



World Sustainable Building Conference 2011

**Hong Kong's
Green Buildings Experience :
Why and How**

19 October 2011

Presentation by Mrs Carrie Lam
Secretary for Development

Government of the Hong Kong Special Administrative Region



Hong Kong : A modern and dense city of 7 million people



- Predominantly service economy (92% of GDP)
- High density development (6,480 persons/km²) with the Kwun Tong District being the most densely populated (53,110 persons/km²)
- Logistics hub with the world's 1st busiest airport for international cargo and 3rd busiest container port in 2009

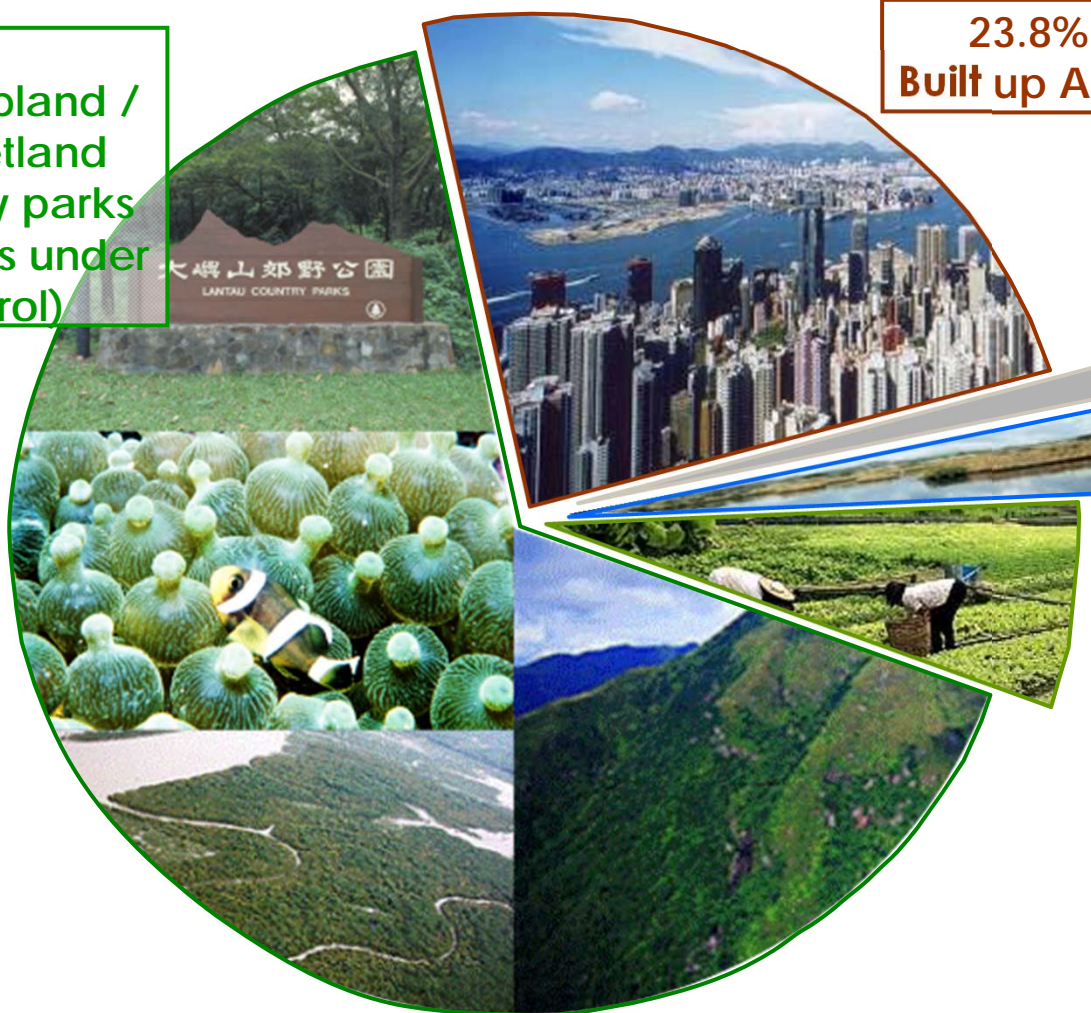
Vertical Densities Meeting Hong Kong's needs



Hong Kong : great City and rural Countryside get along well together

- Built up area takes up only 1/4 of Hong Kong's 1,100 km²

66.6%
Woodland / Shrubland /
Grassland / Wetland
(46% are country parks
and special areas under
statutory control)



23.8%
Built up Area

0.7%
Barren Land

2.6%
Water Bodies

6.2%
Agricultural Land

Preserving the countryside for public enjoyment

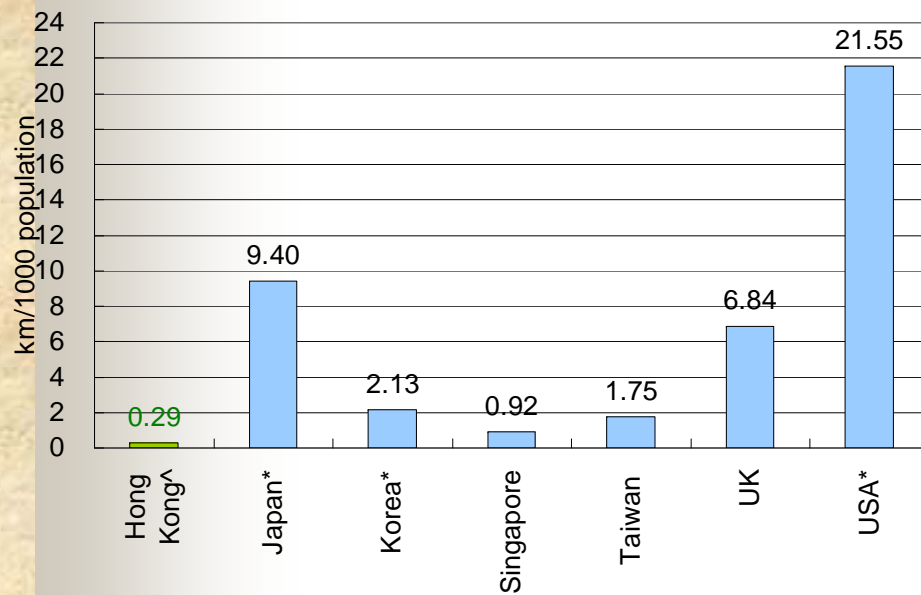


- 46% are country parks and special areas under statutory control for public enjoyment

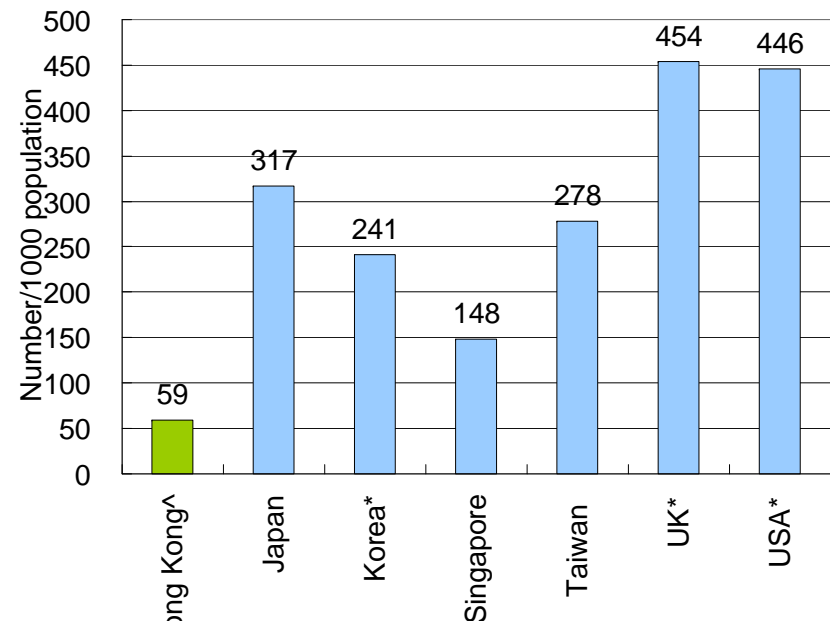
Hong Kong Global Geopark of China



Hong Kong's Efficient Public Transport System



Per Capita Length of Public Road 2008
(^2010 figures, *2007 figures)



