



盧偉國議員 博士 工程師
Ir Dr Hon Lo Wai Kwok

工程心・社會情

WK Lo's Sharings

Speech at HKGSA Spring Reception 2014

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Legislative Councilor (Engineering FC)

Chairman, HKGSA

8 April 2014

Our Challenges?

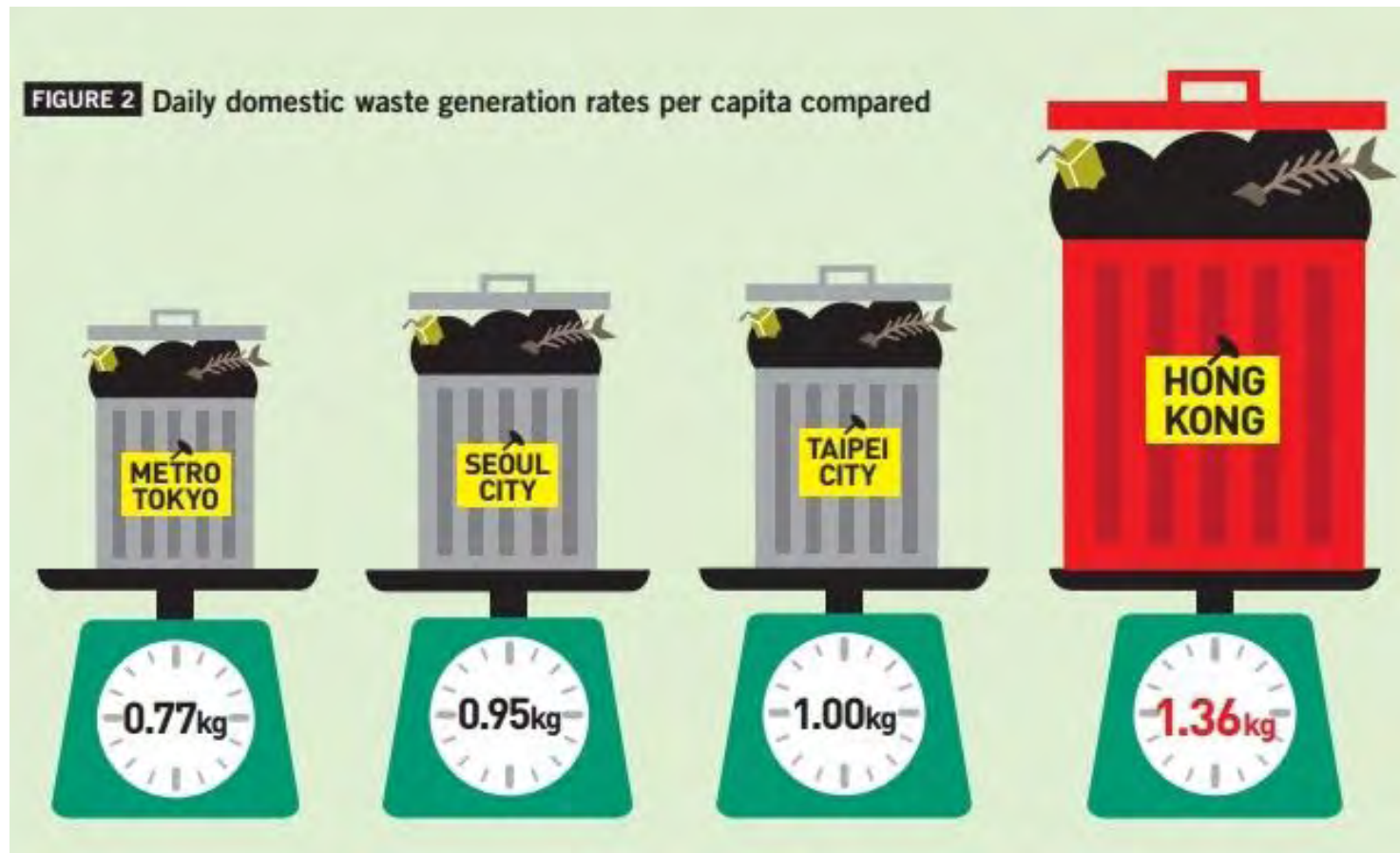


Waste Management in Hong Kong – the Challenges



**Small place, but inhabited
by more than seven million people**

Waste Management in Hong Kong – the Challenges



Daily domestic waste generation

Source: Environment Bureau

Waste Management in Hong Kong – the Challenges



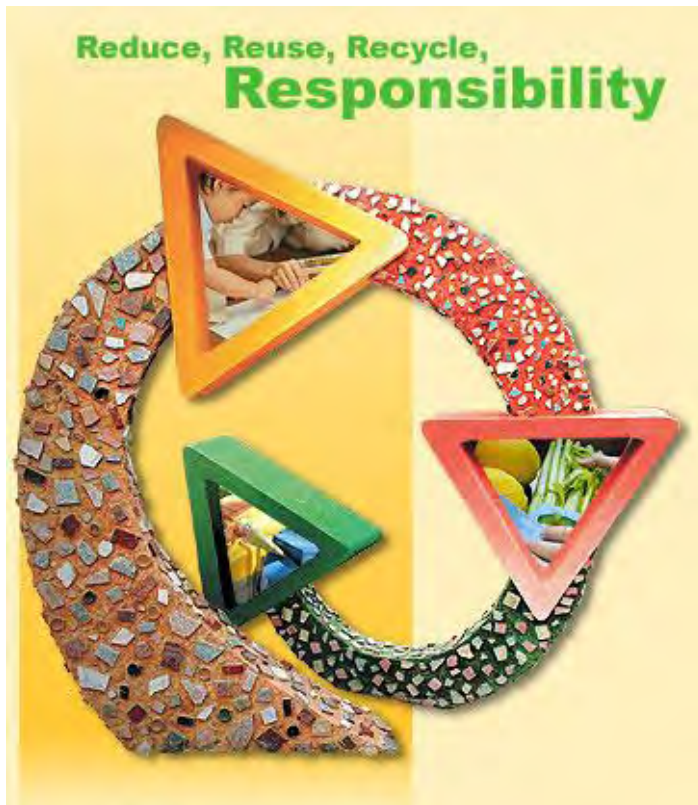
**13,800 tonnes of waste everyday,
of which 9,100 tonnes MSW**

Source: Environment Bureau

Waste Management in Hong Kong – the Challenges

- We are still relying on the three landfills as the only way to treat our waste.**
- It is expected that the three landfills will be filled up in 2015, 2017 and 2019 respectively.**
- We talked about incinerators, but yet we have none. In July 2013, the SAR Gov won the JR on the Shek Kwu Chau IWMMF.**

Policy Framework for the Management of Municipal Solid Waste (2005-2014)



Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022



What we can learn from the experience of other cities?





環境事務委員會

PANEL ON ENVIRONMENTAL AFFAIRS

前往英國、荷蘭、丹麥及瑞典的海外職務訪問

**OVERSEAS DUTY VISIT TO
THE UNITED KINGDOM, THE
NETHERLANDS, DENMARK AND SWEDEN**

2.3.2014 ~ 8.3.2014

有關此次海外職務訪問的詳情，請瀏覽立法會網頁：

http://www.legco.gov.hk/general/chinese/sec/duty_v/yr12-16/ea20140302.htm

LegCo Overseas Duty Visit to Europe

- To study the development of mainstream and emerging waste incineration technologies
- To obtain first-hand information on the four countries' experience in planning and operating thermal waste treatment facilities
- To study the potential application of different thermal waste treatment technologies in HK



