

Managing Global Cities: *Integrated and Plastic Waste Management in Hong Kong*

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Outline

1. Global Cities and Sustainable Development
2. Current Situation of Municipal Solid Wastes in Hong Kong
3. Plastic Waste Management
4. Centre for Education in Environmental Sustainability – Our Work at HKIEd

Global Cities: Definition Debated

- There appears to be no generally accepted definition of a “Global City”, nor one recognised arbiter or judge of which cities are global.
- Consequently there are no unique characteristics or specific attributes a city must possess to be recognised as a global city.
- The concept is subject to ongoing debate about the “specific attributes” which define a global city and its usefulness beyond a simple marketing term.
- Growing awareness about the significant relationship between global competitiveness of cities and sustainable development.

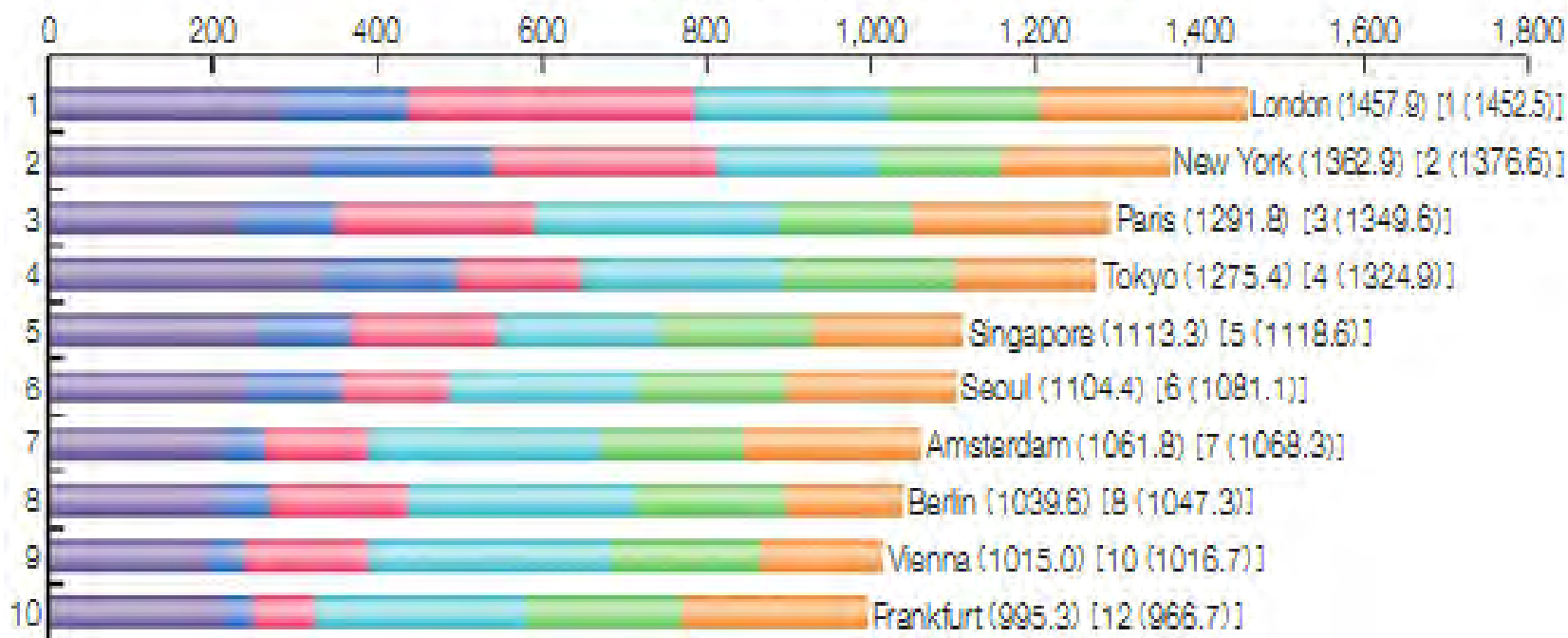
2014 A.T. Kearney Global Cities Index

Country	City	2014	2012	2010	2008
United States	New York	1	1	1	1
United Kingdom	London	2	2	2	2
France	Paris	3	3	4	3
Japan	Tokyo	4	4	3	4
China	Hong Kong	5	5	5	5
United States	Los Angeles	6	6	7	6
United States	Chicago	7	7	6	8
China	Beijing	8	14	15	12
Singapore	Singapore	9	11	8	7
United States	Washington	10	10	13	11
Belgium	Brussels	11	9	11	13
South Korea	Seoul	12	8	10	9
Canada	Toronto	13	16	14	10
Australia	Sydney	14	12	9	16
Spain	Madrid	15	18	17	14
Austria	Vienna	16	13	18	18
Russia	Moscow	17	19	25	19
China	Shanghai	18	21	21	20
Germany	Berlin	19	20	16	17
Argentina	Buenos Aires	20	22	22	33

- Five dimensions of measurement: Business activity, Human capital, Information exchange, Cultural experience, Political engagement

Institute for Urban Strategies, The Mori Memorial Foundation's Global Power City Index 2013

[GPCI-2013] Total score and rank by Functions



- Six dimensions of functions : economy score, research & development score, cultural interaction score, livability score, **ecology & natural environment score**, and accessibility score

The Knight Frank Global City Index 2014

TOP 10 GLOBAL CITIES

	2013	2014	2014
1	London	London	New York
2	New York	New York	London
3	Singapore	Singapore	Hong Kong
4	Hong Kong	Hong Kong	Singapore
5	Geneva	Geneva	Shanghai
6	Shanghai	Shanghai	Beijing
7	Dubai	Miami	Dubai
8	Miami	Dubai	Miami
9	Paris	Beijing	Geneva
10	Beijing	Paris	Mumbai

The Knight Frank Global City Index 2013

City	Region	Overall rank	Economic activity	Political power	Quality of life	Knowledge & influence
New York	North America	1	1	7	6	2