Per Capita Private Car 2008
(^2010 figures, *2007 figures)

- Fuel tax, first registration tax of vehicles and availability of parking spaces further limit car usage
- Public transport accounts for 90% of average daily trips

High connectivity in urban areas

- Integration of main buildings and transport nodes through network of grade-separated walkways



Footbridge network in office buildings



Footbridge connection to rail station



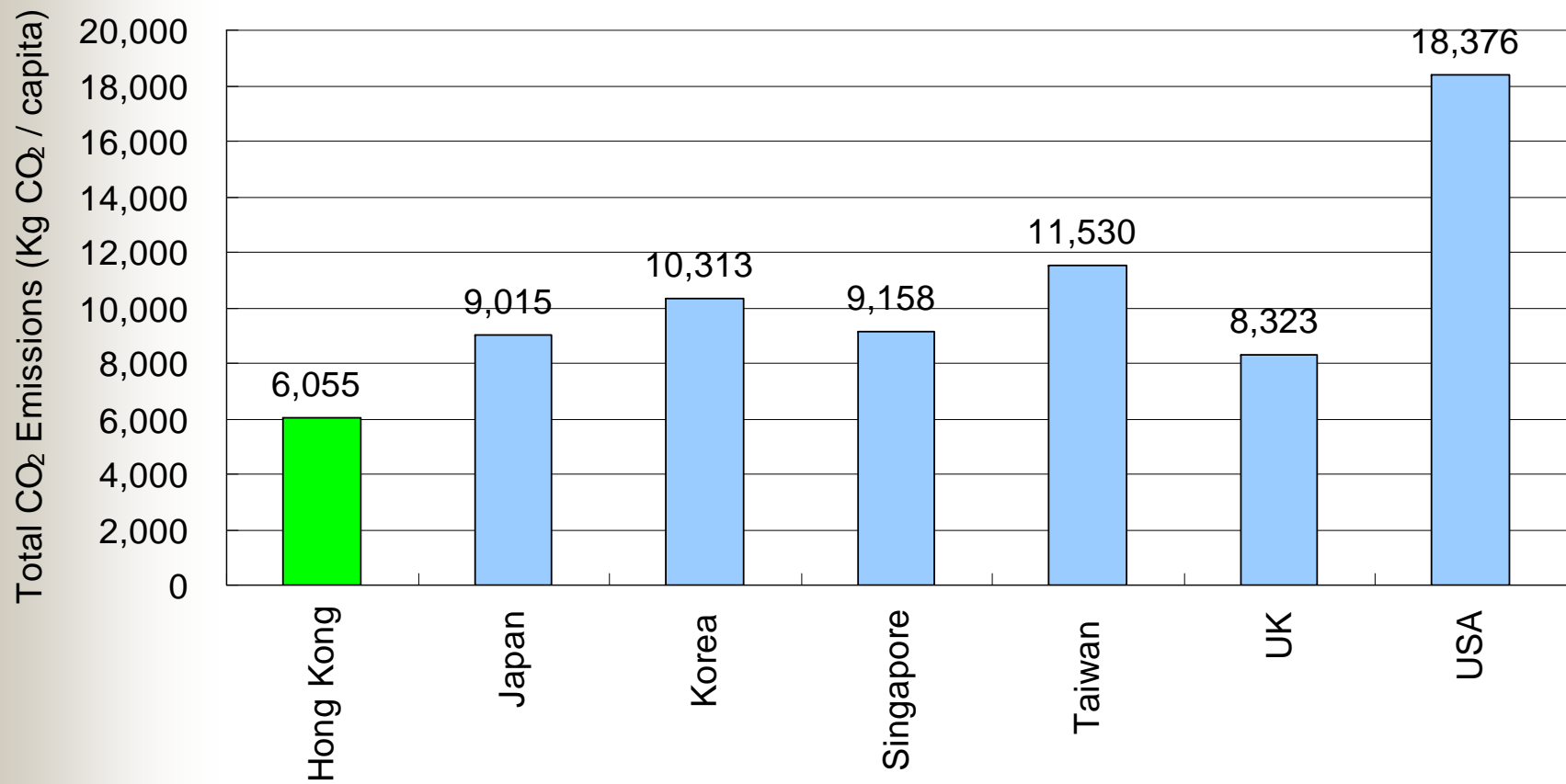
Escalator to Mid-levels of Hong Kong Island



Air-conditioned walkway

Hong Kong's low carbon footprint by virtue of land use efficiency and public transport

CO₂ Emissions from Fuel Combustion Per Capita in 2008



Source : "CO₂ Emissions from Fuel Combustion Highlights (2010 Edition)" by International Energy Agency

But growing carbon emission is a concern

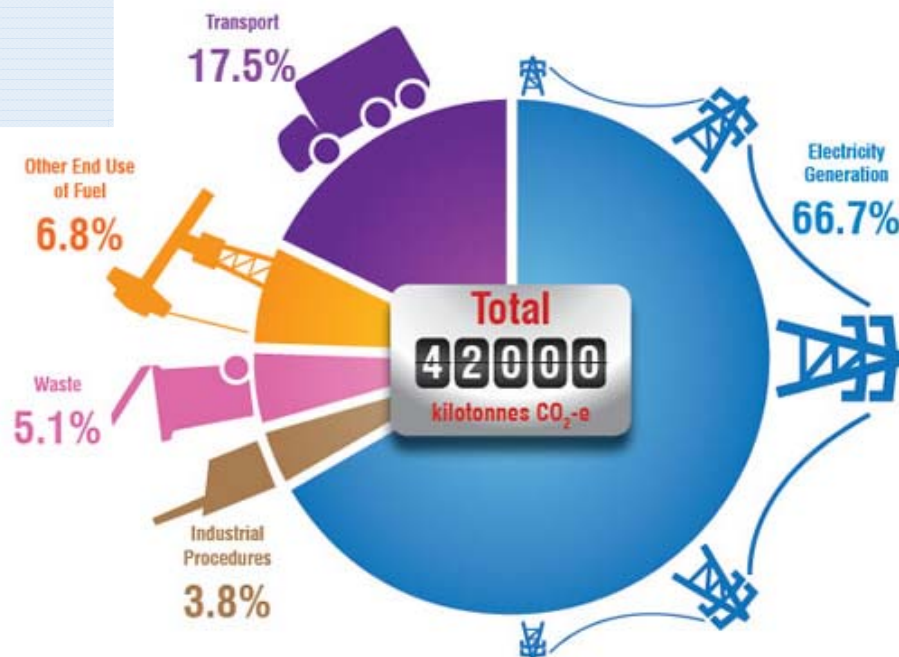
Hong Kong

1998: 35 million tonnes GHG

2008: 42 million tonnes GHG

Up 20% in ten years

Hong Kong's greenhouse gases emission by sectors in 2008



Source : Council for Sustainable Development

Addressing carbon emission by targeting buildings

Power generation accounts for **67%** of HK's GHG emissions



Buildings account for some **90%** of the electricity consumed in Hong Kong



Buildings account for **60%** of HK's GHG emissions

Hong Kong's electricity consumption by sectors in 2008



Source : Council for Sustainable Development



Addressing City Environment

Review Outline Zoning Plan

“The Government will review the outline zoning plans of various districts in a step-by-step manner and, where justified, revise the relevant planning parameters to lower the development density.