The Swindon Gasification Plant in United Kingdom



The Sysav Waste-to-Energy Plant in Malmö of Sweden



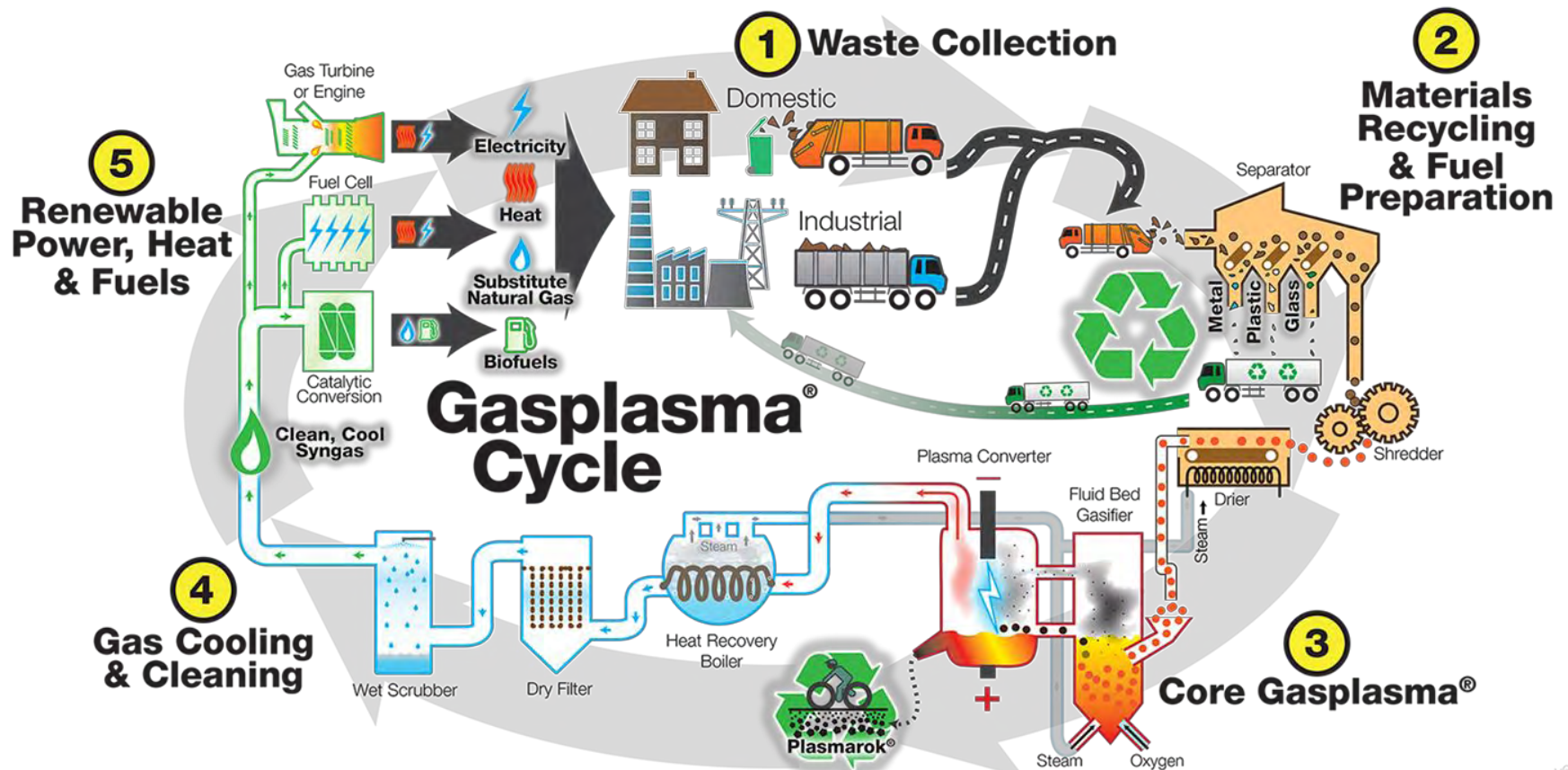
The Roskilde Waste-to-Energy Plant in Denmark

The Swindon Pilot Plasma Gasification Plant in UK



It is a small pilot plasma gasification plant, operated by the Tetronics International and Advanced Plasma Power, for clients to test their pre-sorted waste or refuse derived fuel (RFD). Its operation is two tonnes per day.

