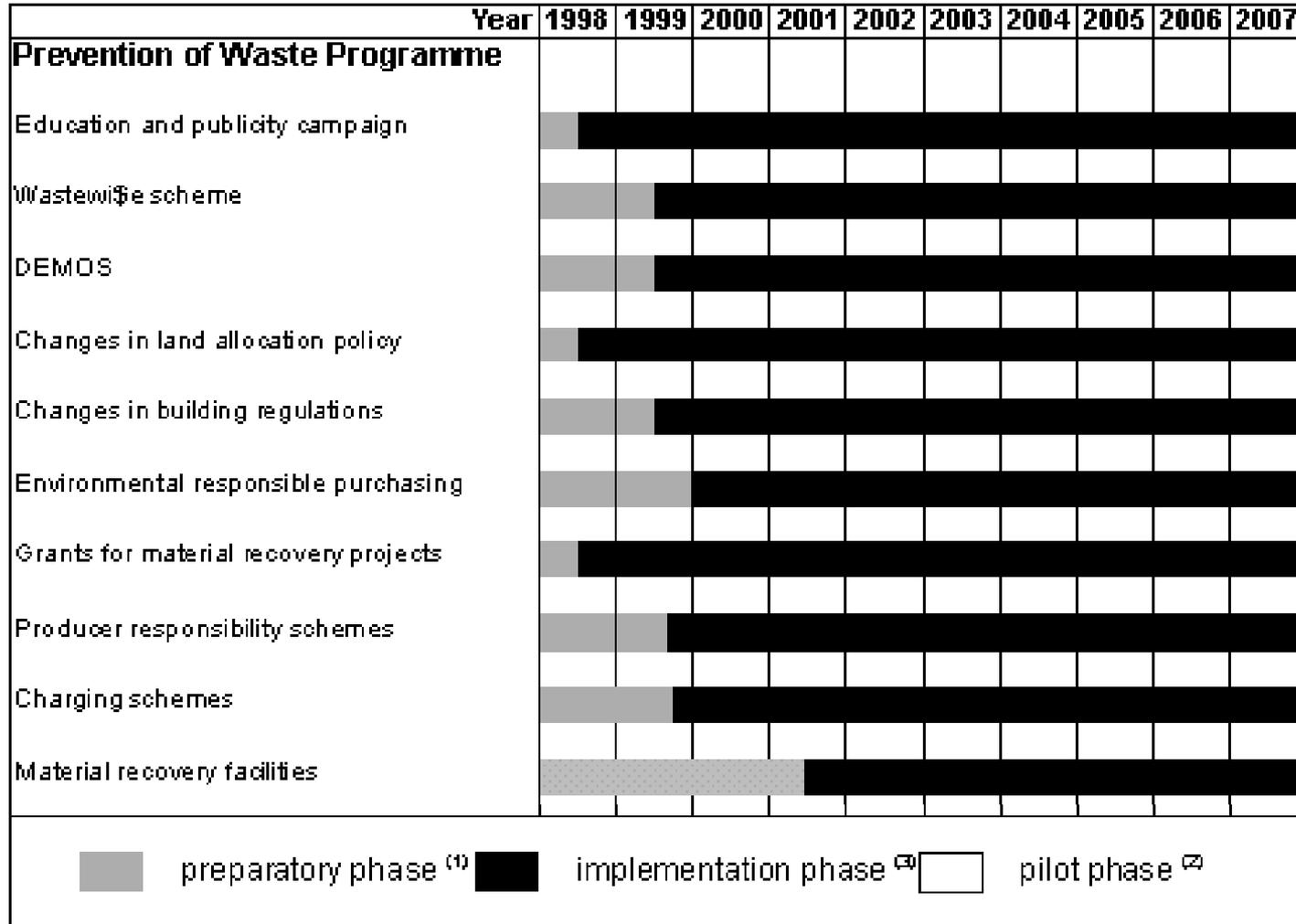


With the majority of the waste management infrastructure in place, as set out in the WDP, the purpose of the WRFP was to promote waste avoidance and recovery, building on the existing recycling system, and to introduce bulk waste reduction technologies (such as waste-to-energy incinerators) so as to minimise the future demand for landfill space

WRFP Objectives

- To extend the useful life of our strategic landfills – the target was to divert an additional 40% of the MSW generated away from landfills by 2007 (compared with 30% in 1997) thereby extending the life span of the existing landfills from 2015 to 2019
- To minimise the amount of waste produced that requires disposal
- To help conserve the earth's non-renewable resources
- To increase the waste recycling rate
- To publicly demonstrate the true costs of waste management so that there can be a review of how these costs are met
- To encourage maximum efficiency in waste management operations and minimisation of the costs associated with the collection, treatment and disposal of wastes

Implementation



Implementation

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Institutional Programme										
Setting up of Resource Recovery Unit	■	■	■	■	■	■	■	■	■	■
Setting up of Waste Reduction Committee	■	■	■	■	■	■	■	■	■	■
Sectoral Scheme and Task Force to motivate community actions	■	■	■	■	■	■	■	■	■	■
Preparation of legislation for mandatory measures		■	■	■	■	■	■	■	■	■
Waste Bulk Reduction Programme										
Waste-to-energy incineration	■	■	■	■	■	■	■	■	■	■
Composting using existing and new facilities	■	■	■	■	■	■	■	■	■	■
Major Review										
				■				■		
										



Low Level Radioactive Waste Storage Facility (LLRWSF)



- Location Sum Wan, Siu A Chau
- Commissioned November 2004
- Capacity 260 drums of waste
(each drum of 275 litre net capacity)
- Capital Cost HK\$98M
- Contractor Atal Belgoprocess JV Ltd

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Prevention of Waste Programme										
Education and publicity campaign	■	■	■	■	■	■	■	■	■	■
Wastewise scheme	■	■	■	■	■	■	■	■	■	■
DEMOS	■	■	■	■	■	■	■	■	■	■
Changes in land allocation policy	■	■	■	■	■	■	■	■	■	■
Changes in building regulations	■	■	■	■	■	■	■	■	■	■
Environmental responsible purchasing	■	■	■	■	■	■	■	■	■	■
Grants for material recovery projects	■	■	■	■	■	■	■	■	■	■
Product responsibility schemes	■	■	■	■	■	■	■	■	■	■
Charging schemes	■	■	■	■	■	■	■	■	■	■
Material recovery facilities	■	■	■	■	■	■	■	■	■	■
■ preparatory phase ⁽¹⁾ ■ implementation phase ⁽²⁾ □ pilot phase ⁽³⁾										

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
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Sectoral Scheme and Task Force to motivate community actions	■	■	■	■	■	■	■	■	■	■
Preparation of legislation for mandatory measures		■	■	■	■	■	■	■	■	■
Waste Bulk Reduction Programme										
Waste to energy incineration										
Composting using existing and new facilities	■	■	■	■	■	■	■	■	■	■
Major Review				■				■		
■ preparatory phase ⁽¹⁾ ■ implementation phase ⁽²⁾ □ pilot phase ⁽³⁾										

Conclusions

- The Waste Reduction Study, completed in 1984, set out recommendations based on extensive research into policy options and other methods to drastically cut the waste volume
- These recommendations were carried forward in the WRFP promulgated in 1998
- A number of the targets set out in the WRFP were not met – some were quietly ignored and others were rolled-over into the next strategy, the Policy Framework Plan for MSW
- Also, during this period, the remaining old landfills were closed and work started on restoring all 13 no. old for new uses, including public parks, BMX tracks, baseball pitches and golf courses



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“Making Choices for Our Future”

**Report on the Engagement Process for a
First Sustainable Development Strategy**

**A First Sustainable
Development Strategy
for Hong Kong**



In recognition of the scale of the waste problem facing Hong Kong, it was fitting that solid waste management was chosen by the Sustainable Development Council (SDC) in 2004 as one of three pilot areas in the engagement process to obtain stakeholders' views on what might be done to promote sustainable practices in this important area

Stakeholders' Views

- We should aim to reduce waste in the first place by using fewer materials or avoiding the use of certain materials altogether
- We need to accept that there is a financial implication of dealing with waste in Hong Kong and that we should be prepared to pay waste disposal costs
- Involving businesses through producer responsibility schemes (PRs) will promote recycling and waste reduction at source
- The simple step of separating our waste into reusable materials and materials that require disposal will result in more MSW being recovered for either reuse or recycling
- The burden on Hong Kong's landfills can be reduced through reuse, recovery, recycling and the use of waste treatment technologies

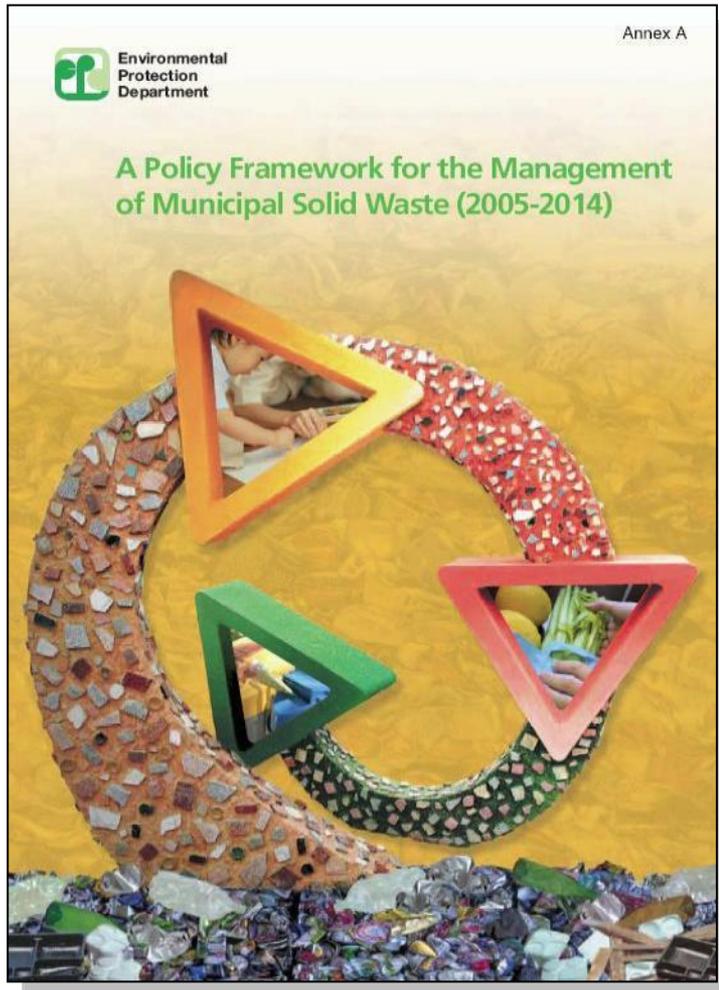
SDC's Recommendations

- **Strategic Objective 1.** As a community, to make every effort to avoid generating waste and to reduce the amount of solid waste that needs final disposal, by adopting measures to facilitate the separation of discarded material, the recovery and reuse of material and the recycling of non-reusable material
- **Strategic Objective 2.** To apply the "user-pays principle" as a means of reducing volumes of waste for disposal
- **Strategic Objective 3.** To adopt advanced technologies and practices to treat waste requiring final disposal and to create new economic opportunities. The burden on Hong Kong's landfills can be reduced through reuse, recovery, recycling and the use of waste treatment technologies