London	Europe	2	2	5	8	1
Paris	Europe	3	4	8	11	4
Tokyo	Asia	4	3	6	23	13
Hong Kong	Asia	5	7	10	26	6
Singapore	Asia	6	8	23	22	3
Sydney	Australasia	7	17	12	3	7
Washington DC	North America	8	14	1	19	23
Toronto	North America	9	12	15	4	15
Zurich	Europe	10	11	24	1	22
Berlin	Europe	11	10	4	18	9
Brussels	Europe	12	27	3	25	21
Seoul	Asia	13	28	11	28	10
Boston	North America	14	19	25	24	5
Beijing	Asia	15	6	2	40	27
Vancouver	North America	16	38	19	7	16
Chicago	North America	17	13	29	20	14
Vienna	Europe	18	25	27	13	8
Amsterdam	Europe	19	16	26	14	19
Los Angeles	North America	20	21	30	15	10

Global Cities are:

- national and international trade, entry-points for their countries and sometimes for neighbouring countries;
- co-ordination and servicing of international economies;
- specialized business services including: banking, insurance; finance; accountancy; legal, commercial law;
- advertising, public relations; business tourism; real estate; transportation, communication,
- specialized personal services, tertiary education entertainment, culture, arts, and the ancillary activities that cater for them.
- advanced professional activity of all kinds;
- information gathering and diffusion, knowledge & creativity resulting in the production of new services and commodities, the production of which feeds directly into trade within the city/region as well as globally.

Global Cities are

- They are characterized by :
- increasing demand for employment in the above services sectors;
- growing importance in the buying and selling of services as a part of world trade and therefore global city linkages.
- conspicuous consumption;
- polarized workforces with increasingly high levels of spatial and ethnic segregation.

More Recently

- In the more recent literature, it appears that this debate is focusing more on the attributes of a city that are attractive to individuals as well as businesses, for example: transport, entertainment, conspicuous consumption, specialized personal services,
- tertiary education, entertainment, culture, arts, and the ancillary activities that cater for them.
- In a sense, there is a merging between the attributes a city offers for individuals' lifestyles (the city's liveability) and those for businesses.
- Does size matter when considering the concept of Global Cities?
- Size helps, but size does not ensure a city has influence. Even small cities can lead by example, that is, influence others by demonstrating innovation in the way they are managed and the quality of their attributes for living and working.