The Swindon Pilot Plasma Gasification Plant

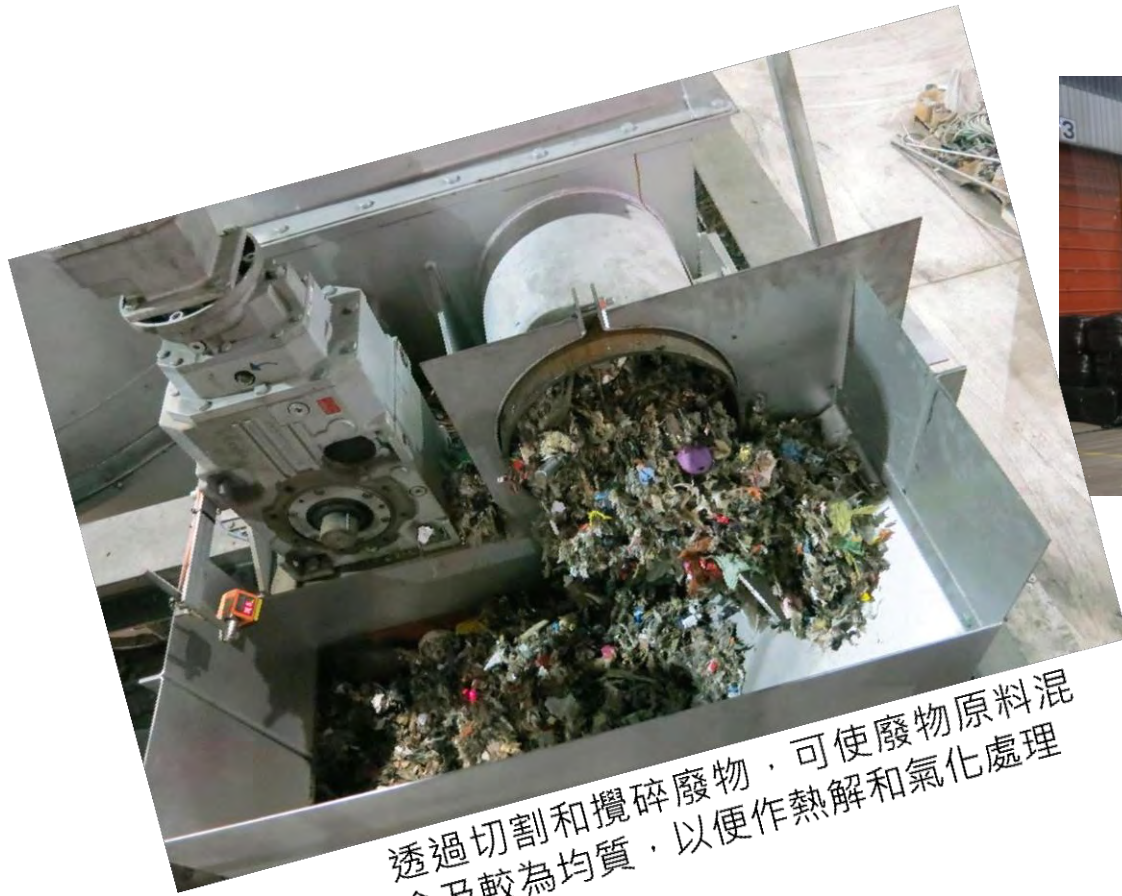


v6

Gasplasma Cycle – the process of transforming waste to energy by applying the Gasplasma fuels technology.

The New Earth Solutions' pyrolysis and gasification plant in UK

The Avonmouth plant, newly commissioned in 2013, employs pyrolysis and gasification technologies to turn the RDF (refuse derived fuel) into electricity and heat. Its operation capacity is 350 tonnes per day.