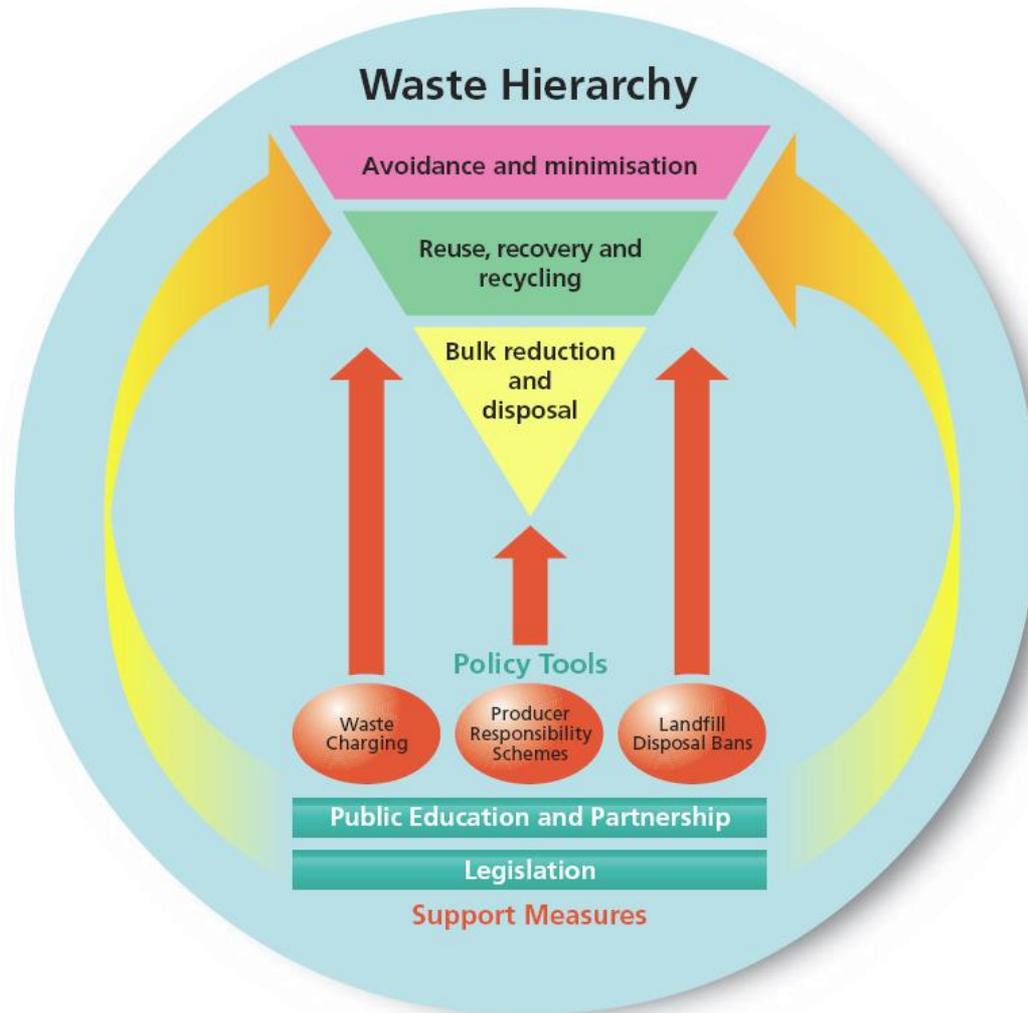
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Policy Framework for the Management of MSW 2007 to 2014

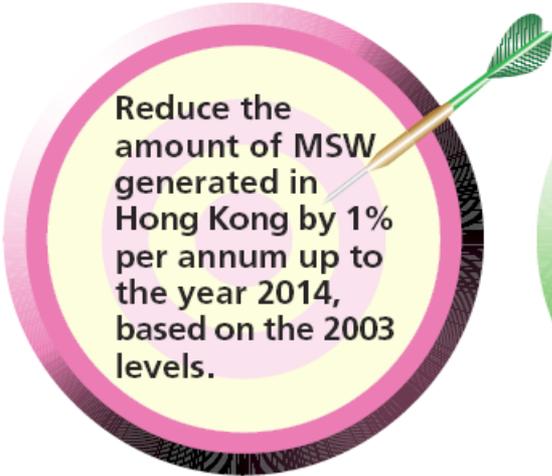


The Policy Framework describes the urgency of our growing MSW problems, pinpoints what problems and pressures we are facing and explains how this strategy impinges on a healthy future. It argues for the concerted efforts of the community as well as the Government to solve the problems, while outlining measures and initiatives already underway and future plans for discussion and comment

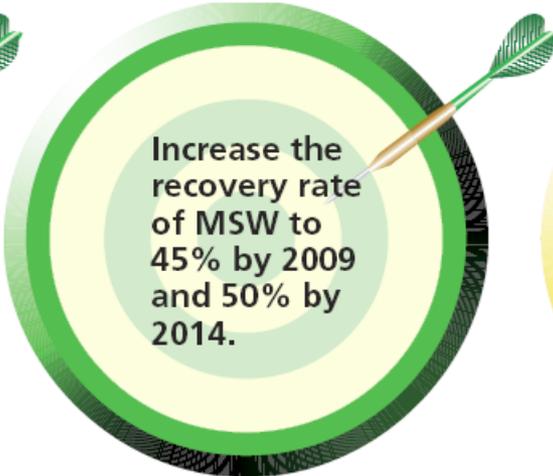
The MSW Strategy



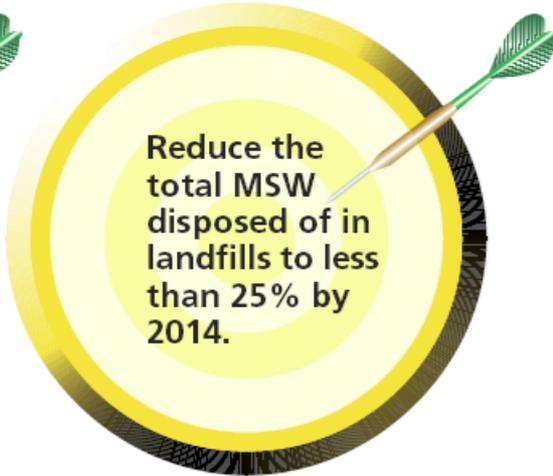
Waste Reduction Targets



Reduce the amount of MSW generated in Hong Kong by 1% per annum up to the year 2014, based on the 2003 levels.

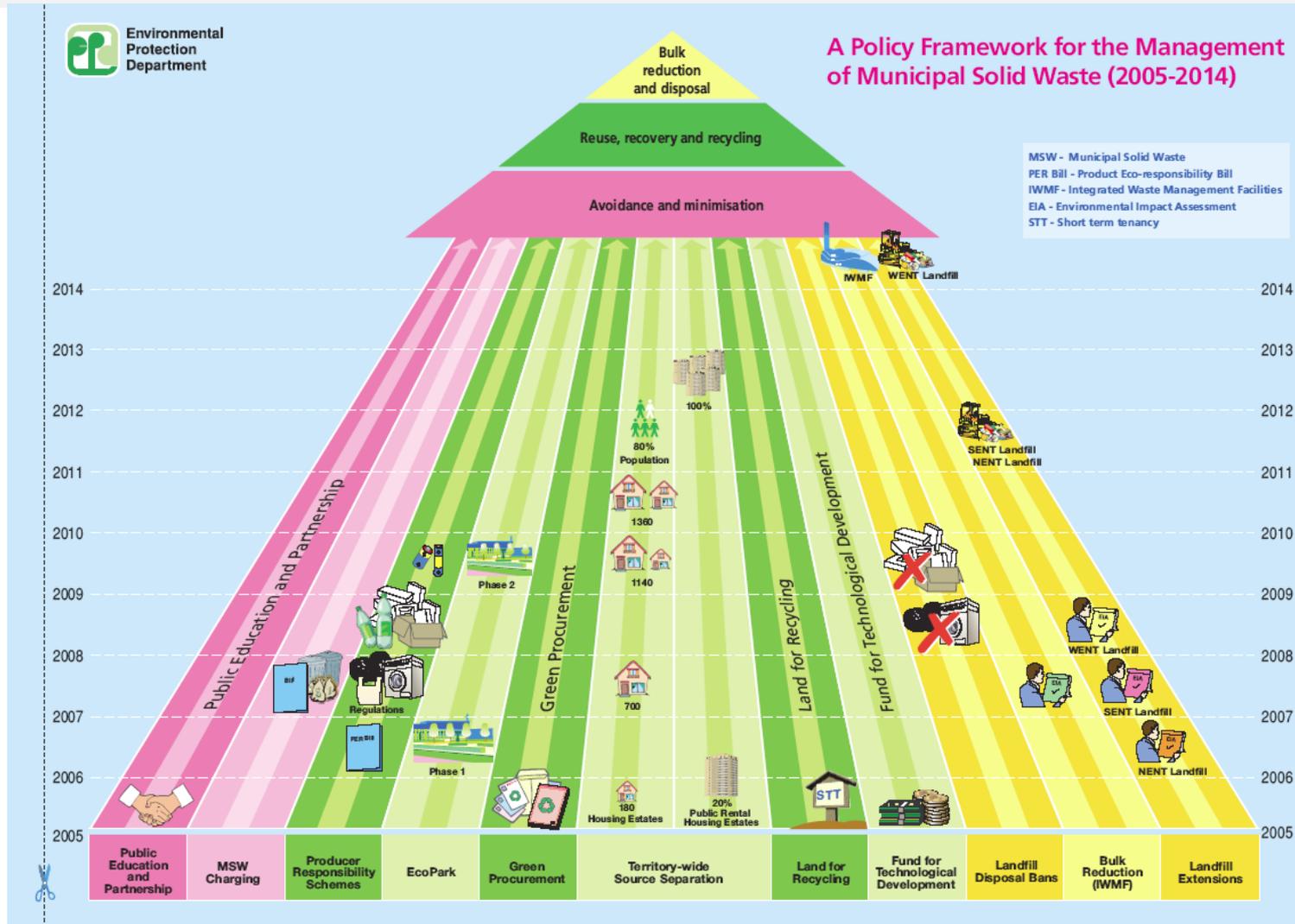


Increase the recovery rate of MSW to 45% by 2009 and 50% by 2014.



Reduce the total MSW disposed of in landfills to less than 25% by 2014.