Such measures will inevitably lead to a reduction in public revenue, but I am convinced that it is well worth it for the better living environment that will be created for our people.”

(The Chief Executive's 2007-08 Policy Address in October 2007)



Mr Donald Tsang
The Chief Executive of HKSAR

Land Sale

- Green planning parameters to be incorporated into the Conditions of Sale to ensure that the future development of the sites would not cause adverse environmental impacts on the surrounding areas:
 - Provision of breezeway;
 - Building Separation;
 - Maximum site coverage;
 - Provision of sufficient open space for recreational purpose;
 - Cap on GFA concession;
 - Height restriction;
 - Provision of landscape plan

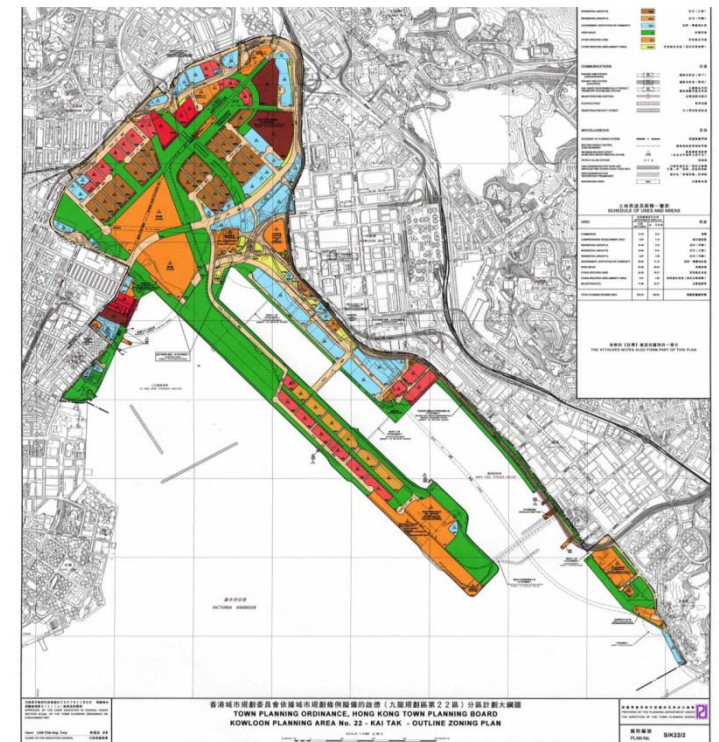


Tseung Kwan O Town Lot 113
which was sold by public
auction on 25 July 2011

Planning Sustainable Land Use

■ Kai Tak Development

- Developing Kai Tak into a distinguished, vibrant, attractive and people-orientated community by the Victoria Harbour
- “Podium-free” design concept to enhance air ventilation and view corridor in the street environment
- The landscape design of “A Green Web for Sustainable Development” to create a hierarchical landscape network
- Landscaped deck to separate vehicles and pedestrian traffic
- To develop a 11km continuous promenade
- About 100-hectare open space
- District Cooling System

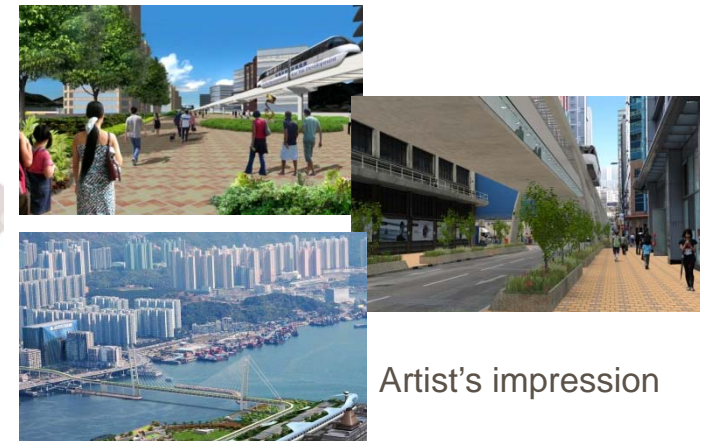


Planning Sustainable Land Use *(Cont'd)*

■ Kai Tak Development

- Reserved alignment of a rail-based **E**nvironmentally **F**riendly **L**inkage **S**ystem (EFLS) in Kai Tak Outline Zoning Plan

- Total length about 9 km, use elevated monorail system and have 12 stations
- Enhance connectivity to the Kowloon hinterland
- No carbon emission along its passage, much less energy consumption than diesel buses;
- Unique landmark in Hong Kong with high tourism appeal



Artist's impression

Impose Air Ventilation Assessment Requirement



HONG KONG PLANNING STANDARDS AND GUIDELINES

Ch11 Urban Design Guidelines

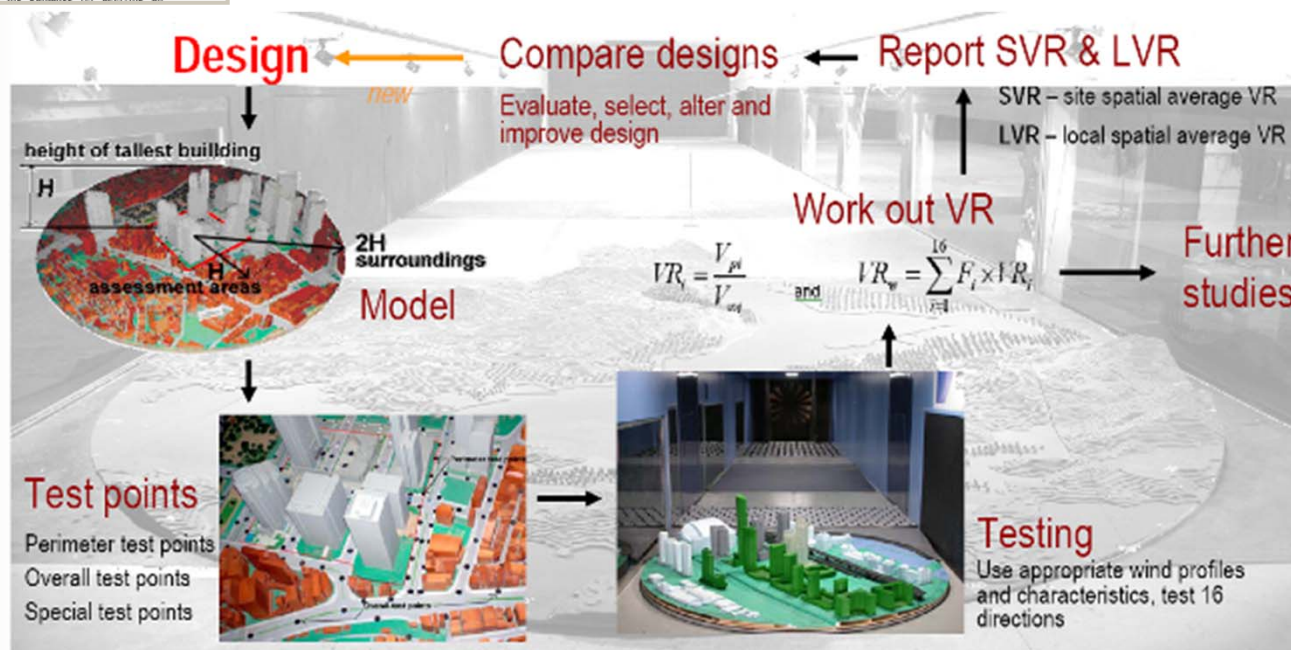
Qualitative Guidelines on Air Ventilation