How to maintain Global Ranking

- Economic sustainability
- Political stability
- Cultural diversity
- Social cohesion
- Racial inclusion
- Environmental sustainability
- Urban redevelopment and land use
- Appropriate governance models

Major Challenges for Managing Global Cities

- Globalization, deindustrialization and the rise of producer services
- Rapid economic transformation and changing social structure
- Dualisation in the organization of service industries
- Employment and occupational changes
- Class polarisation and income inequality

Major Challenges for Managing Global Cities (S. Sassen & Brookings Institution)

- Environmental degradation and climate change
- Intensified inequality
- Unequal competition between transnational corporations and small and medium enterprises
- Limited space in central city and land redeployment issues
- International governance issues like environment and aviation
- Transnational mobility of people and crime
- Traffic congestion
- Demand for social welfare / service support
- Digitalization and the growing impact of internet

Major Challenges for Managing Global Cities

- Economic globalization promotes both integration and exclusion, decreases national sovereignty and increases autonomy of the market
- Social costs like high level of spatial and ethnic segregation
- Dehumanize the cities and urban violence
- The Fragmented city
- The Governed city
- The Technological city
- The Ecological city

Current Situation

Large 'Waste Load'

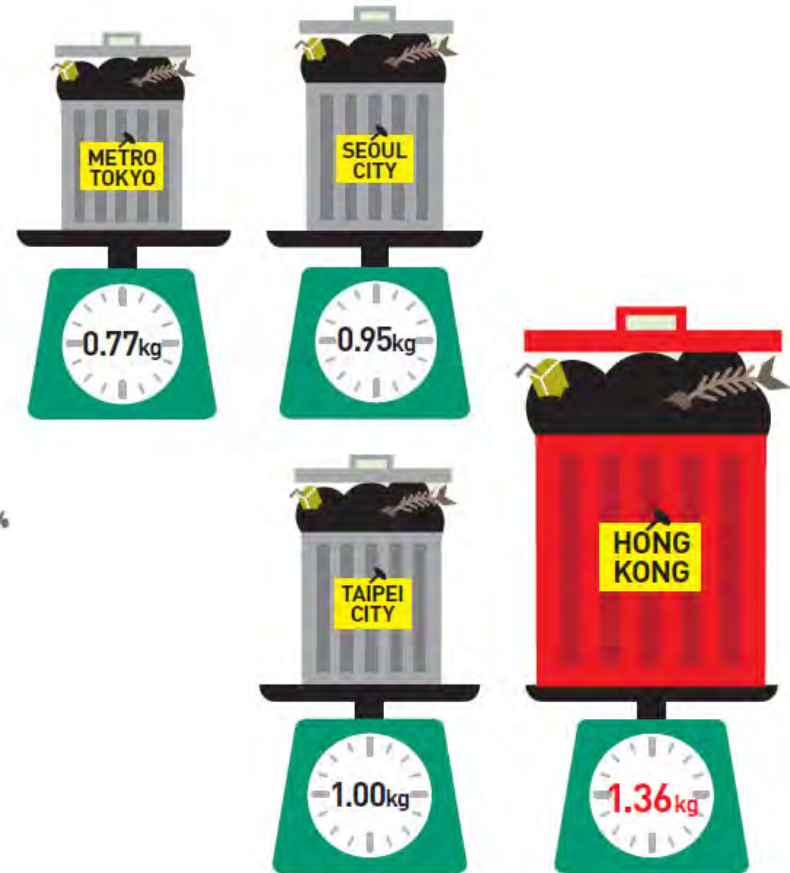
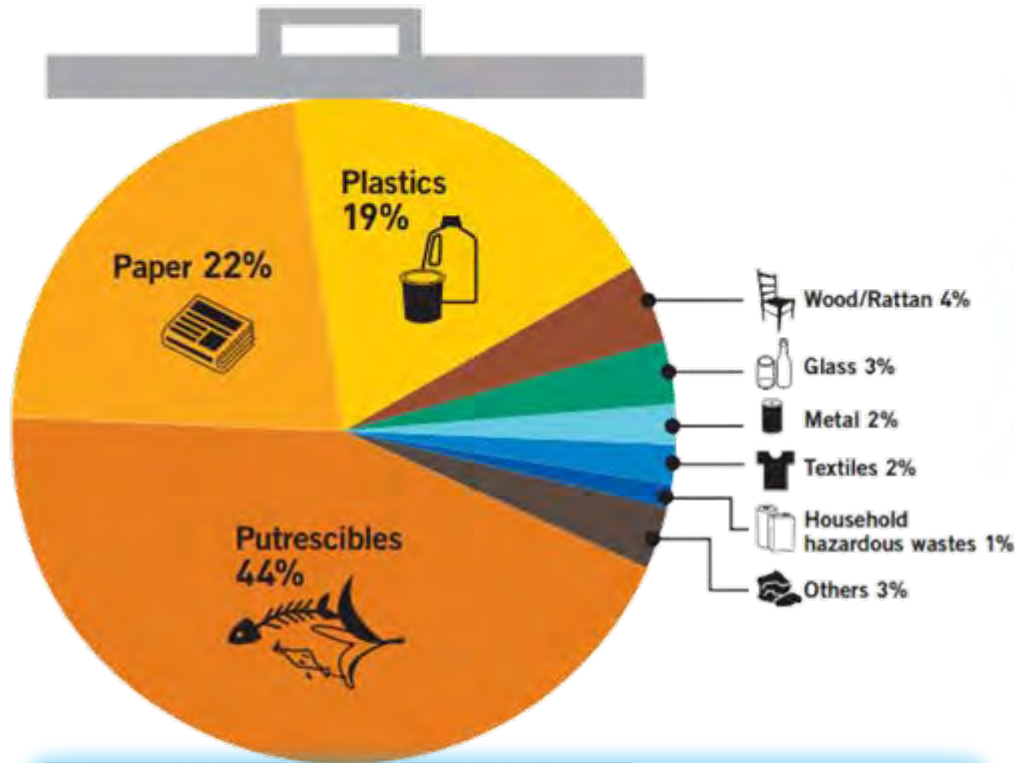
- In the past 10 years
 - MSW - From 5.18 million to 6.3 million tonnes
 - > 20% increase
- In the past 30 years
 - HK population grew by 36%
 - GDP increased two fold
 - But MSW increased by nearly 80%.