Policy/Infra Timeline



New Facilities



EcoPark



- Location Area 38, Tuen Mun
- Commissioned 2007 (Phase 1) and 2010 (Phase 2)
- Capacity 12 ha (~26) lots for recycling trade
- Capital Cost HK\$258M
- Operating Cost ~HK\$14M/year
- Contractor Kaden Construction (construction contract)
Serco Guardian Joint Venture (1st management contract)
Urban Property Management (2nd and 3rd management contracts)

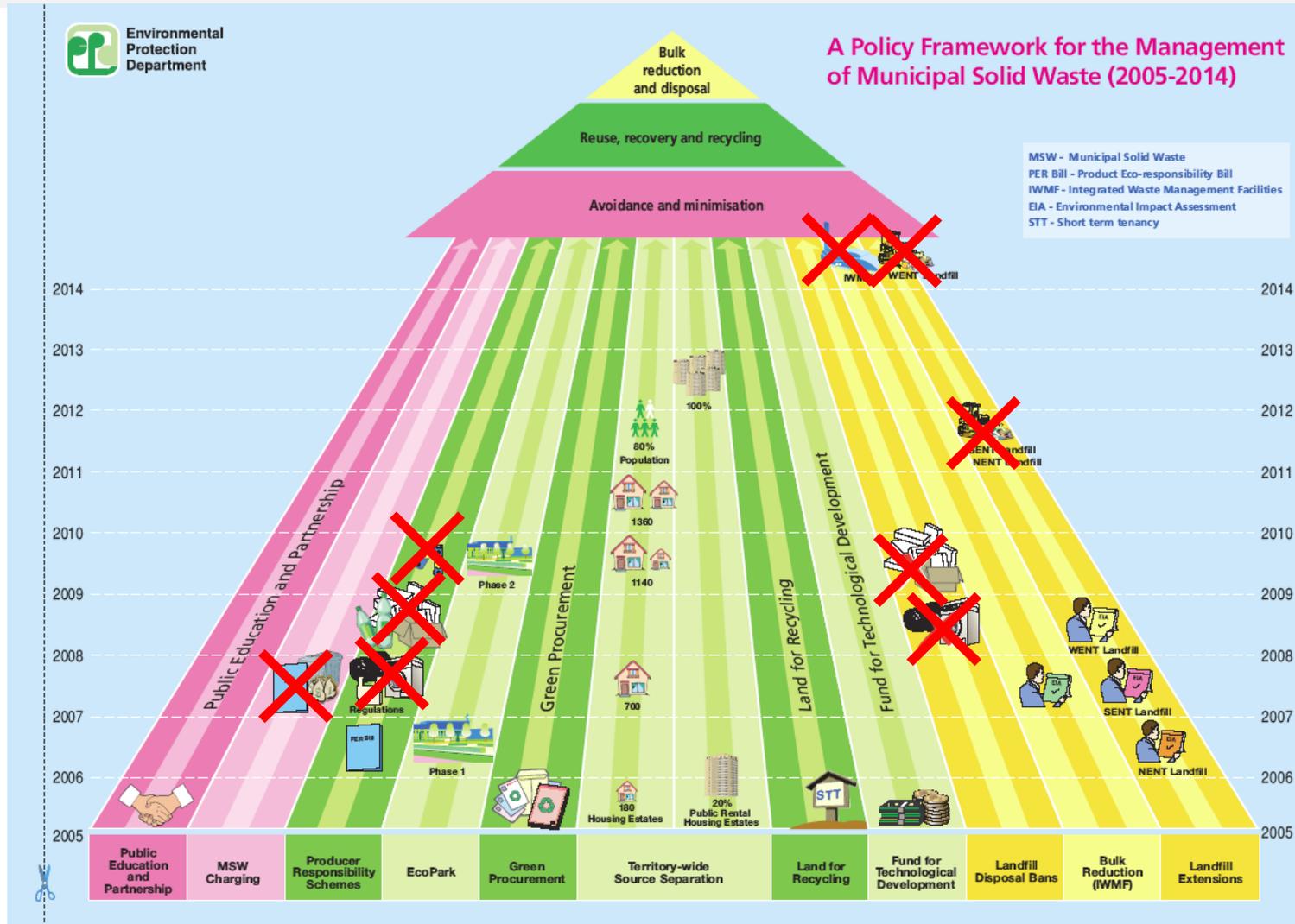


Pilot Composting Plant



- Location Kowloon Bay Waste Recycling Centre, Kowloon
(former Kowloon Bay Transfer Station)
- Commissioned mid-2008
- Throughput 4tpd
- Decommissioned mid-2015





Conclusions

- Only one of the waste reduction targets was achieved – waste disposal at landfill actually increased during the lifetime of the PFMMSW
- Very few of the policies or infrastructure were completed within the lifetime of the PFMMSW
- Similar to the WFRP, the targets set out in the PFMMSW were rolled-over into the next strategy, the Hong Kong Blueprint for Sustainable Use of Resources
- However, there were some notable successes, such as the development of the EcoPark in Tuen Mun Area 38



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Hong Kong Blueprint for Sustainable Use of Resources 2013 to 2022

Overview

HONG KONG BLUEPRINT FOR SUSTAINABLE USE OF RESOURCES 2013 – 2022

Environment Bureau



May 2013

The Blueprint recognises that Hong Kong needs to take co-ordinated and simultaneous action on waste prevention, reuse, recycling, recovery, treatment and landfilling, as part of a whole resources management chain. It aims to put Hong Kong on a clear path, with targets and a timeline, towards a “Use Less, Waste Less” lifestyle, with substantial effort in social campaigns to mobilise citizens to take more environmentally-sustainable actions in their daily lives

Objectives

Vision



Use less and waste less of the Earth's resources through instilling an environmentally-sustainable culture into Hong Kong people's daily life.

Strategy



Develop a comprehensive waste management plan and promote a new social contract with the community to conserve resources and reduce waste.

Overall Target



Reduce the Municipal Solid Waste (MSW) disposal rate by 40% on a per capita basis by 2022.

Policy Directions

1

Government to take multiple, concurrent actions to prevent and reduce waste



2

Make all out efforts to mobilize the community to participate



3

Fill missing gaps in Hong Kong's waste-related infrastructure



Key Actions



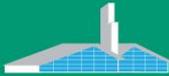
Drive behavioural change through policies and legislation to reduce waste, such as MSW charging and Producer Responsibility Schemes (PRS).



Mobilize the community through targeted campaigns, such as with food waste, glass beverage bottles collection, bring your own bag (BYOB), community green stations etc.



Invest in infrastructure, including Organic Waste Treatment Facilities (OWTFs), waste-to-energy MSW treatment, and landfill extensions.

	2013-2015	2016-2018	2019-2022
Policy Development and Legislation 	(1A) Stakeholder engagement and law drafting for MSW charging (1B) Trade consultation regarding review of construction waste charging scheme (2A) Bill on Extension of PRS on plastic shopping bags (2B) Bill on PRS on WEEE (2C) Public consultation and law drafting for PRS on glass beverage bottles (3A) Optimize the BEAM Plus scheme on waste reduction (3B) Review regularly the green specifications of the products	(2D) Study on PRSs on other waste (e.g. rubber tyres, wood, packaging materials, rechargeable batteries, etc.)	
Social Mobilization 	(1A) Food Wise Hong Kong Campaign (1B) Funding for small-scale food waste treatment facilities (2) Injection into the ECF (3A) On-going work with industry stakeholders (3B) Collaboration with District Councils	(1A)(1B)(2)(3A)(3B) Review all items	
Investing in Infrastructure 	(1A) Commission CGS by phases (1C) Improve the waste separation and collection system (2A) Establish WEEE treatment plant. (2B) Commission the STF (2C) Apply for funding for the 1st OWTF & 2nd OWTF (2C) Site search for 3rd and more OWTF (2D) Apply for funding for IWMF (3A) Apply for funding for landfill extensions	(1B) Provide stable berthing facilities for recyclers to export recyclable materials (2C) Commission the 1st OWTF & 2nd OWTF	(2D) Commission the IWMF

Specific Targets

To reduce the current per capita MSW disposal rate of 1.27 kg per day to 0.8kg per day by 2022.



Target Result

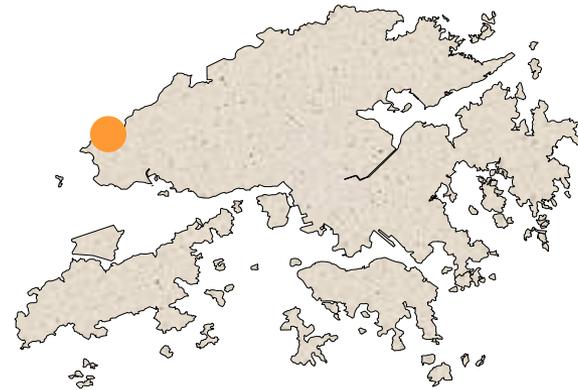
To transform the waste management structure by 2022.



New Facilities



T-PARK



- Location Nim Wan, Tuen Mun
- Commissioned May 2016
- Capacity 2,000 tonnes/day
- Power Export 2MW – approx. 4,000 households
- DBO Cost HK\$8.2 Billion NPV (15 Years Operation)
- Contractor Veolia

New Facilities

Kowloon Bay Plastic Sorting Centre



- Location Kowloon Bay, Kowloon
- Commissioned mid-2017
- Decommissioned mid-2018

New Facilities



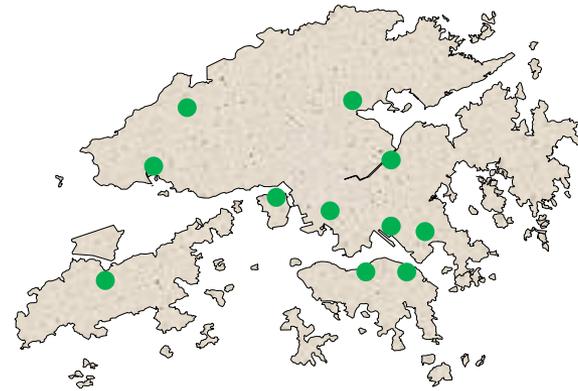
WEEE-PARK



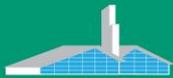
- Location EcoPark, Tuen Mun
- Commissioned March 2018
- Capacity 37,000 tonnes/year (56,000 tonnes/year double shift)
- DBO Cost HK\$1.7 Billion (10 years operation)
- Contractor ALBA Integrated Waste Solutions (Hong Kong) Limited



Community Green Stations



Green @	Operator	Address	Opened
Sha Tin	Christian Family Service Centre	10 On Ping Street, Shek Mun	2015
Eastern	Po Leung Kuk	30 Oi Shun Road, Shau Kei Wan	2015
Kwun Tong	Christian Family Service Centre	27 Sheung Yee Road, Kowloon Bay	2017
Yuen Long	Hong Chi Association	65 Tin Wah Road, Tin Shui Wai	2017
Sham Shui Po	Po Leung Kuk	339 Tung Chau Street, Sham Shui Po	2017
Tuen Mun	Yan Oi Tong Limited	9 Tuen Yee Street, Tuen Mun	2018
Kwai Tsing	New Life Psychiatric Rehabilitation Association	12 Tam Kon Shan Road, Tsing Yi	2018
Tai Po	Hong Chi Association	25 Dai Wah Street, Tai Po	2019
Islands	OIWA Ltd	1 Chung Mun Road, Tung Chung, Lantau	2020
Sai Kung	Christian Family Service Centre	near Po Hong Road/Po Lam Road North, Tseung Kwan O	later in 2021
Wan Chai	The Hong Kong Wan Chai District Association	6 Wan Shing Street, Wan Chai	later in 2021