HOUSING, PLANNING AND LANDS BUREAU
 TECHNICAL CIRCULAR NO. L06
 ENVIRONMENT, TRANSPORT AND WORKS BUREAU
 TECHNICAL CIRCULAR NO. L06

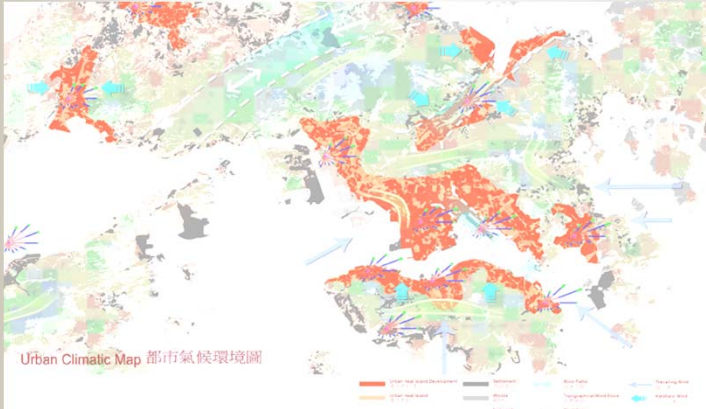
Air Ventilation Assessments

Purpose

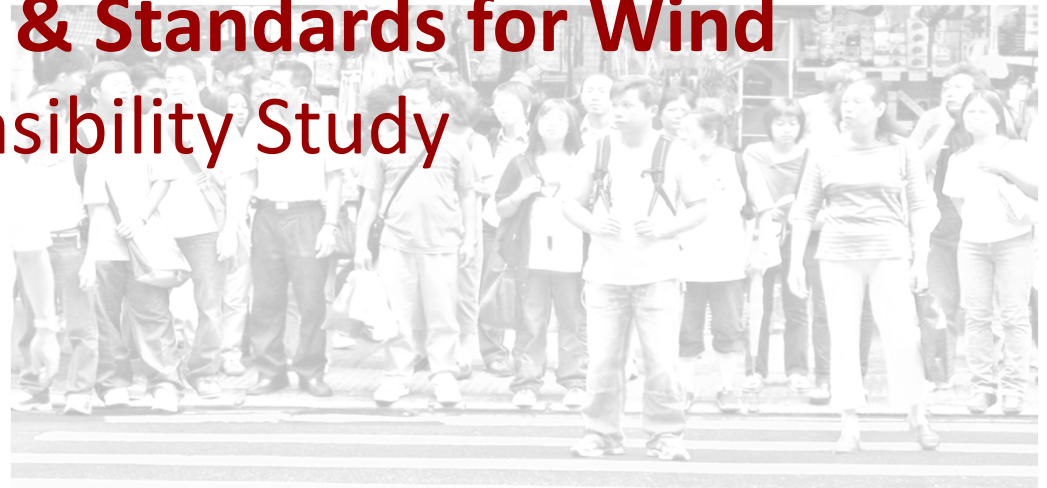
This Technical Circular sets out the guidance for applying air



AVA Methodology



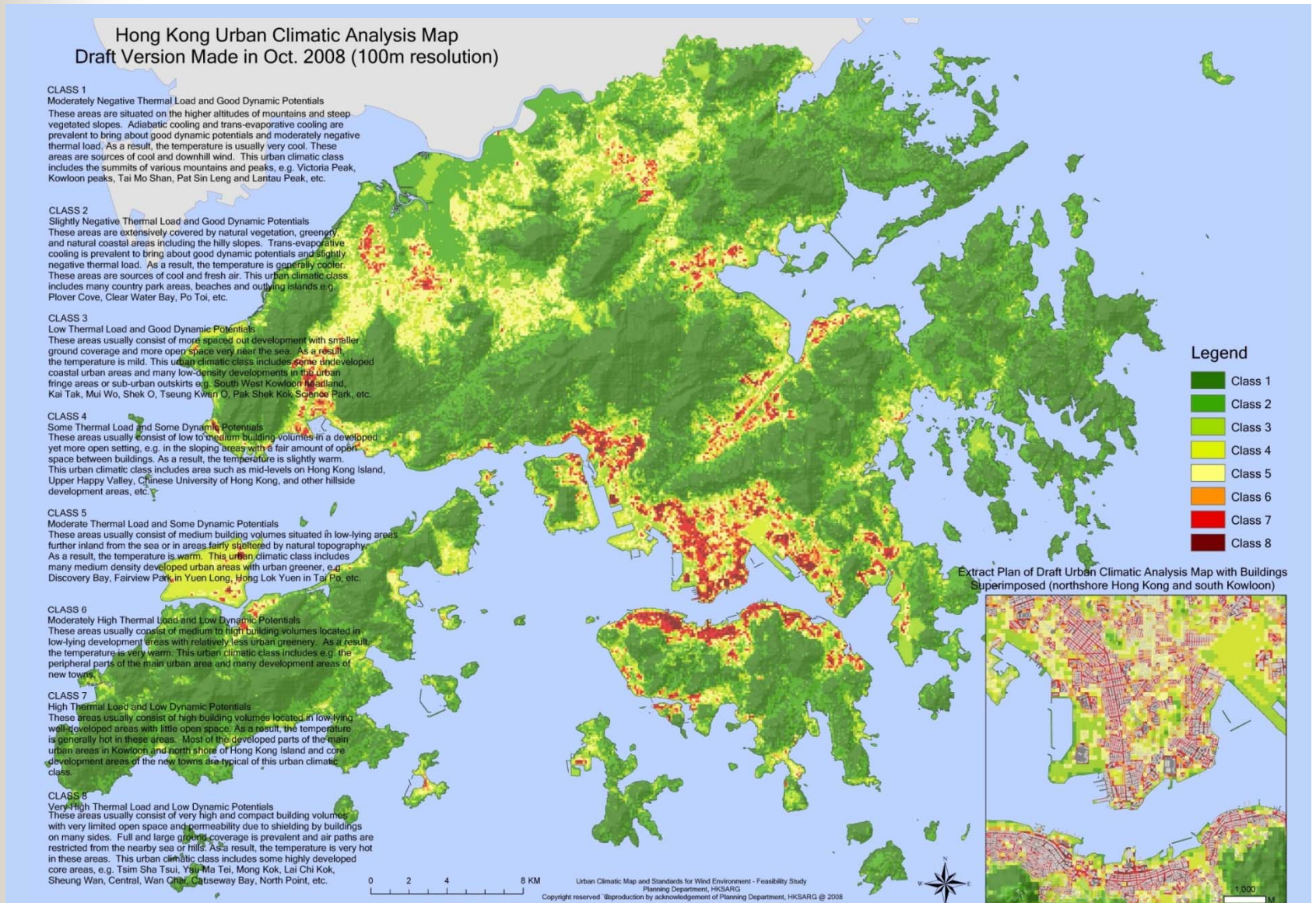
Devise Urban Climatic Map and Formulate Recommendations & Standards for Wind Environment – Feasibility Study