Sources:

- EPD, Hong Kong Waste Treatment and Disposal Statistics, http://www.epd.gov.hk/epd/english/environmentinhk/waste/data/stat_treat.html
- Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resource 2013-2022, 2013
- EPD, 源頭減廢 基建並行, <https://www.youtube.com/watch?v=3RP6RK3xCnk&index=2&list=PLSIOvjUwNf15iplrVqn2CZ3h79Cx06vN9>

Municipal Solid Waste in HK



Average Daily MSW disposal \approx 9300 tonnes

Sources:

- Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resource 2013-2022, 2013 <http://www.enb.gov.hk/en/files/WastePlan-E.pdf>
- EPD, Monitoring of Solid Waste in Hong Kong Waste Statistics for 2011 <https://www.wastereduction.gov.hk/en/materials/info/msw2011.pdf>
- Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resource 2013-2022, 2013
- Hong Kong Environmental Protection Department; Ministry of the Environment of Japan; Taiwan environmental authority and Seoul Metropolitan Government

Waste Management: HK Gov. Approach

Waste

Sustainable Use of Resources Five-Pronged Approach



Reduction at Source

Producer Responsibility Scheme

- MSW Disposal Charging Scheme (HK\$0.5/kg)
- Construction Waste Disposal Charging Scheme (HK\$250/tonne)
- Plastic Shopping Bags (HK\$0.5/ bag)
- Glass Beverage Bottles (HK\$1/bottle)



Sources:

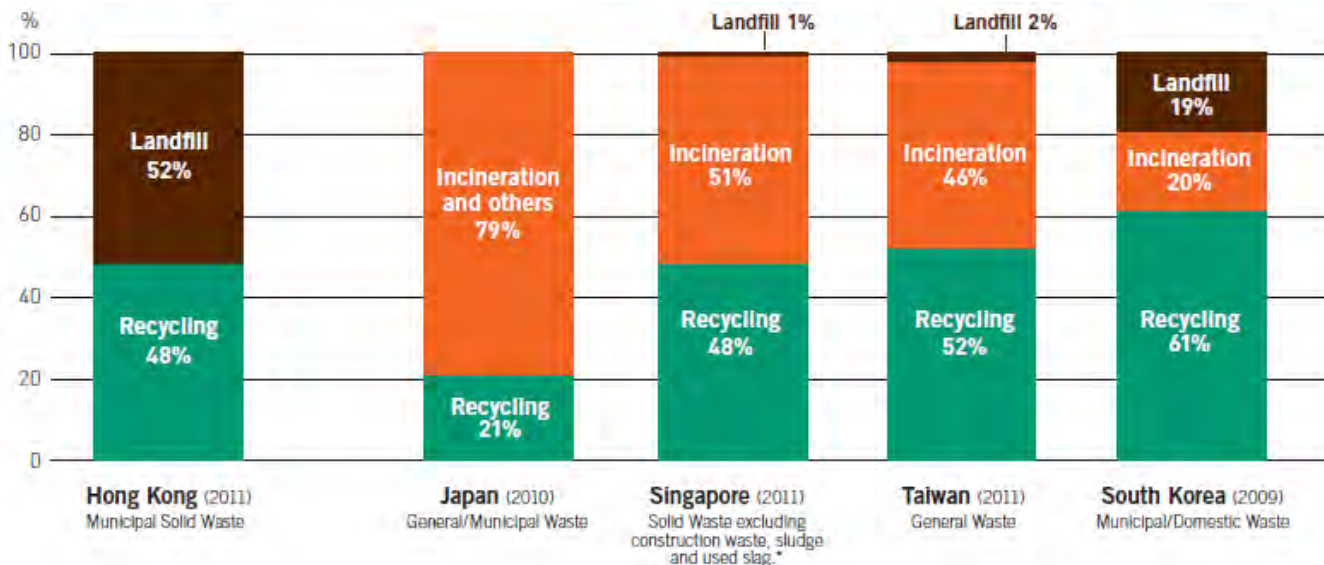
•EPD http://www.epd.gov.hk/epd/english/resources_pub/policy/files/weee_consultation_eng.pdf

•EPD http://www.epd.gov.hk/epd/bottles_consult/tc/

Waste to Energy

New waste treatment infrastructures

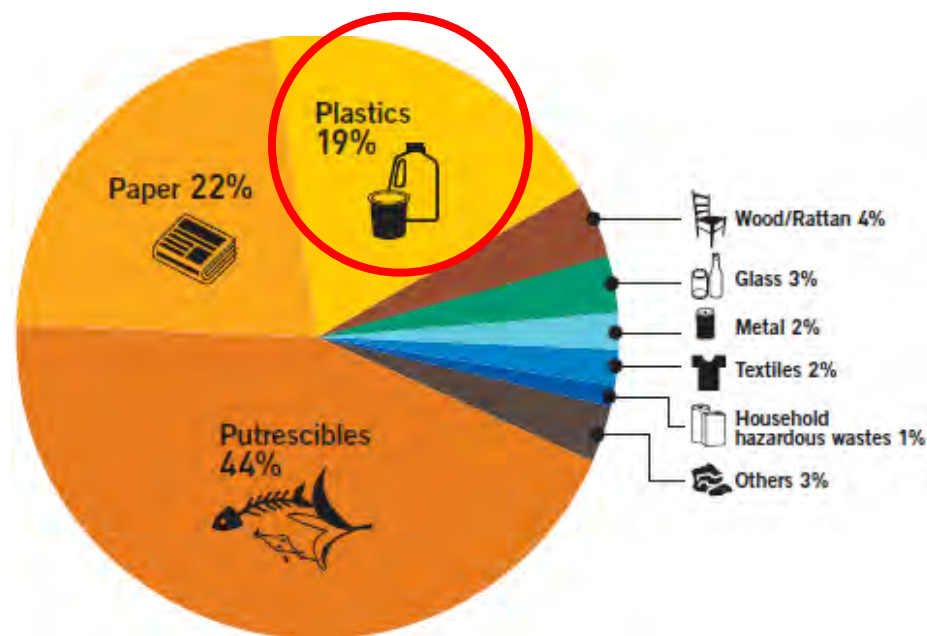
- Rely too much on landfills in the past
- Proposed infrastructures include:
 - Organic Waste Treatment Facilities (OWTF)
 - State-of-the art Incinerator
 - Sludge Treatment Facility (STF)