	2013-2015	2016-2018	2019-2022
Policy Development and Legislation 	(1A) Stakeholder engagement and law drafting for MSW charging (1B) Trade consultation regarding review of construction waste charging scheme (2A) Bill on Extension of PRS on plastic shopping bags (2B) Bill on PRS on WEEE (2C) Public consultation and law drafting for PRS on glass beverage bottles (3A) Optimize the BEAM Plus scheme on waste reduction (3B) Review regularly the green specifications of the products	(2D) Study on PRSs on other waste (e.g. rubber tyres, wood, packaging materials, rechargeable batteries, etc.) delay to 2016	→ delayed – still not enacted
Social Mobilization 	(1A) Food Wise Hong Kong Campaign (1B) Funding for small-scale food waste treatment facilities (2) Injection into the ECF (3A) On-going work with industry stakeholders (3B) Collaboration with District Councils	(1A)(1B)(2)(3A)(3B) Review all items	
Investing in Infrastructure 	(1A) Commission CGS by phases (1C) Improve the waste separation and collection system (2A) Establish WEEE treatment plant. (2B) Commission the CTF (2C) Apply for funding for the 1st OWTF & 2nd OWTF (2C) Site search for 3rd and more OWTF (2D) Apply for funding for IWMF (3A) Apply for funding for landfill extensions	(1B) Provide stable berthing facilities for recyclers to export recyclable materials (2C) Commission the 1st OWTF & 2nd OWTF delay to 2018 delay to 2016	(2D) Commission the IWMF → delay to 2025 delay to 2019 → delay to 2022

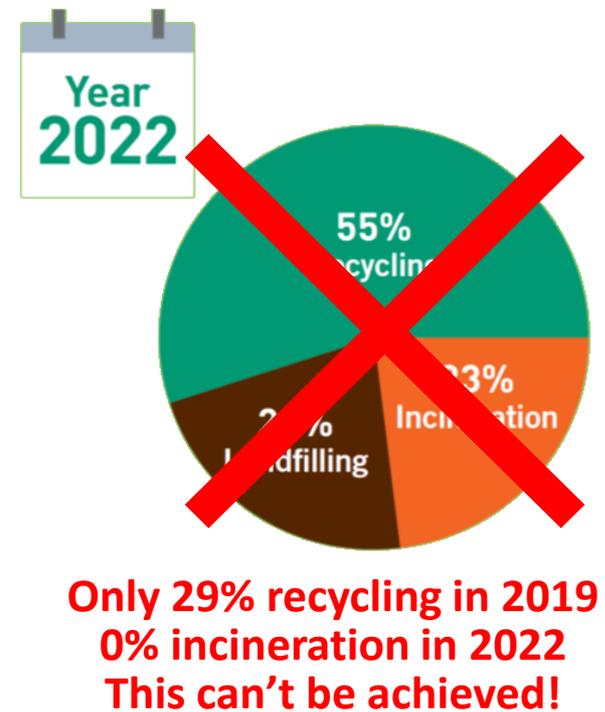
Specific Targets

To reduce the current per capita MSW disposal rate of 1.27 kg per day to 0.8kg per day by 2022.



Target Result

To transform the waste management structure by 2022.



Conclusions

- None of the waste reduction targets were achieved – waste actually increased during the lifetime of the BFSUR
- However, many of the policies were implemented and while little of the planned infrastructure was completed on time, most of it was at least started
- Similar to the WFRP and the PFMMSW, the targets set out in the BFSUR were rolled-over into the next update, the Waste Blueprint for Hong Kong



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A Food Waste and Yard Waste Plan for Hong Kong 2014 to 2022



Companion document to the *Blueprint* that articulates the specific strategy for tackling food and yard waste, which is a component of MSW. The strategy for food waste has FOUR main components:

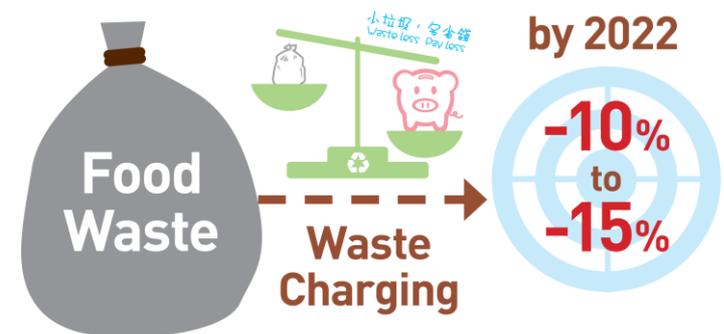
- Mobilize the community
- Promote food waste separation
- Recycle and treat separated food waste
- Treat non-separated food waste and final disposal

- To cut down the amount of food waste that goes to landfills by at least 40% by 2022.
- This means reduce food waste to landfills from around 3,600 tonnes a day to around 2,160 tonnes a day (a reduction of about 500,000 tonnes per year) over the course of about eight years
- Intention is to implement a quantity-based MSW charging scheme by 2016/17.

Food Wise Hong Kong Campaign



-5%
to
-10%



New Facilities



O-PARK 1



- Location Siu Ho Wan
- Commissioned March 2019
- Throughput 200 tonnes/day
- DBO Cost HK\$ 2.4 Billion NPV (15 years)
- Contractor Oscar Bioenergy JV

New Facilities

Food Waste/Sewage Sludge Anaerobic Co-digestion Trial Scheme

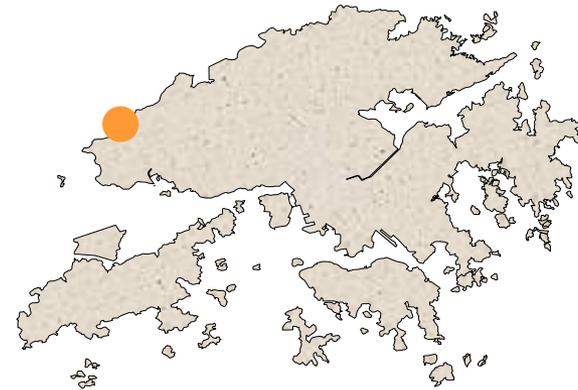


- Location Adjacent to Tai Po Sewage Treatment Works
- Commissioned 2019
- Capacity 50 tpd

New Facilities



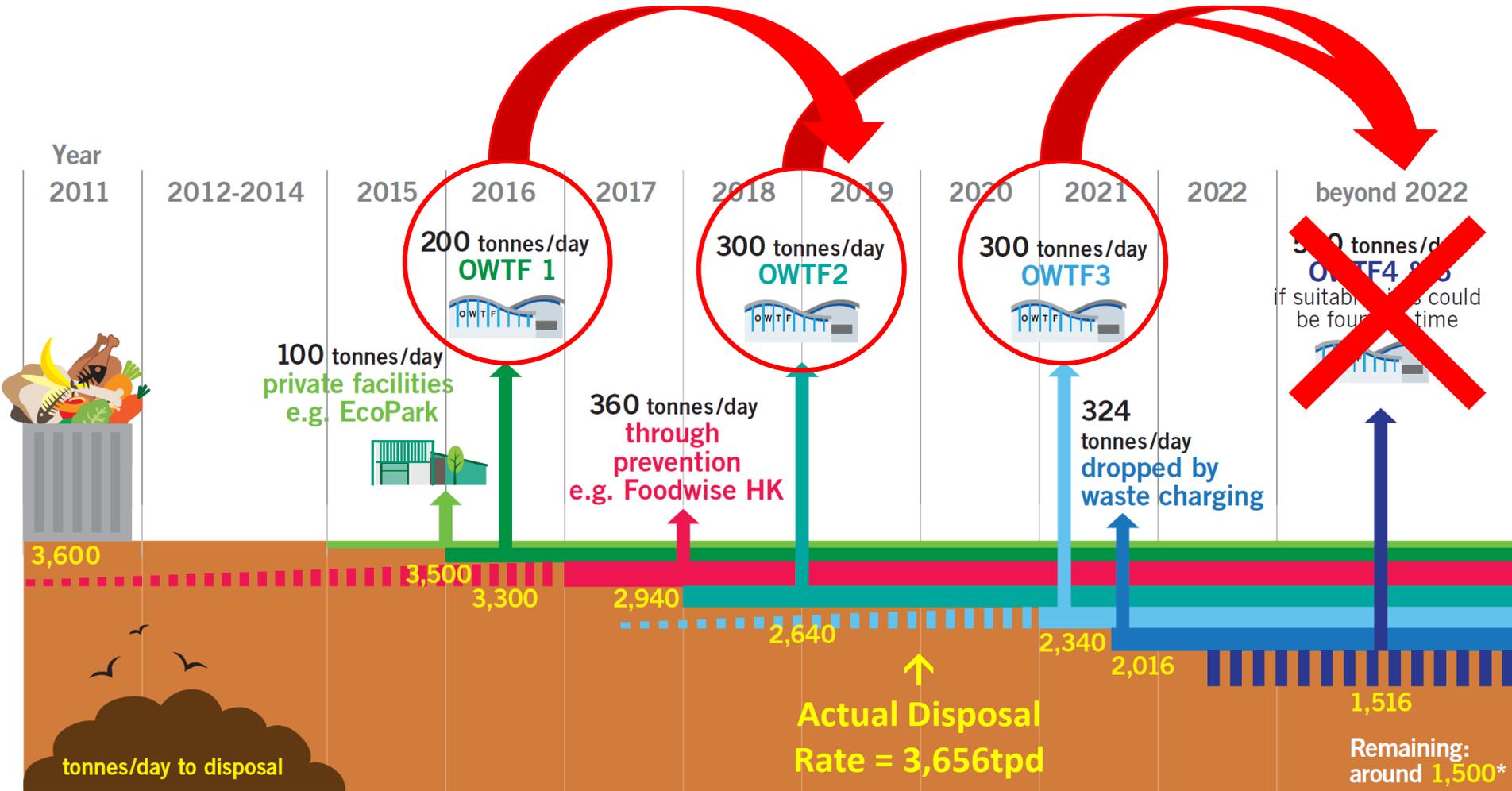
Y-PARK



- Location Tsang Tsui, Tuen Mun
- Commissioned expected 2nd Quarter in 2021
- Capacity 11,000 tonnes (1st year)
will increase to 20,000 tonnes average
- Contractor Ming Hing-AEL Joint Venture



Conclusion



Conclusions

- None of the food waste reduction targets were achieved, primarily because waste charging was not implemented
- None of the planned infrastructure was completed on time, although the first food waste composting was ultimately delivered
- As of 2019, which is the latest data provided by EPD, food waste disposal actually increased over the timeframe of the FW&YWP



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Waste Blueprint for Hong Kong 2035



An updated version of the *Blueprint* looking ahead to 2035, with a new vision to achieve

**“Waste Reduction • Resources
Circulation • Zero Landfill”**

Major implementation strategies:

- Work on low-carbon transformation
- Develop more facilities for waste to resource/energy
- Build circular economy
- Support green employment opportunities

New Vision



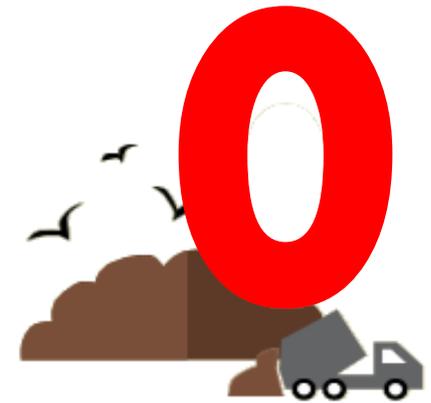
New Vision



**Waste
Reduction**



**Resources
Circulation**



**Zero
Landfill**



New Targets

① Medium-term Target

By implementing charging for disposal of MSW, to gradually reduce the per capita MSW disposal by 40-45% and increase the recovery rate to about 55%



↓ **40-45%**



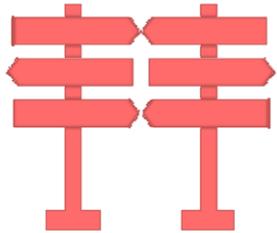
↑ **~55%**

② Long-term Target

By developing adequate waste-to-energy facilities, to move away from the reliance on landfills in the long run