PlanArch Consultants Ltd.
建港規劃顧問有限公司



The Draft Hong Kong Urban Climatic Analysis Map

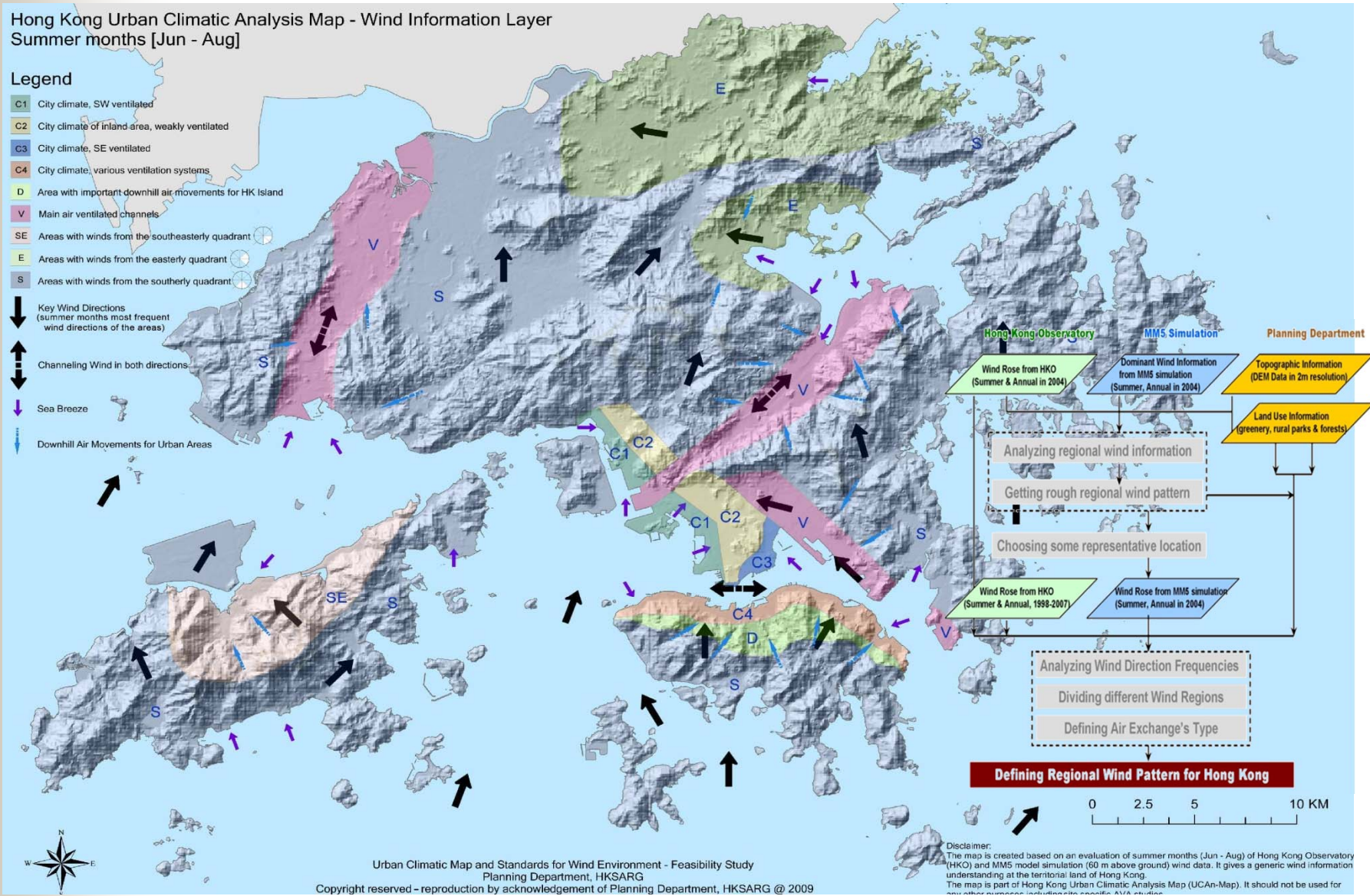


The Draft Hong Kong Wind Information Map

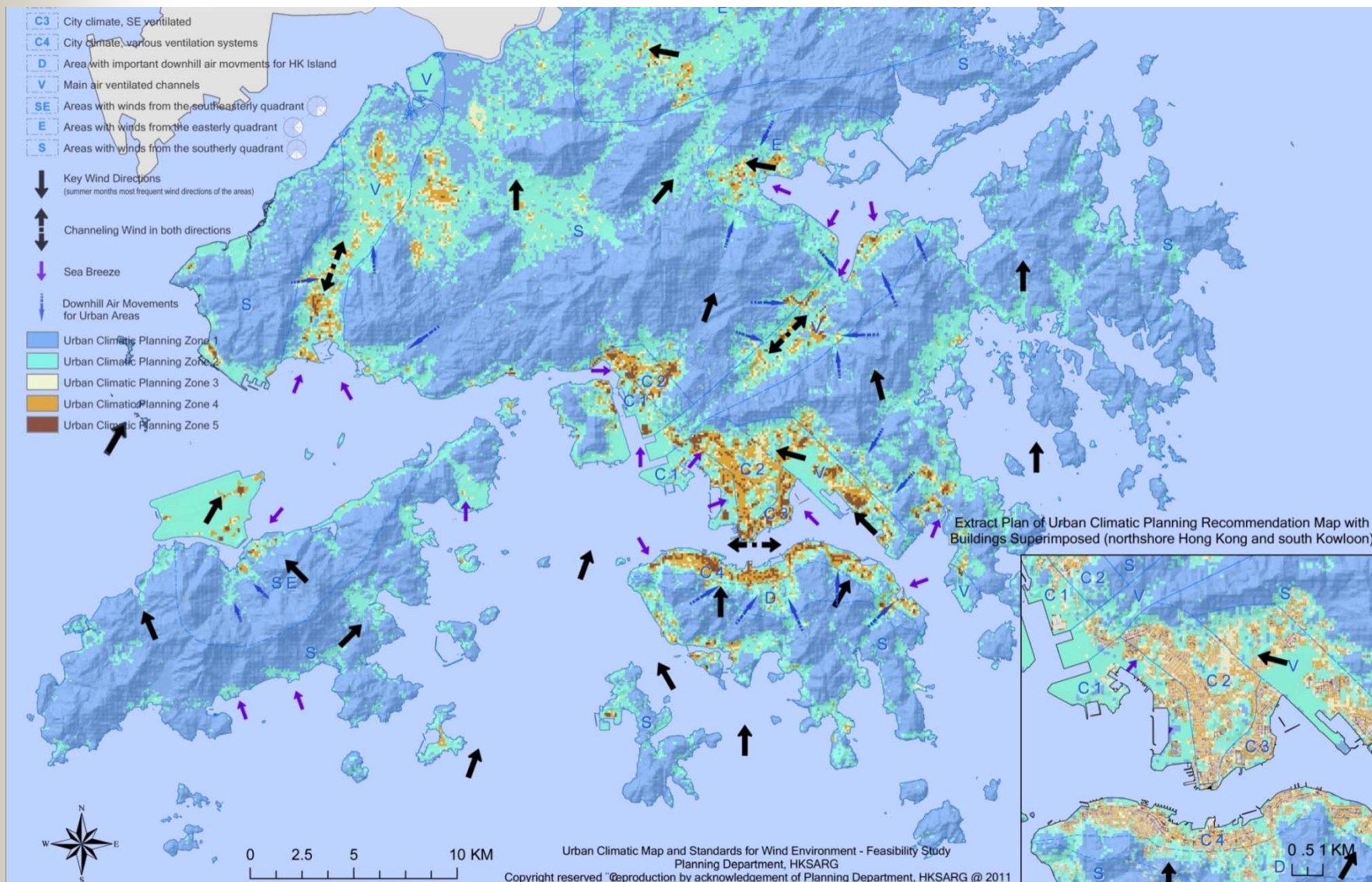
Hong Kong Urban Climatic Analysis Map - Wind Information Layer
Summer months [Jun - Aug]