透過切割和攪碎廢物，可使廢物原料混合及較為均質，以便作熱解和氣化處理

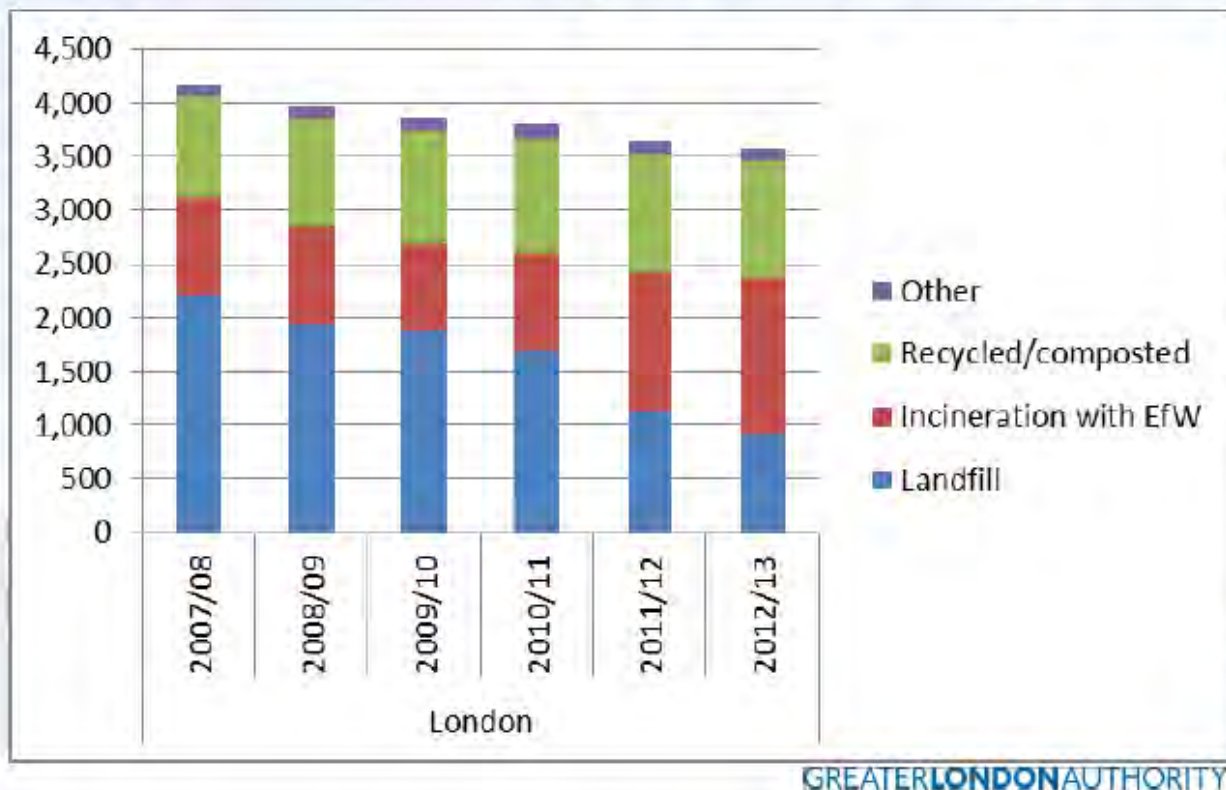


由於廠房的廢物處理量較少，部份未能處理的廢物會運往荷蘭作熱能處理

The Evolution of Waste Management in London

In England, the level of landfill tax has been on the increase since 1999 and currently stands at £72 (HK\$923). More MSW has been diverted from landfilling to recycling or incineration.

London's municipal waste story



Waste-to-energy facility in Teesside, UK

Tees Valley 1 - Project Summary

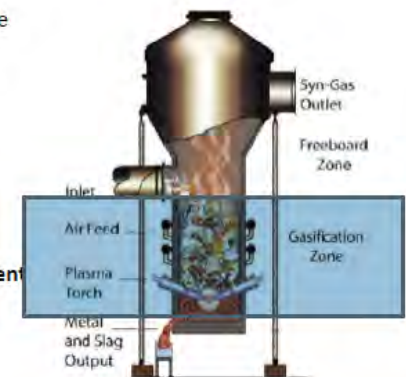
- US\$0.5 billion investment
- Feedstock is non hazardous municipal solid waste (MSW) and non hazardous (MSW type) commercial/industrial waste
 - ~350,000 tonnes of waste processed per annum / 950 tonnes of waste processed per day
 - Majority of waste from local area, being diverted from landfills
 - Recyclables are removed for economic reasons but facility can process wide variety of sorted and unsorted wastes
- Renewable power sold via a long-Term PPA to 3rd party
 - ~50MW capacity – power for ~50,000 homes
- Facility qualifies for participation in the UK Government renewable obligation program which provides incentives to renewable energy projects using advanced technologies
- Planned On-stream late 2014
- Located on 20 acres of reclaimed land in the Teesside area of the UK



The facility is expected to be in operation in late 2014. It will be the first plant to use plasma gasification to treat 950 tonnes of pretreated domestic, commercial and industrial waste per day.

Tees Valley 2 - Project Summary

- US\$0.5 billion investment – duplicate of the first project
- Same feedstock / same feedstock partner
 - ~350,000 tonnes of waste processed per annum / 950 tonnes of waste processed per day
 - Some waste being provided from local areas, other waste being provided from locations further away
 - Waste processing facility adjacent to the facility to be expanded by our partner
- Renewable power sold via a long-Term PPA to the UK Government
 - ~50MW capacity – power for ~50,000 homes
- Facility also qualifies for participation in the UK Government renewable obligation program
- Planned On-stream in early 2016
- Located adjacent to the first project



Lakeside Energy from Waste Plant, UK

It commenced operation in 2010 and employs moving grate incineration technology to treat some 1100 tonnes of mixed and unsorted municipal solid waste per day.