Six Major Areas of Action



**Six
Major
Areas of
Action**

1



**Waste
Reduction**

2



**Waste
Separation**

3



**Resources
Circulation**

4



**Industry
Support**

5



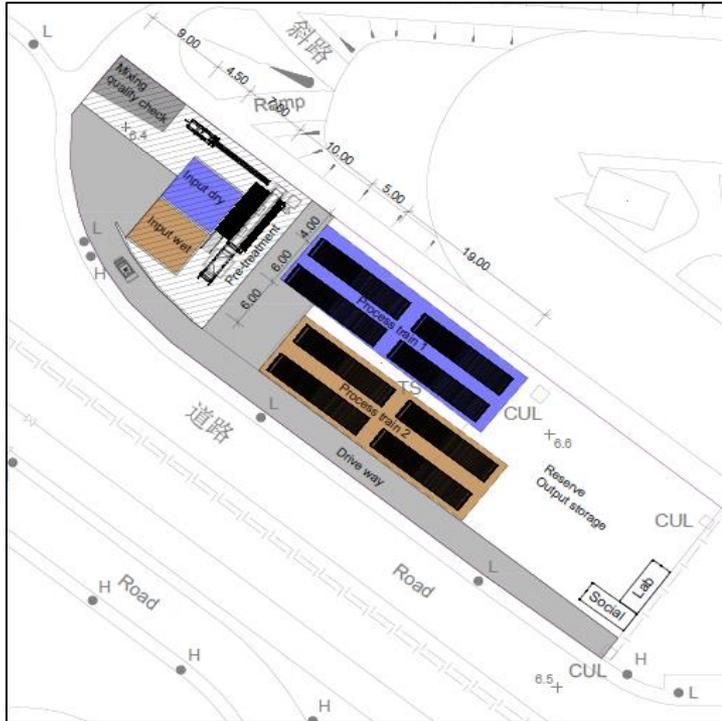
**Innovation and
Cooperation**

6



**Education and
Publicity**

New Facilities



Biochar Pilot Plant

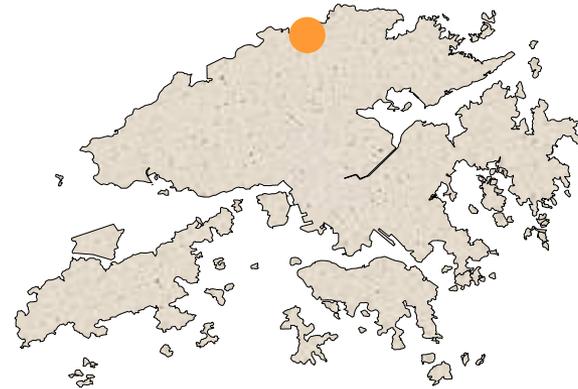


- Location EcoPark, Tuen Mun
- Commissioned expected 2022
- Capacity 1 tonne/hour
- Contractor yet to be tendered

New Facilities



O-PARK 2



- Location Sha Ling, Sheung Shui
 (at site of former SLCP)
- Commissioned expected in 2023
- Throughput 300 tonnes/day
- Contractor AJA JV

Paper Pulping Facility



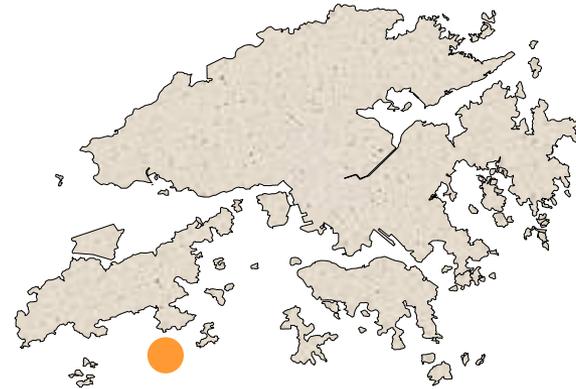
- Location EcoPark, Tuen Mun
- Commissioned tba
- Capacity tba
- Contractor tba

Note: Rocsky International Limited was awarded a contract in December 2018 to develop a paper recycling plant at Lots P1, P5, P6 and P7. No work ever commenced due to a dispute between Rocsky and EPD, which is now being litigated in court. EPD has indicated that it will repurpose the lots for a paper pulping facility, to be tendered towards the end of 2021.

New Facilities



I-PARK 1 aka IWMF, Phase 1

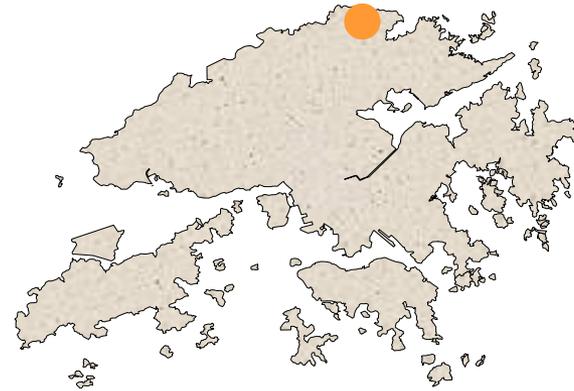


- | | |
|----------------|--|
| – Location | Shek Kwu Chau |
| – Commissioned | expected 2025 |
| – Throughput | 3,000tpd MSW Incineration + 200tpd MSW Sorting |
| – Power Export | 480M kWh – approx. 100,000 households |
| – Site Area | 16ha (reclamation) |
| – DBO Cost | HK\$31.4 Billion NPV (15 years operation) |
| – Contractor | Keppel Seghers – Zhen Hua JV |

New Facilities



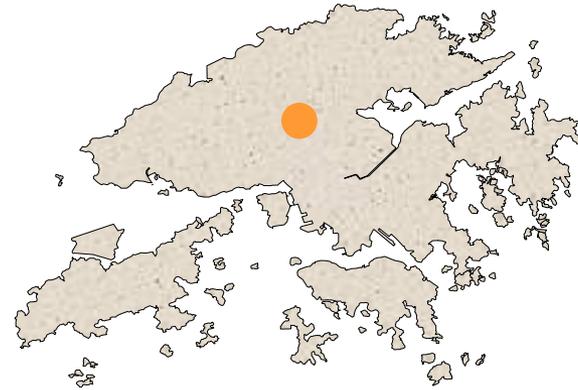
NENT Landfill Extension



- Location Ta Kwu Ling
- Commissioned expected July 2025
- Capacity 19+Mm³
- Lifespan 10+ years?
- Site Area 16ha
- DBO Cost Unknown
- Contractor Currently being tendered

New Facilities

O-PARK 3

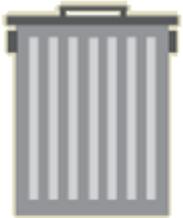


- Location Shek Kong, Yuen Long
(opposite Kadoorie Farm)
- Commissioned 2026 planned
- Throughput 300 tonnes/day
- Site Area 1.86ha

Observations

1 Medium-term Target

By implementing charging for disposal of MSW, to gradually reduce the per capita MSW disposal by 40-45% and increase the recovery rate to about 55%



↓40-45%



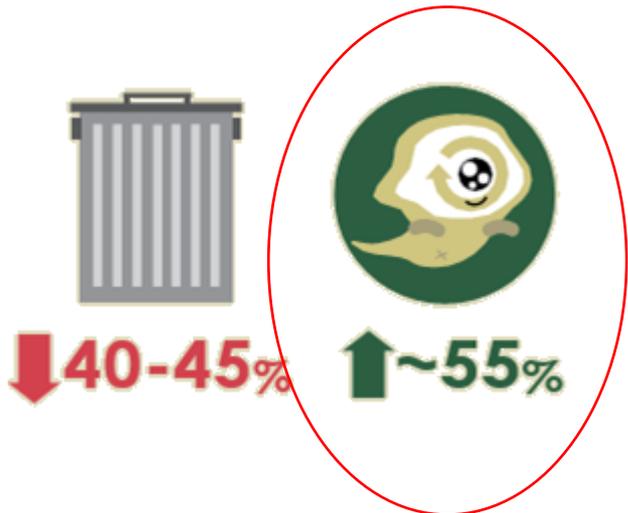
↑~55%

- Reducing the MSW disposal rate from 11,057tpd to 6,081 – 6,643tpd
- In per capita terms, this is equivalent to a reduction from 1.47kg/person/day to 0.81 – 0.88kg/person/day
- Note that the BFSUR target was already 0.80kg/person/day by 2022, so this actually represents a relaxation over the next 14 years!
- With an increasing population, using a %age for a target rather than a tpd figure allows more waste to be disposed of

Observations

1 Medium-term Target

By implementing charging for disposal of MSW, to gradually reduce the per capita MSW disposal by 40-45% and increase the recovery rate to about 55%



- Increasing MSW recovery rate from 1.64M tpa (@29%) to 2M tpa (@55%)
- Note that Hong Kong was achieving 35% recovery of MSW back in 2015, so this target is only a 20% increase over a period of 20 years – just 1% per year – so not that challenging, either!
- With an increasing population, using a %age for a target rather than a tpd figure allows more waste to be recovered

2 Long-term Target

By developing adequate waste-to-energy facilities, to move away from the reliance on landfills in the long run



Observations

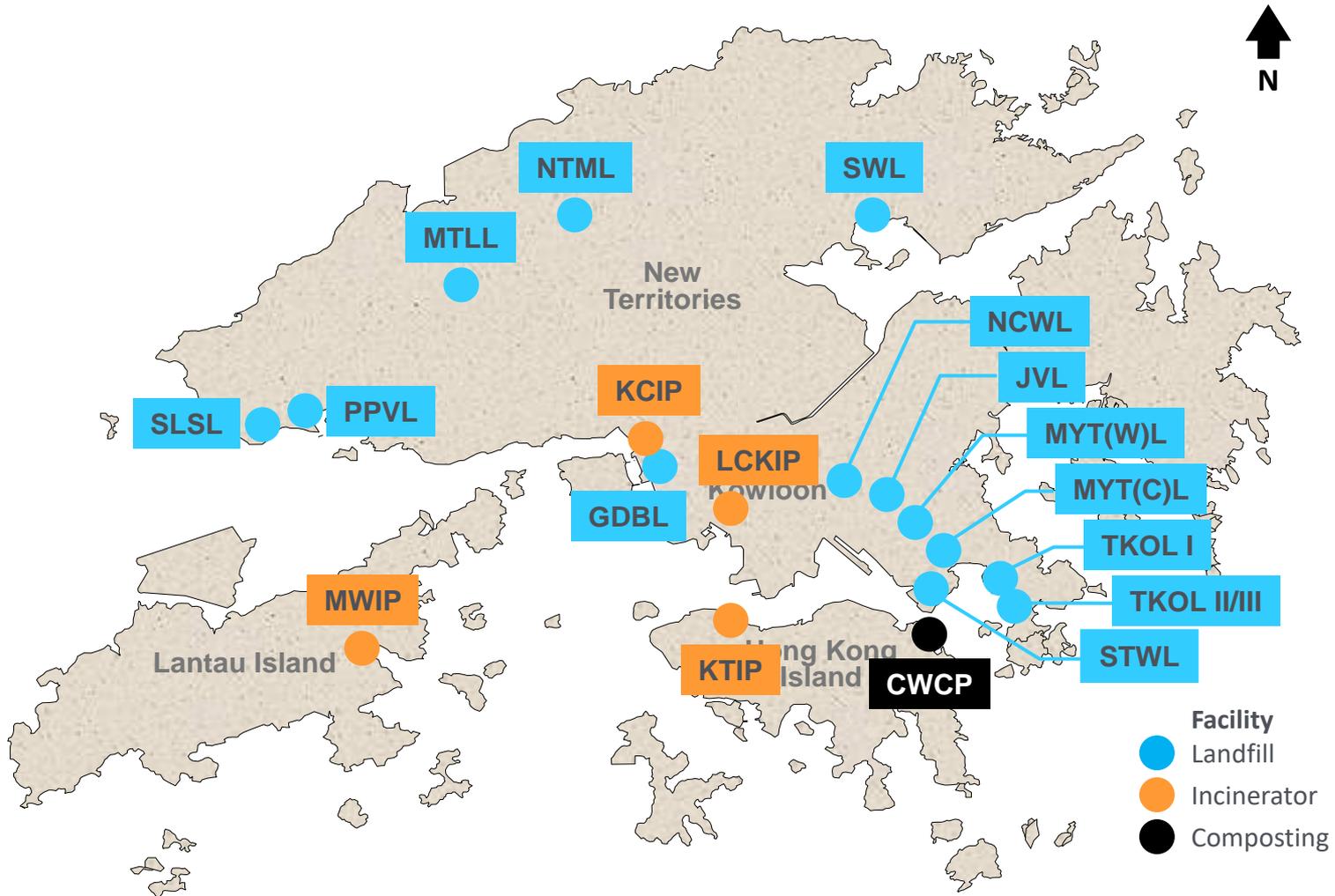
- “Adequate WtoE facilities”? The IWMF currently under construction can treat 3,000tpd of MSW, which is roughly 1/3 of the daily amount. So does this mean we need two more IWMFs by 2035?
- Landfills will ALWAYS be needed, e.g. for residuals from MSW treatment (e.g. ash from incineration) and for chemical wastes that cannot be treated in any other way (e.g. asbestos)
- So setting a vision of “Zero Landfill” is somewhat misleading