Legend

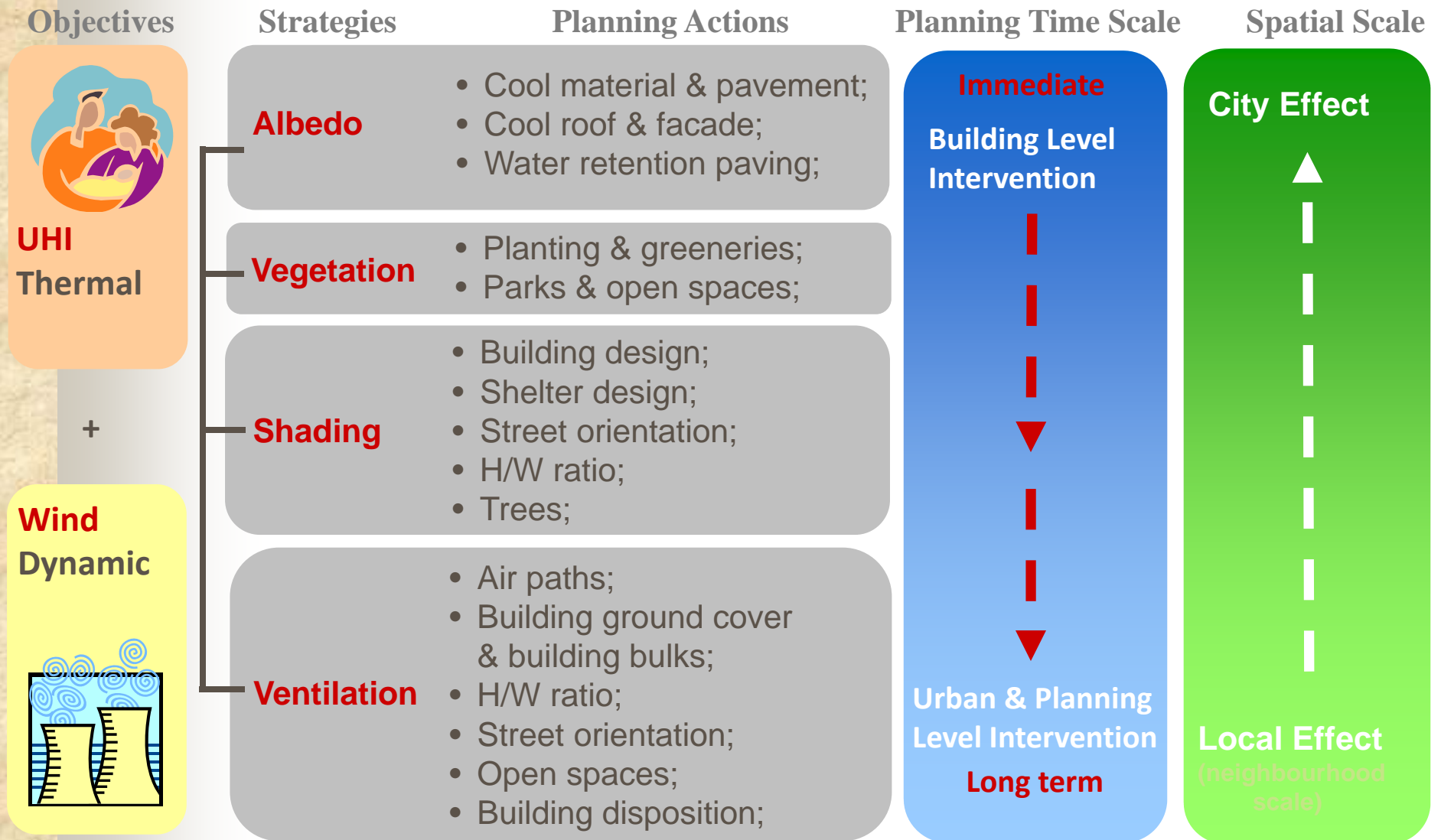
- C1 City climate, SW ventilated
 - C2 City climate of inland area, weakly ventilated
 - C3 City climate, SE ventilated
 - C4 City climate, various ventilation systems
 - D Area with important downhill air movements for HK Island
 - V Main air ventilated channels
 - SE Areas with winds from the southeasterly quadrant
 - E Areas with winds from the easterly quadrant
 - S Areas with winds from the southerly quadrant
- Key Wind Directions (summer months most frequent wind directions of the areas)
 Channeling Wind in both directions
 Sea Breeze
 Downhill Air Movements for Urban Areas



The Draft Urban Climatic Planning Recommendation Map



Key Design / Mitigation Strategies





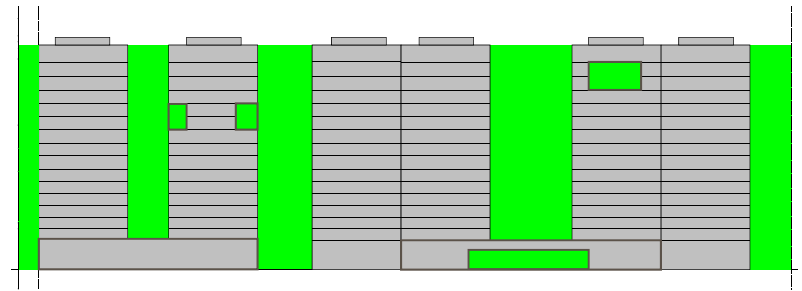
Addressing Buildings

Promote Sustainable Building Design

Guidelines for New Buildings

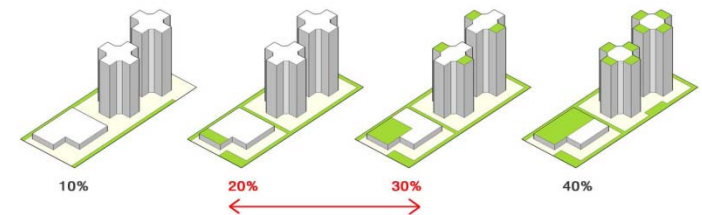
1. Building separation

- For sites with area greater than 2 ha or with continuous building width of greater than 60m, an intervening space of 20% - 33.3% of total frontage area of the buildings would be required



2. Greenery

- For sites larger than 1,000m², greenery equivalent to 20% – 30% of site area should be provided, including greenery at ground, podium and roof

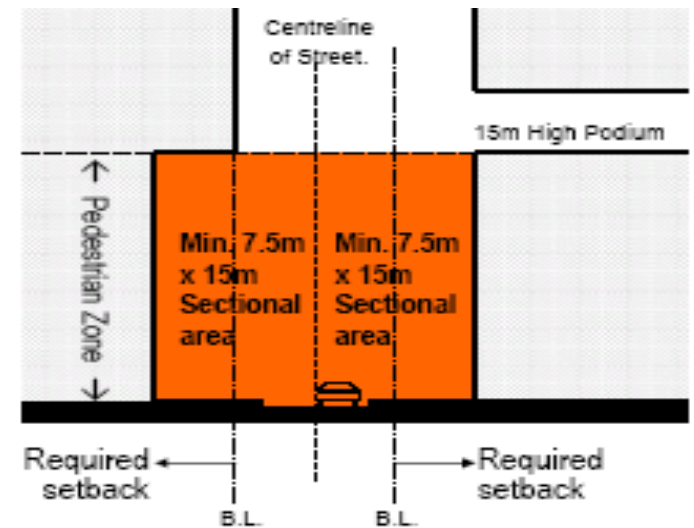


Promote Sustainable Building Design

Guidelines for New Buildings *(cont'd)*

3. Setback from narrow streets

- On streets less than 15m wide, new buildings should be set back (from ground level to a height of 15m) to improve flow of air at pedestrian level