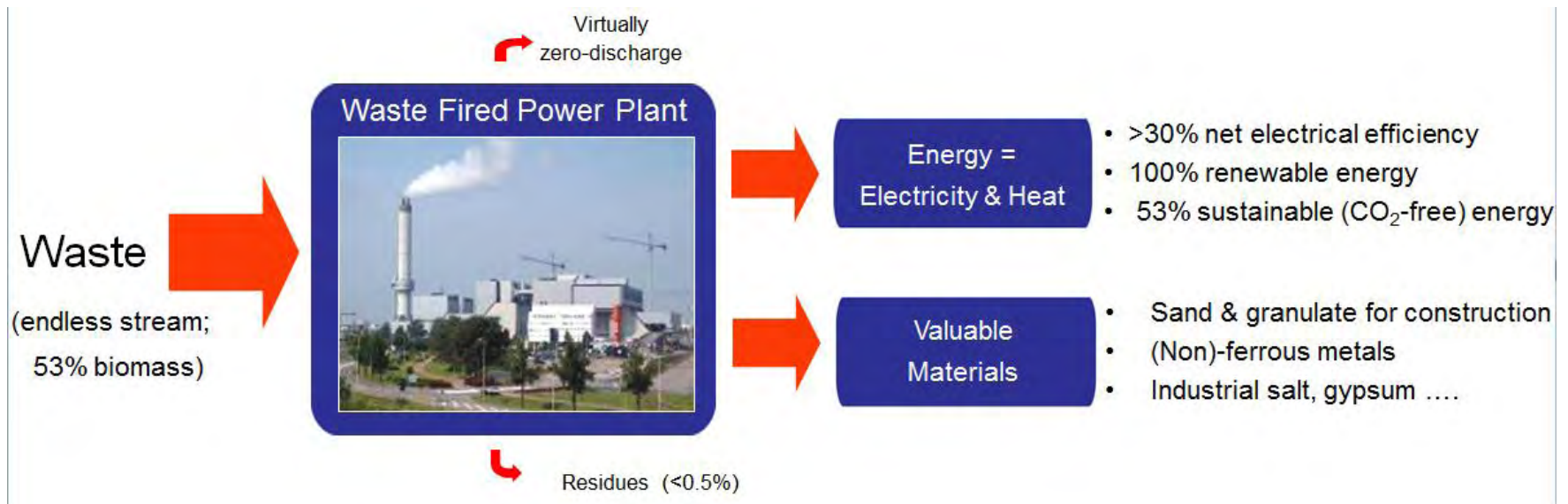
AEB Waste Fired Power Plant in Amsterdam



It is the world 's largest waste-to-energy plant, which treats 4 400 tonnes of waste per day using the moving grate technology.

AEB Waste Fired Power Plant in Amsterdam

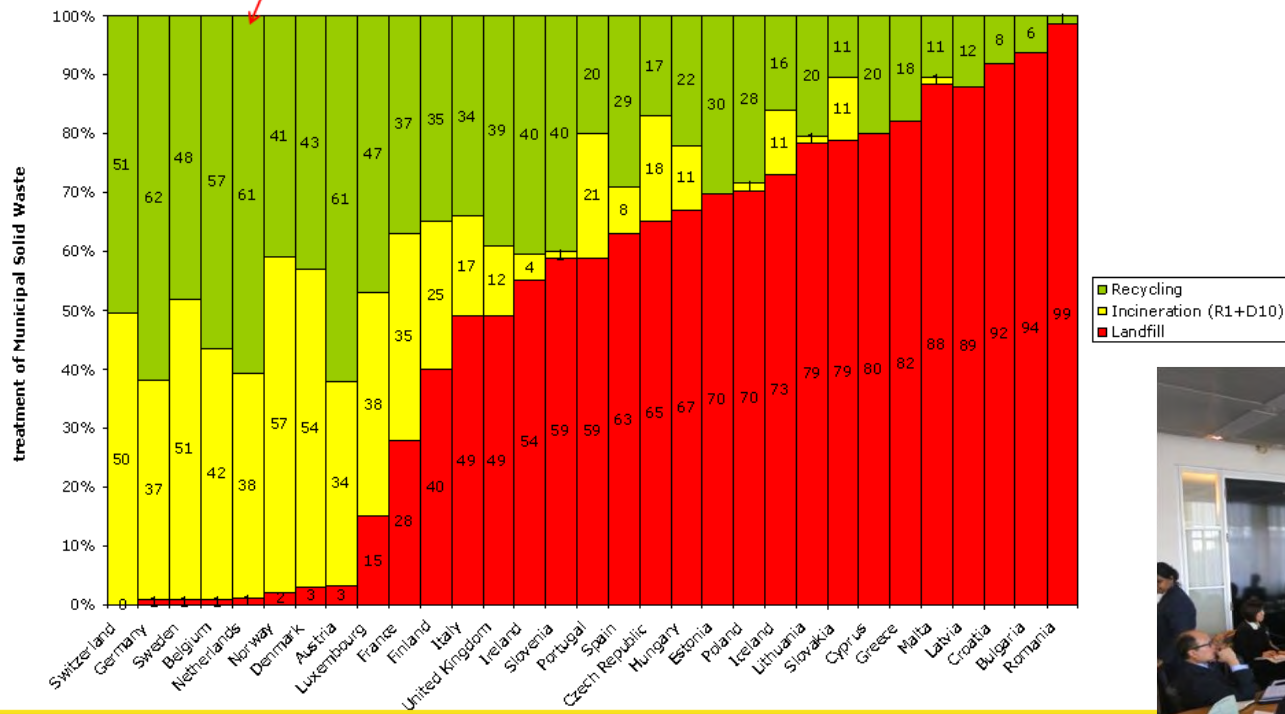
4th generation: WFPP® in a nutshell



It is the largest renewable energy plant in Amsterdam. AEB has an energy-from-waste power station with an energy efficiency of 30%.