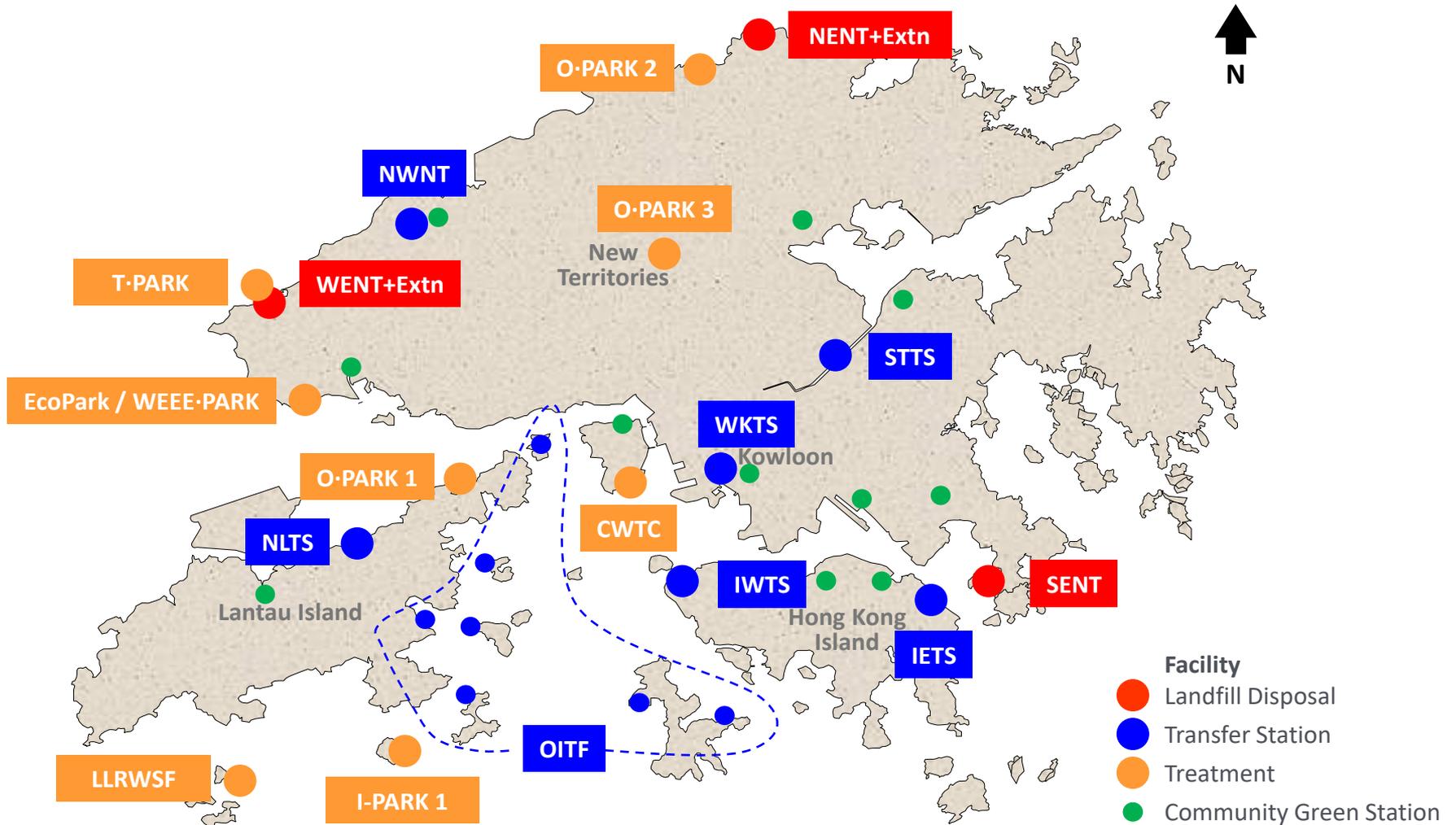
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Overall Conclusions 1989 to 2035

Infrastructure (Hardware)



Infrastructure (Hardware)