Difficulties in Plastic Recycling

1. Lack of awareness - Discard plastic recyclables as wastes
2. Intensive labour cost for sorting
3. High transportation cost due to the bulkiness of the plastic
4. Low retail price (~HK\$0.5/kg)

- Composition of MSW in HK



Centre for Education in Environmental Sustainability

- Our Work in HKIEd



“I Act, U Act!” 2013-2018

- Education for Plastic Waste Recycling Programme

Aims:

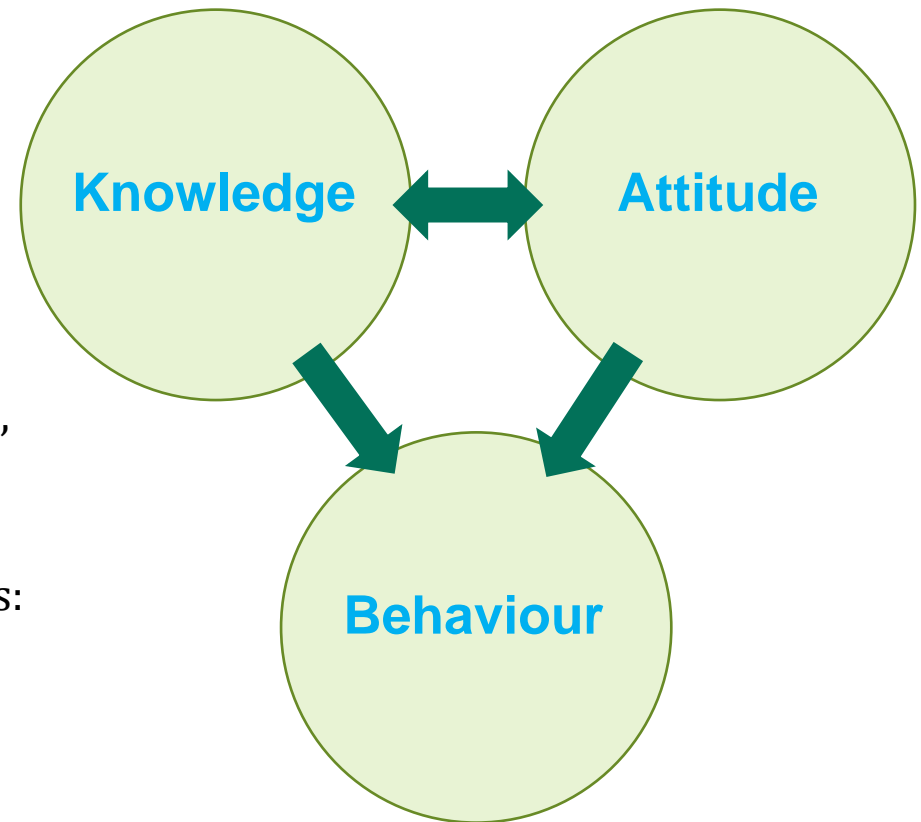
Educate our next generation, especially primary school students, about the importance and methods of proper plastic waste recycling

Background

4.5-year, \$8-million education programme,

Implementation

- Inquiry-based and field based approaches:
 - Changing students' knowledge & attitude
 - Changing students' behaviour



“I Act, U Act!” – Education for Plastic Waste Recycling Programme

Our Work



Recent & on-going activities

- Scientific investigation
- Incentive programme
- Card games
- Beach clean-ups
- Intensive education programme



Technological Research on Waste Plastics Degradation

Our Work

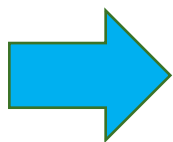
Study

- Plastics to Energy
 - To design and synthesize a “green” catalyst to degrade the waste plastic to carbon dioxide or hydrocarbon fuel.
 - To investigate the detail mechanism and study the feasibility in application.