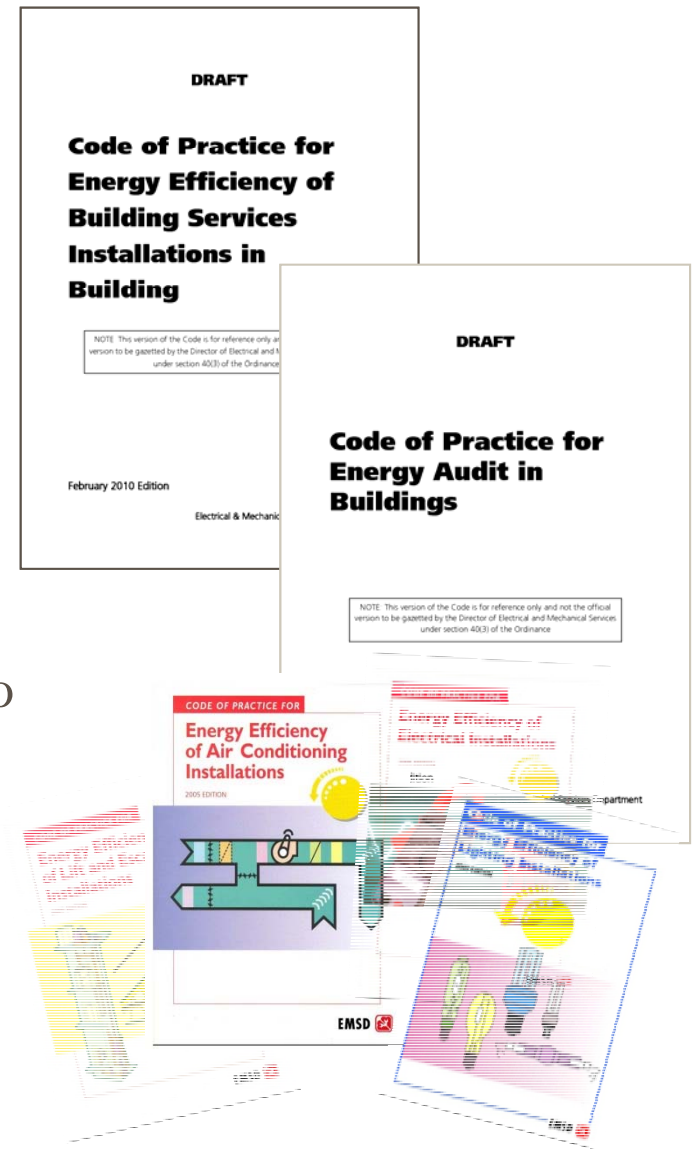
Provide GFA Concessions to promote green neighbourhood and green buildings

- Allow GFA concession for mandatory features like waste separation/recovery areas
- Allow GFA concession for green features beneficial to community like sky and podium garden
- Impose 10% cap on GFA concession for other green and amenity features
- Require carparks to be “electric-vehicle (EV) charging-enabling”
- Require building to go through Hong Kong Green Building Council’s BEAM-Plus assessment

Mandate Energy Efficiency in Buildings

Buildings Energy Efficiency Ordinance

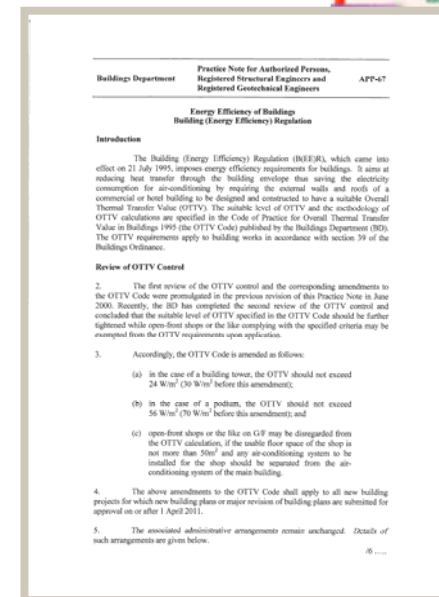
- The BEE Ordinance was passed in 2010
- To require the four major building services installations including lighting, electrical, air conditioning and lift & escalator installations of 13 categories of prescribed buildings to comply with the minimum energy efficiency standard in accordance with the Building Energy Code
- To require commercial buildings or commercial portion of composite buildings to conduct energy audit in accordance with the Energy Audit Code
- Full implementation of this Ordinance will result in energy savings in new buildings of approximately 2.8 billion kWh in the first decade (a reduction in carbon emissions of 1.96 million tones)



Mandate Energy Efficiency in Buildings *(cont'd)*

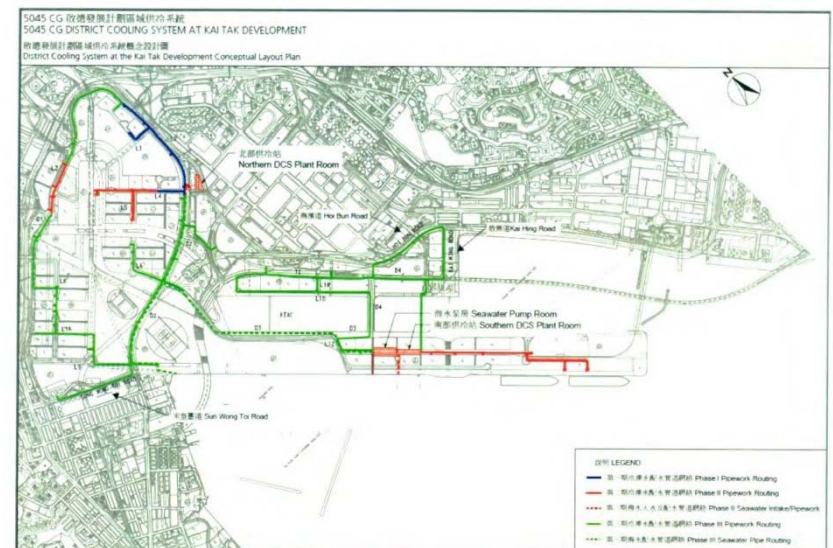
- Update Standards and Regulations
 - To save electricity consumption in air-conditioning for commercial buildings and hotels, Building (Energy Efficiency) Regulation and Code of Practice for Overall Thermal Transfer Value (OTTV) in Buildings require external walls and roofs of these buildings to be designed and constructed with suitable OTTV

Code of Practice
for Overall
Thermal Transfer
Value in Building
1995



Promote Energy Efficiency in Buildings

- District Cooling System (DCS)
 - Air conditioning system of high energy efficiency
 - A seawater DCS to be set up in Kai Tak Development
 - Actively exploring feasibility of development in other sites
 - Seriously considering mandating development in Kai Tak Development to use district cooling system



Promote Energy Efficiency in Buildings *(cont'd)*

- Earmark \$450 million to carry out minor works in government buildings to improve energy efficiency
- Launch \$450-million Building Energy Efficiency Funding Schemes to finance private building owners to conduct energy-cum-carbon audits and carry out energy efficiency projects in their buildings