Meeting with officials and experts in Netherlands

Netherlands performance in Municipal waste management 2011



A comparison between Netherlands and other countries regarding the management of MSW in 2011.



The delegation received a briefing on the Netherlands' policy on circular economy.

The Amager Bakke Waste-to-Energy Plant in Denmark

- Innovative architectural design, with its exterior integrated with other social facilities
- To employ moving grate technology
- Paired with a high environmental performance and energy efficiency
- To treat about 1 500 tonnes of waste per day
- To be commissioned in 2017

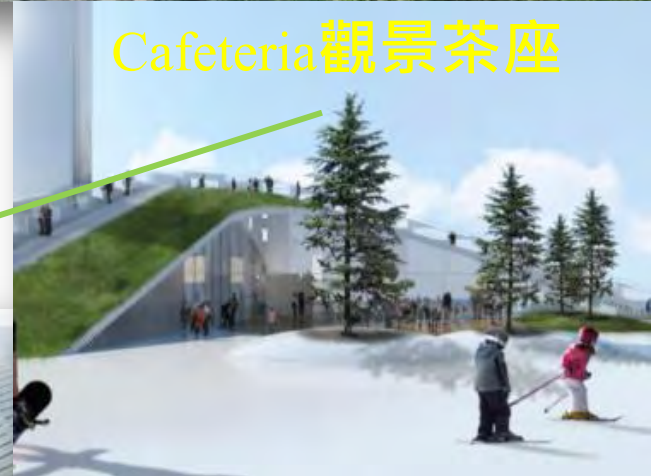




Ski Slope 滑雪道

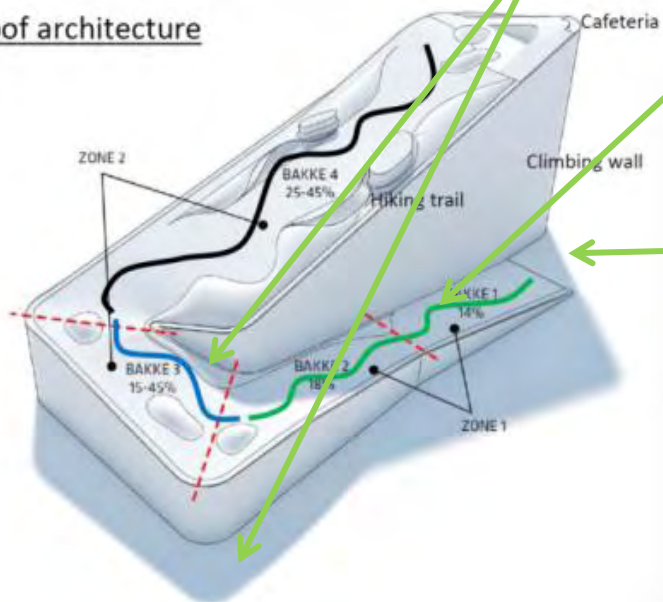


Hiking Trail
行山徑



Cafeteria 觀景茶座

Roof architecture



Climbing Wall
攀石牆

The Waste-to-Energy Plant in Roskilde, Denmark



The Waste-to-Energy Plant in Roskilde, Denmark

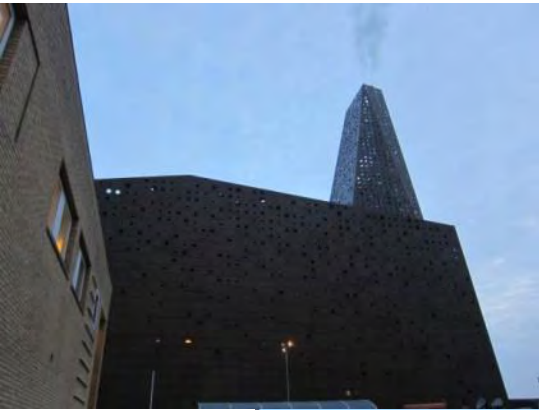


The Waste-to-Energy Plant in Roskilde, Denmark

The Plant was commissioned in at the end of 2013 and now serves nine municipalities. The Plant was operated by KARA/NOVEREN (a waste management company) and was designed by Dutch architect Erick van Egeraart.