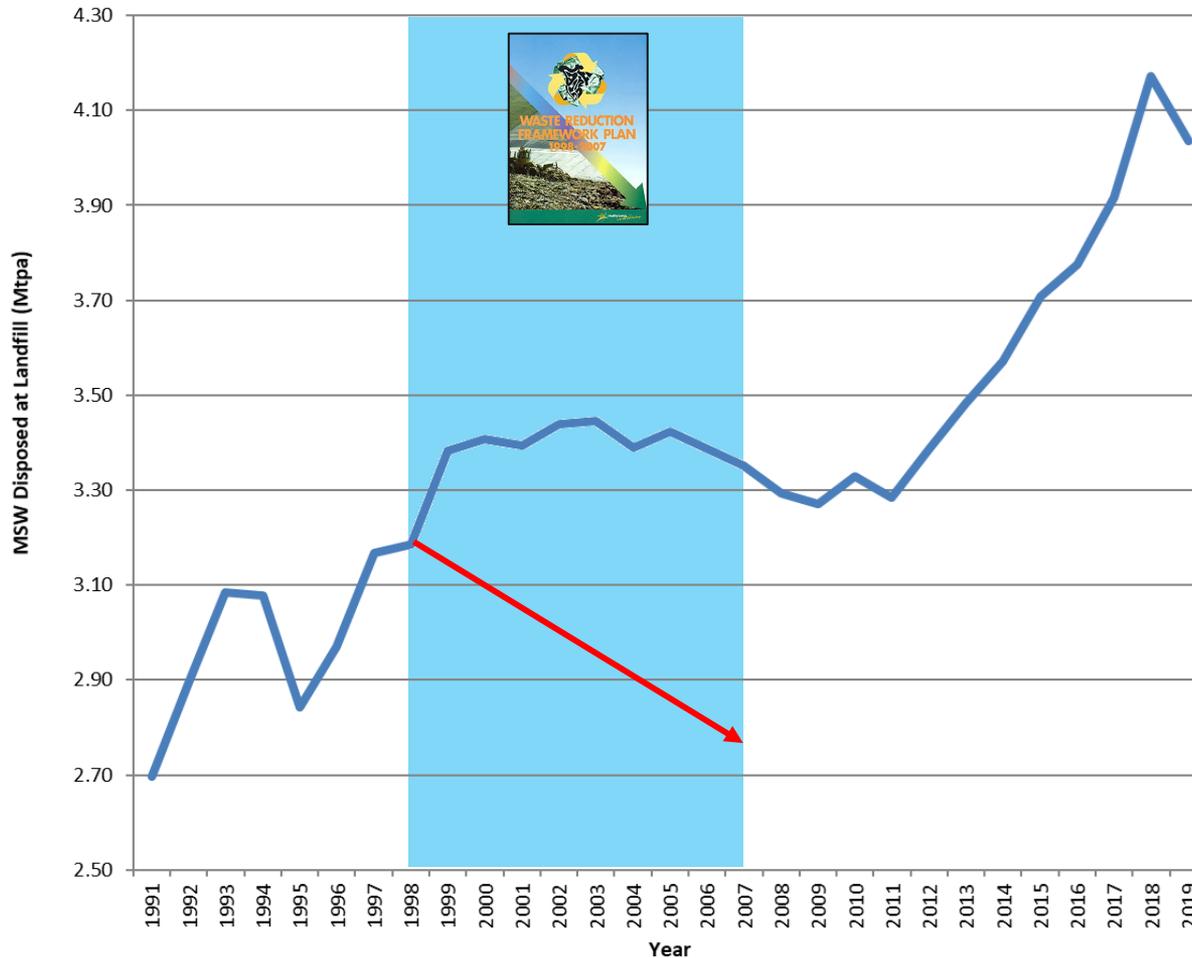


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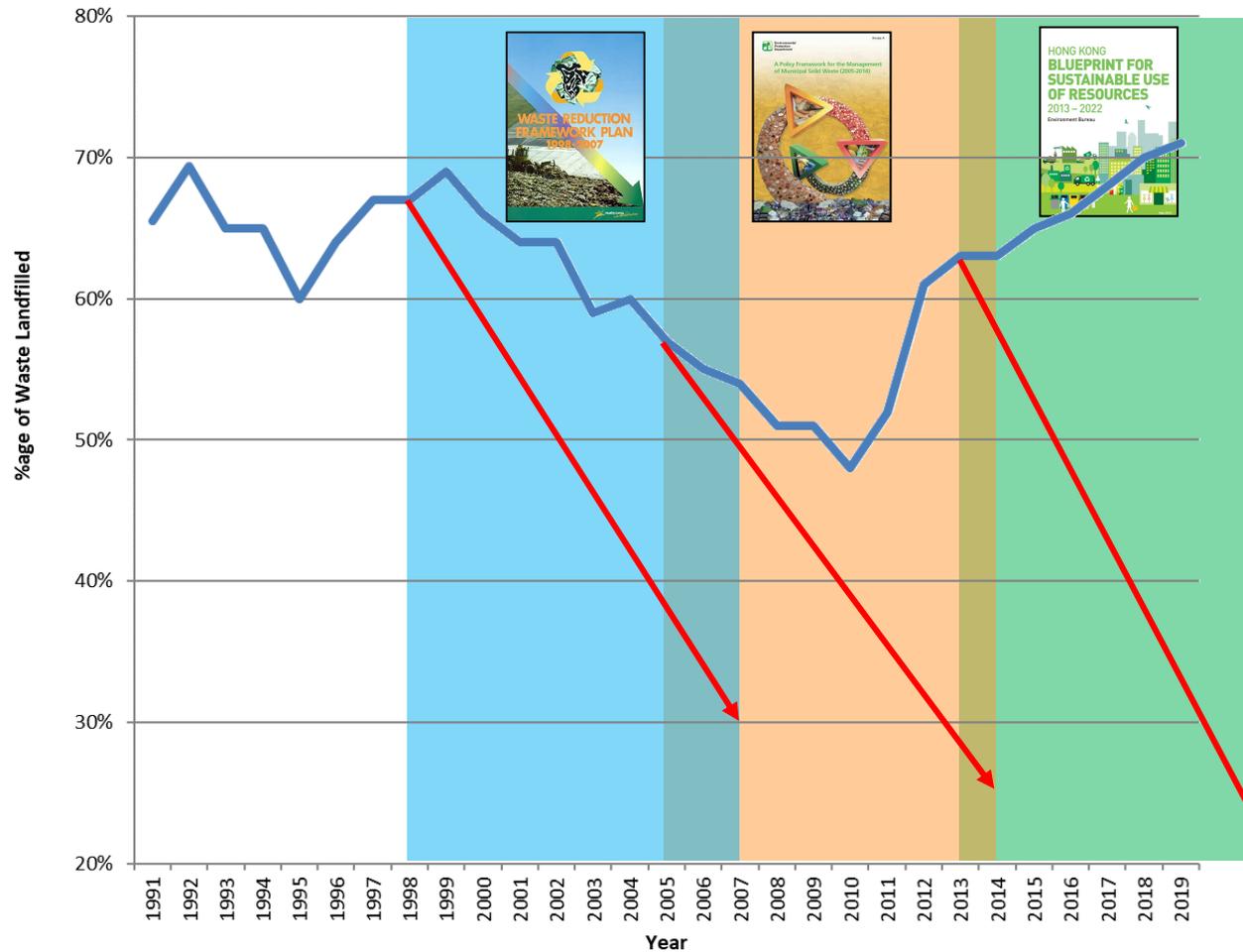
Policy (Software)

- I think we can agree that the infrastructure (hardware) side of things has been a great success – initially in terms of collection and disposal, and later with more focus on treatment
- But while the policies and strategies (the software) proposed by the government are commendable, time and time again implementation has been delayed or given-up on
- Almost none of the waste reduction targets have been achieved over the lifetime of the strategy in which they were proposed