Green Building Towards a Low Carbon Environment

建築物能源效益資助計劃
Buildings Energy Efficiency Funding Schemes

2009年4月8日開始接受申請
Open for application from 8 April 2009



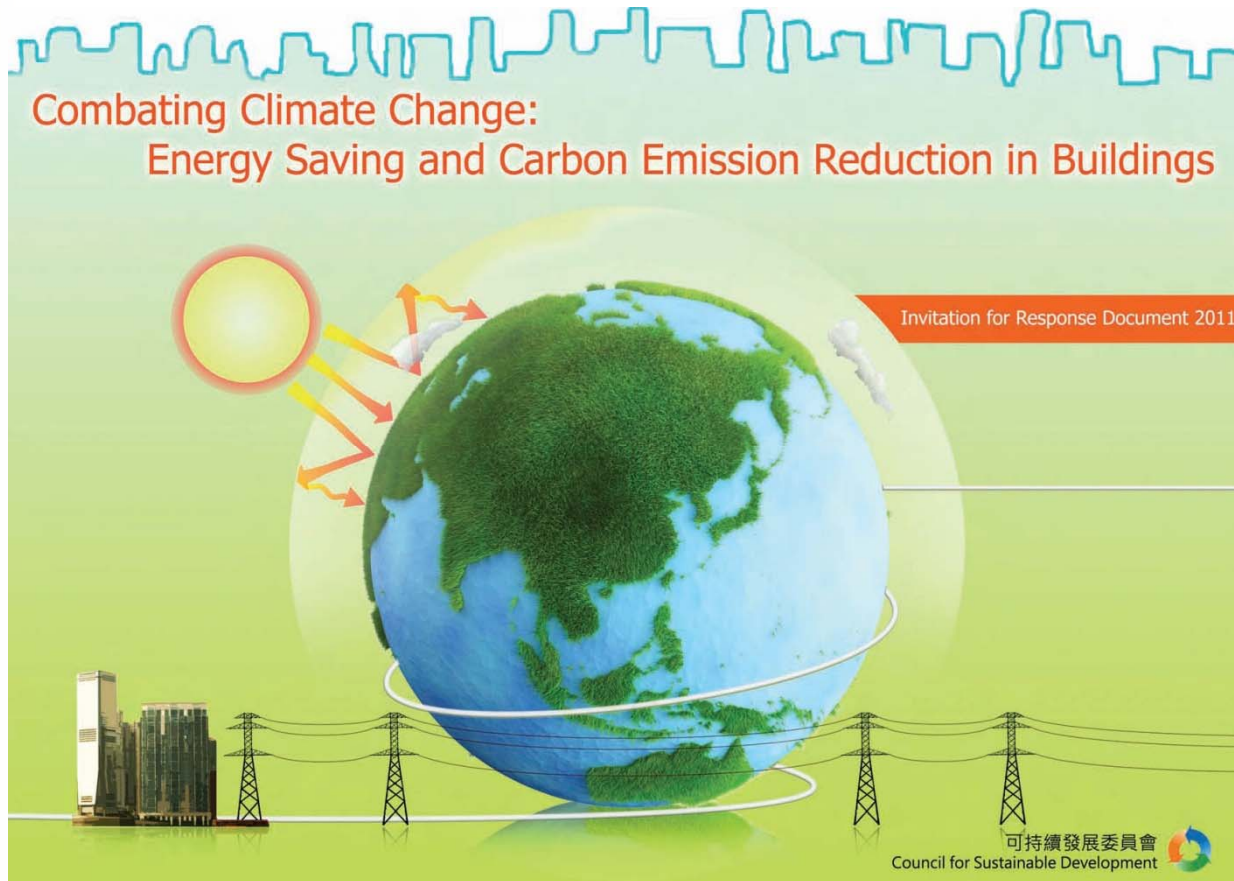
查詢 Enquiries
電話 Tel. 3757 6025
傳真 Fax 3521 0062
網頁 Homepage www.building-energy-funds.gov.hk
電郵 Email beefs@emsd.gov.hk

Give recognition to exemplary efforts

- Hong Kong Awards for Environmental Excellence encourage organisations to adopt green management and recognise their commitment towards environmental protection
 - Environmental Labels
 - Carbon“Less” Certificates
 - Green Innovations Awards
 - Sectoral Awards



To take our work forward further, the Council for Sustainable Development is conducting an extensive public engagement on Combating Climate Change: Energy Saving and Carbon Emission Reduction in Buildings





Our Green Building Movement

World Sustainable Building Conference 2008 in Melbourne, Australia



Hong Kong Green Building Council

“ With the support of the Construction Industry Council, the Hong Kong Green Building Council will soon be established. The Council will comprise representatives of the construction industry and professional sectors. It will help raise public awareness of green buildings and facilitate exchange and technological co-operation between Hong Kong and the rest of the world. We welcome the establishment of the Council, and will support its work.”

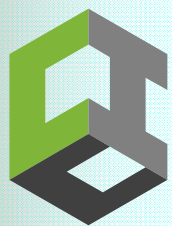
(The Financial Secretary's 2009-10 Budget in February 2009)



Mr John C Tsang
The Financial Secretary of HKSAR

Hong Kong Green Building Council *(Cont'd)*

- The HKGBC was inaugurated on 20 November 2009
- Vision :
 - To aspire for quality and sustainability at every stage of the building life cycle



CONSTRUCTION
INDUSTRY COUNCIL
建造業議會



BUSINESS
ENVIRONMENT
COUNCIL
商界環保協會



BEAM Society
香港環保建築協會



環保建築專業議會
Professional Green Building Council

- Upgrade assessment tool BEAM to BEAM Plus

Hong Kong Green Building Council *(Cont'd)*

- The “4As” expectation for Hong Kong Green Building Council at its Inaugural Ceremony cum Conference on 20 November 2009
 - Advocacy
 - Assessment
 - Accreditation
 - Award





Hong Kong Green Building Council *(Cont'd)*

- Up to August 2011,
 - HKGBC has over 140 Institutional Members and 160 Associate Members
 - HKGBC has received about 85 projects to apply for BEAM Plus assessment
 - HKGBC has accredited about 1,200 BEAM Professionals (BEAM Pro)
 - HKGBC has accredited 30 BEAM Assessors to support the BEAM Plus assessment



The Coming Highlights

A Zero Carbon Emission Building at Kowloon Bay under construction for public education and demonstration purpose



Investing in research and development

- Environmentally friendly construction materials
- Skyrise and vertical greening
- Concrete technology



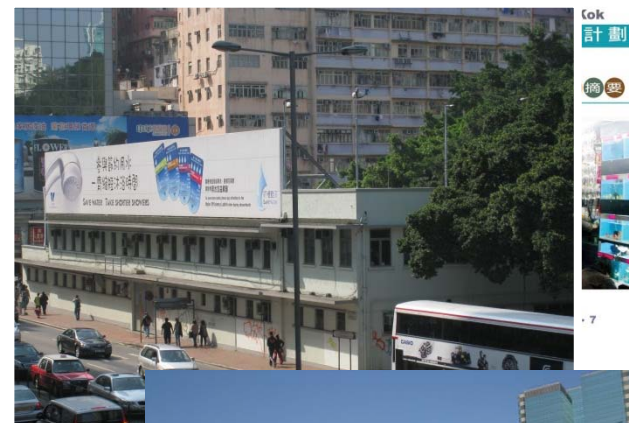


Retrofitting of Industrial Buildings

- Allow owners to retrofit their under-utilised older industrial buildings to more gainful commercial uses at a nil payment for the change in use of the building during its lifetime
- This would avoid pre-mature demolition of existing buildings, reduce construction waste and upgrade the existing stock older buildings to improve their performance
- We encourage such retrofitting to receive green building certification under our locally developed *Building Environmental Assessment Method Plus* (BEAM Plus) to encourage adoption of green building design and features

Government taking the lead in retrofitting industrial buildings to green standards

- We are planning to purchase and convert an industrial building to accommodate Water Supplies Department New Territories West Regional Office
- We will adopt green design and introduce environment-friendly and water conservation measures for the conversion works and aim for second highest rating
- The experience gained will provide practical reference for incorporating green features in retrofitting buildings



Progressive Development

“I will insist that our development be sustainable, balanced and diversified. While the economy powers ahead, we must take care of environmental protection and cultural conservation to offer our people a quality city life.

I will insist that development bring about social harmony, with different strata of people sharing the fruits. ”

(The Chief Executive's 2007-08 Policy Address in October 2007)



Mr Donald Tsang
The Chief Executive of HKSAR



Thank you