Using moving grate technology, this modern facility provides electricity, heating and cooling processes to suit the needs of the community in different seasons.

Circular openings in the building's aluminium facade serve to transform the station into a beacon at night, when light from the facility shines through the exterior.



The Sysav Waste-to-Energy Plant in Sweden



The Sysav Waste-to-Energy Plant in Sweden

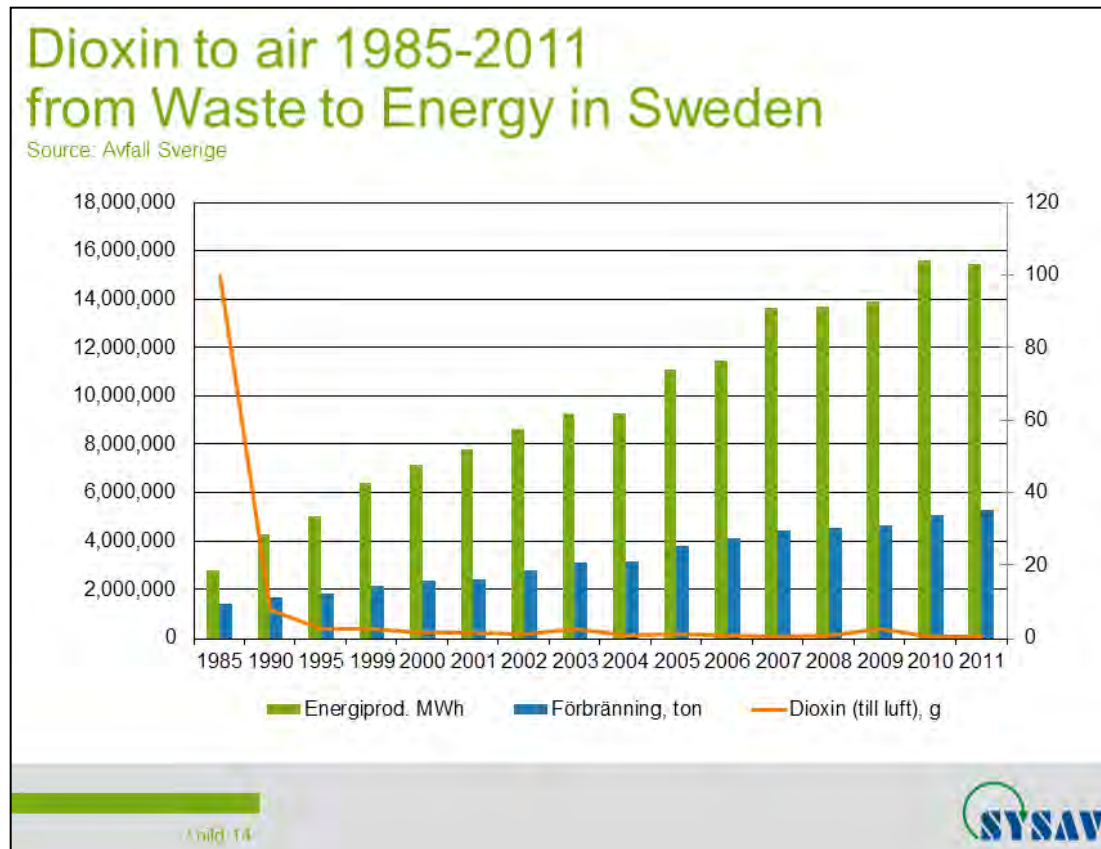
It adopts moving grate technology to treat about 1 500 tonnes of waste per day and generates electricity and heat for use by the neighbourhood districts.



The delegation observes the operation of the furnace to understand the combustion process at the plant. The temperature in the furnace is over 1 000°C.

The effect of waste management in Sweden

In Sweden, the dioxin to air generated from the process of waste-to-energy has dropped substantially over the last 20 years.





Hong Kong Green Strategy Alliance 香港綠色策略聯盟

“綠色策略，共創未來”

We must progress with time, and adopt a new vision for formulating policies and measures to promote the development of the environmental industry in Hong Kong!





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**“Political Will Power” of the SAR
Government is crucial !**

**We, being professionals & practitioners
in the industry must have a stronger
voice!**





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Thank you !

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