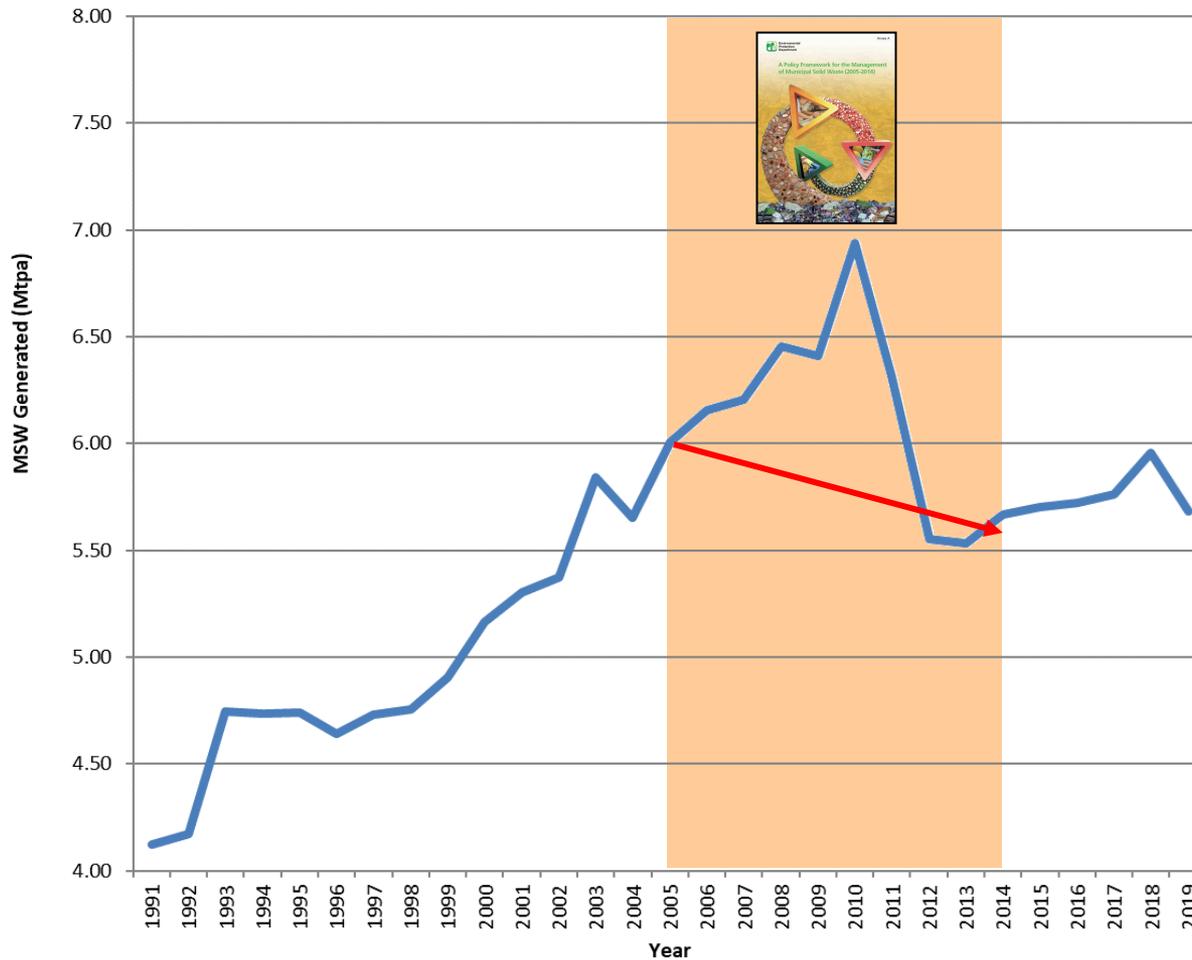
Waste Disposal Over Time



%age Waste Landfilled Over Time

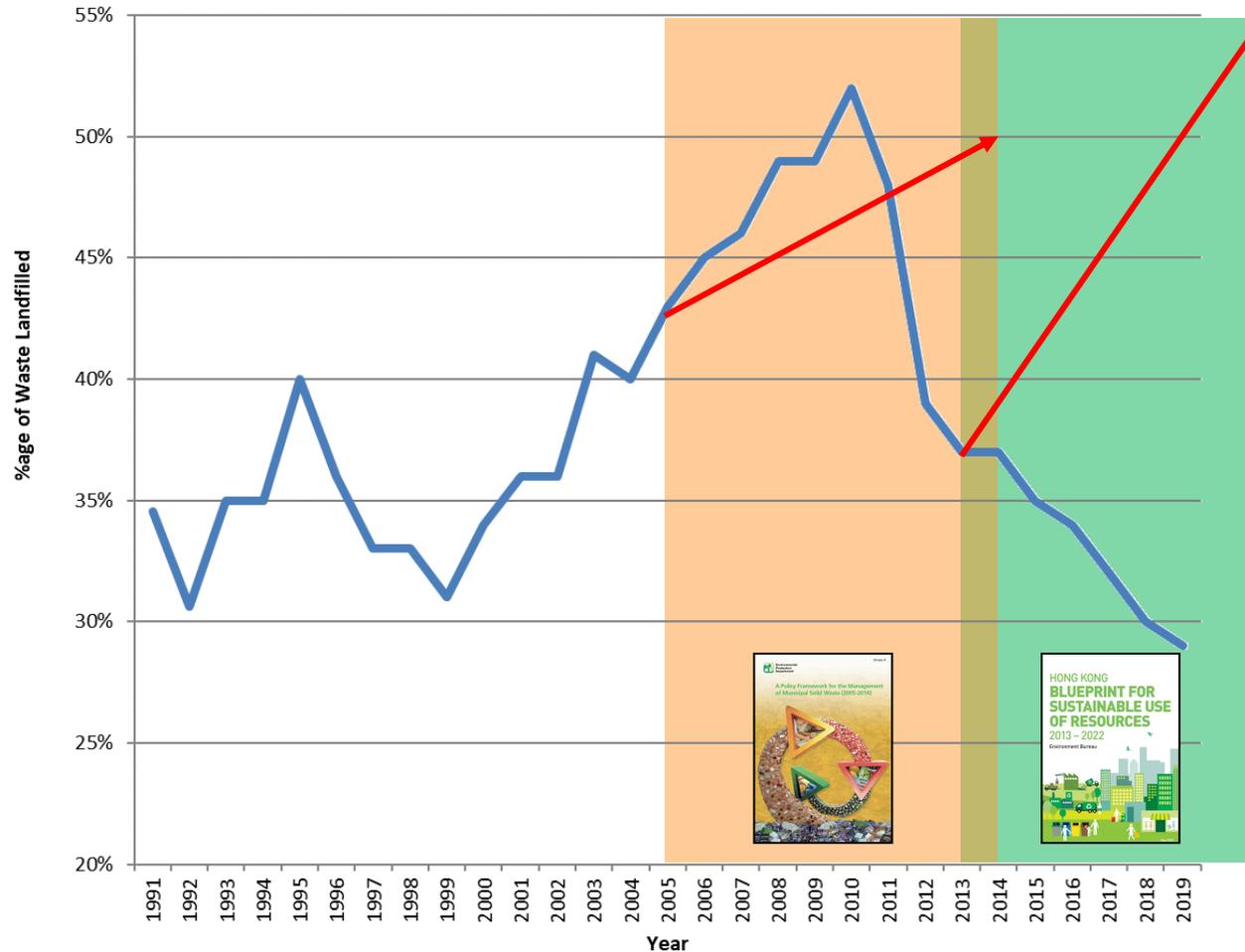


Waste Generation Over Time

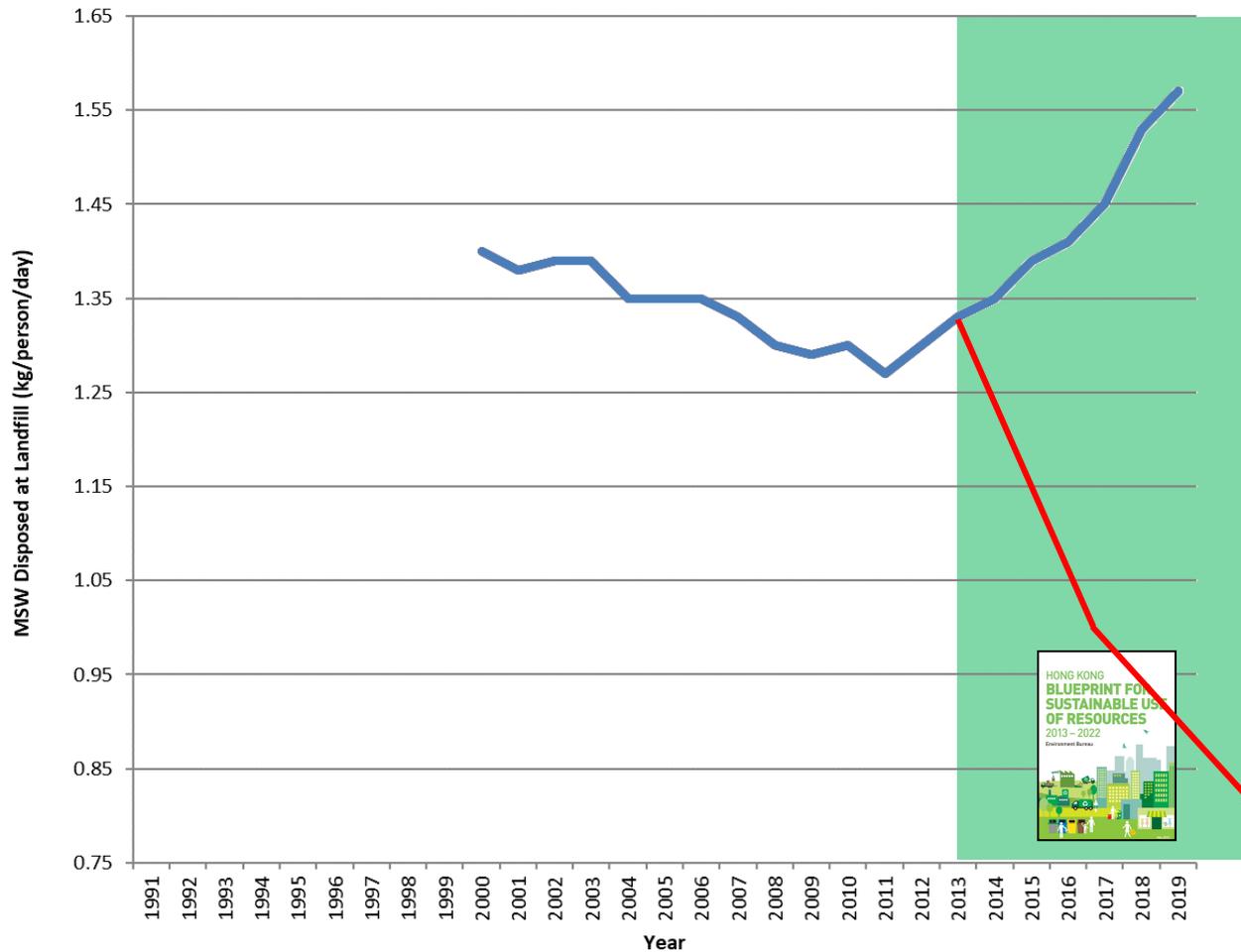


Policy (Software)

%age Waste Recovered Over Time



Per Capita Waste Generation Over Time

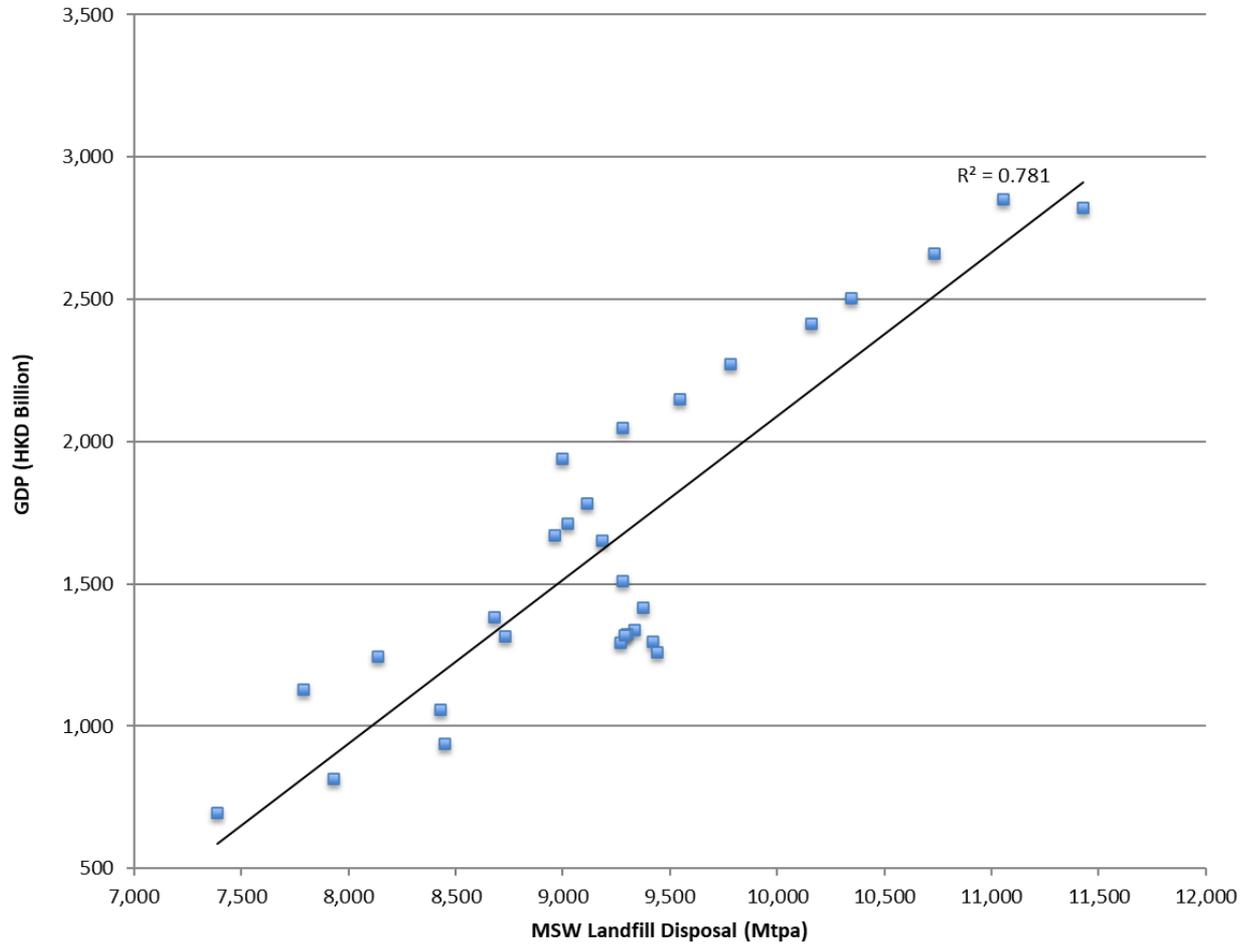


Policy (Software)

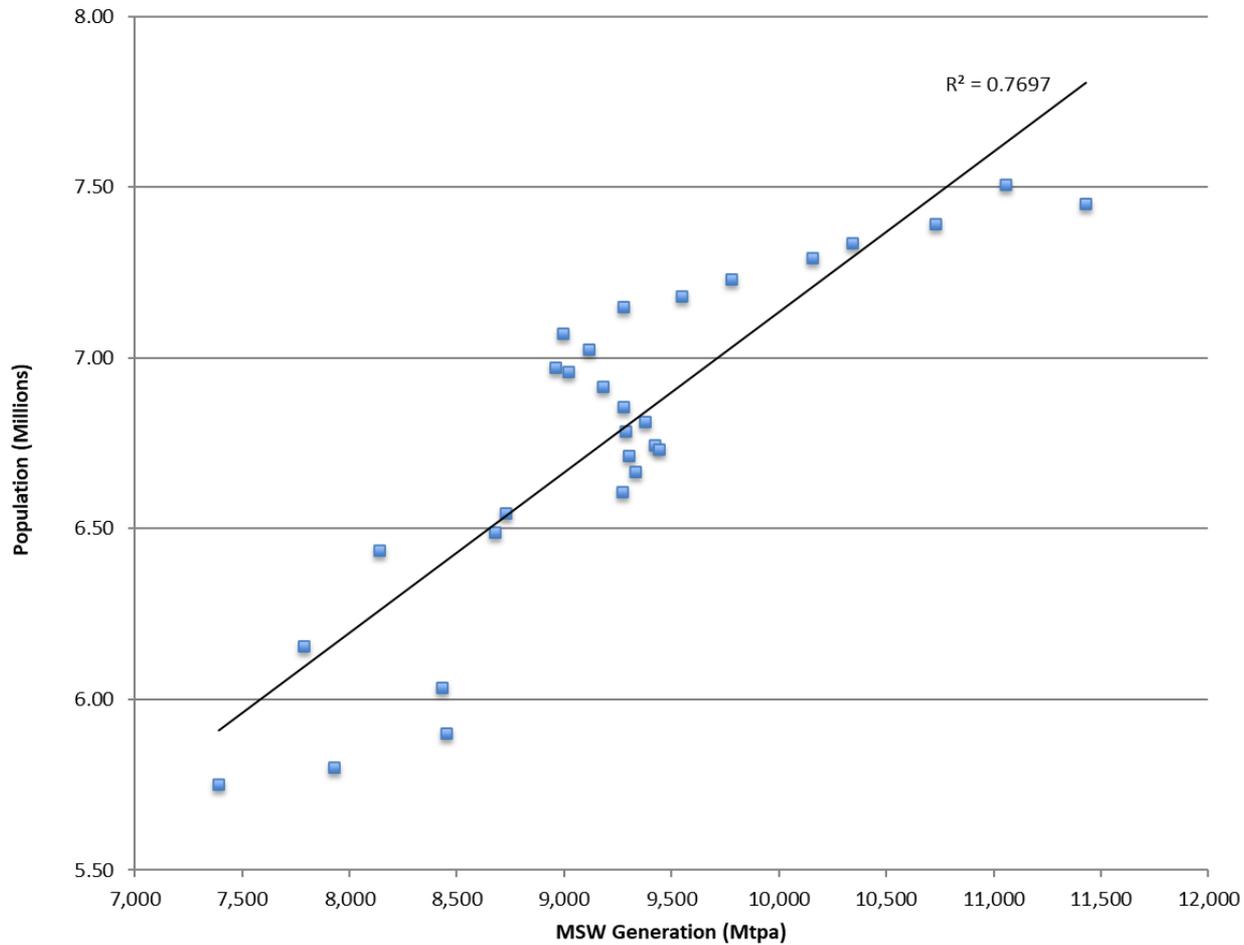
- Why?

Policy (Software)

MSW Landfill Disposal vs GDP



MSW Landfill Disposal vs Population



Policy (Software)

- Why?
- Previous policies were not able to address rising affluence (i.e. increasing GDP) and increasing population, which dominate the generation of waste and the proportion that can be recovered
- The latest set of targets in the *Blueprint* for 40-45% reduction in waste generation and a 55% increase in recycling have been announced with both fanfare and depressing familiarity – how can these be achieved, when previous targets weren't?
- I believe that it will take just one thing, which goes way back to the *1989 White Paper on Pollution in Hong Kong: A Time to Act ...*

Policy (Software)

- **Implementation of MSW Charging!**
- This will stop government subsidising the least sustainable form of waste management (i.e. landfilling)
- This will provide the economic incentive to reduce waste generation at source that was missing in all previous policies, i.e. making the user – us – pay when we throw non-recyclables
- This will incentivise people to source-separate their waste, which provides a cleaner feedstock for recyclers, for whom there is now economic value – the \$/kg MSW charge – for ALL recyclables, not just those with intrinsic value (i.e. metal, paper, plastic, etc.)
- If MSW charging can be implemented – it’s been the “time to act” for more than 30 years – then I believe the latest *Blueprint* has a chance of succeeding. Better late than never!



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Thank You!

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