Plastics

catalyst



Hydrocarbon fuel

【明報專訊】香港每日消耗大量塑膠製品，但回收及處理廢膠的成本高，發現時大部分廢膠都會運到堆填區，加重已飽和飽和的3個堆填區負擔，而焚化則有釋放有毒物質的風險。香港教育學院的研究團隊成功研製「綠膠催化劑」，能以低廉成本及快速將廢膠變成有機燃料或二氧化碳，將降解每噸塑膠的成本由逾1300元，大減95%至數十元，同時亦由逾1小時縮減至10分鐘。

教育學院科學發展學系副系主任陳建輝表示，塑膠製品絕大部分，令每年全球產生約1.5億噸廢膠，約佔1.5至2小時，燃料成本高昂，而焚化「極耗時間」，廢膠再為困難，通常平均以10分鐘，時間亦會隨膠量增加。

陳建輝表示，綠膠催化劑的成本低，反應時間短，可重複使用。目前一種綠膠催化劑可降解於10分鐘的廢膠，但由於膠類成分複雜，故反應溫度或較一般膠類高，約需5至10分鐘，但膠類量高或低，包括不同類型的膠類（分為2類膠類），如白色膠類、膠油類、工業用膠類，混合膠類等，他亦將試驗膠類不同成分的膠類，以尋求最理想膠類組合製成不致有副作用，且可重複使用，若以1克膠類可降解10分鐘變燃料，降解成本最高成本大減95%。

2014-04-03, Ming Pao Daily News, A01, 港聞

Our Work

News Report

Wen Wei Po

Sing Tao

教育

教院新教育中心開幕 2014-03-01

教院新教育中心開幕

(星島日報報道)香港教育學院「可持續發展教育中心」昨日舉行開幕典禮，並隨即為新成立的健康環境及教研聯盟舉行啟動儀式。校長張仁良與澳洲國立綜合醫學研究所簽署合作備忘錄，



教院校長張仁良(右)



教育

教院代表團東京考察廢物處理 2014-03-28

教院代表團東京考察廢物處理

(星島日報報道)正爭取「正名」的香港教育學院，最近組成代表團前往日本東京考察，了解當地處理固體廢物的最新技術。協理副校長(研究與國際交流)莫家豪表示，教院近年致力增加研究實力，其中包括主力發展環境研究與教育的研究，又透露下月將準備社會科學及人文學科的課程領域自我評審工作，有信心按照政府的路口圖邁向正名之路。



http://paper.wenweipo.com

[2013-11-29] 我要評論(0)

放大圖片

教院「膠再用」計劃 明年25小學推行

小學生到教院玩攤位遊戲，認識塑膠回收現

http://paper.wenweipo.com [2014-04-08] 我要評論(0)

放大圖片

逾50專家聚教院 商可持續發展

教育學院舉行「可持續發展的環保城市」國際研討會，吸引超過50名各地專家學者出席，就廢物處理及保育區管理等議員交流意見。教院供圖

香港文匯報訊(記者 高鈺)可持續發展是國際社會共同關注議題，

教院研光催化劑 速降解塑膠廢料

http://paper.wenweipo.com [2014-04-03] 我要評論(0)

放大圖片

周卓輝與研究團隊利用化合物組成的粉末進行測試，成功驗證到水中含污染物草酸，以及可利用降解技術去污。香港文匯報記者馮晉研 攝

快熱解最少10倍 便宜95%兼無污染

香港文匯報訊(記者 馮晉研)塑膠是本港第三大類固體廢物，令堆填區構成沉重壓力。有見及此，教育學院科學與環境學系副教授周卓輝與城大學者合作，積極研發全新的光催化劑，配合現有的光催化技術，即可將「頑固」的塑膠快速降解，5分鐘即可將發泡膠變成二氧化碳或有機燃料。新技術較傳統的热解方法快最少10倍，且便宜95%兼無污染。周卓輝指，在實驗室測試的塑膠量較少，正計劃申請150萬元的基金，以擴大研究時處理塑膠量的可行性，預計3年至5年後可在工業層面應用，盼長遠可令香港變為「無膠城市」。

Debates on Global Cities

- Overemphasizing the importance of globalization on socio-economic changes of global cities
- Neglecting local factors and the role of nation-state in shaping socio-economic changes of global cities
- Overstressing the economic determination of changes in global cities

Promoting alternative urban futures

- Cities, managers of social transformations and guides of deliberate social change
- Cities of solidarity and multiculturalism, capable to nurture an environment of tolerance and social sustainability
- Cities, promoters of citizenship and well-being
- Resourceful cities, designed to use natural resources sustainably

Thank you!