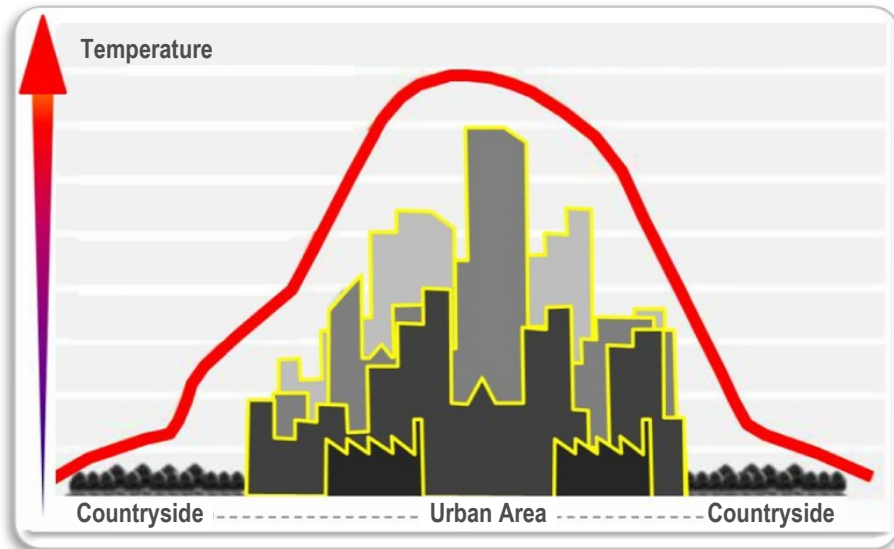


# Urban Climatic Map and Standards for Wind Environment - Feasibility Study

## FEELING THE INCREASING HEAT?

The **Urban Heat Island (UHI)** effect in Hong Kong is intensifying. The urban area is significantly warmer than its surrounding rural/natural areas due to a dense concentration of buildings and urban activities, urban emissions, congested public spaces and insufficient greenery, etc.



▲ Urban Heat Island (UHI) Effect

Increasing urban temperature and reducing urban wind lead to human thermal discomfort and heat stress.



## ACTION REQUIRED?

To help mitigate the UHI effect and improve quality of the living environment through better planning and urban design, we have launched the **Urban Climatic Map and Standards for Wind Environment - Feasibility Study (UCM Study)**. It aims to examine the urban climatic characteristics of the territory and to make planning recommendations based on urban climatic considerations.

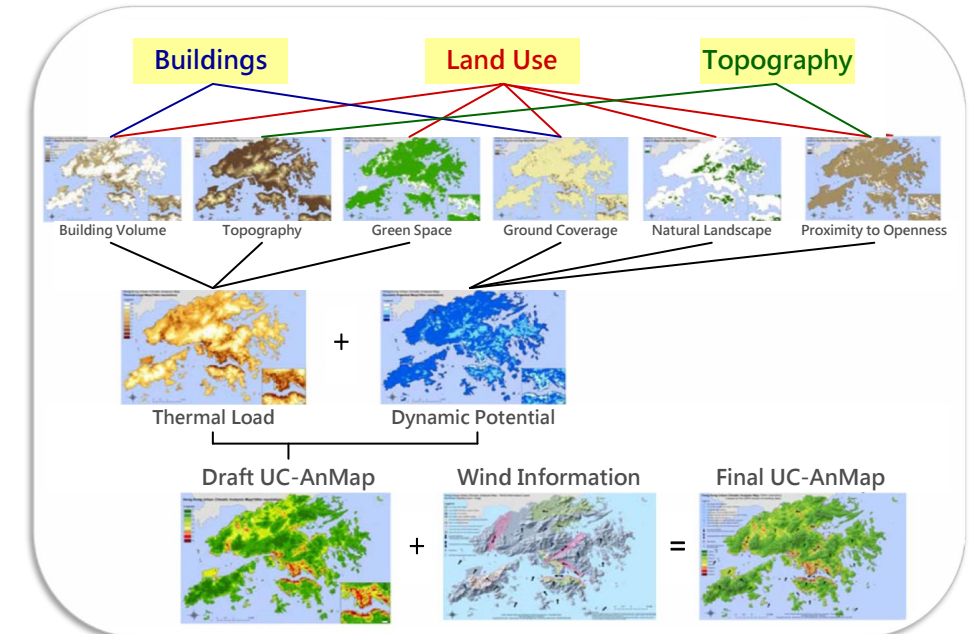
In the Report on the Public Engagement Process on *Building*

*Design to Foster a Quality and Sustainable Built Environment*, the Council for Sustainable Development recommends, amongst others, the Government to consider incorporating more scientific considerations in the planning process. The Urban Climatic Map serves this purpose.

## STUDY RECOMMENDATIONS

**1 Urban Climatic Analysis Map (UC-AnMap)** - Based on an analysis of 6 urban climatic factors which affect thermal load (heat gain capacity) and dynamic potential (air ventilation capacity) and hence have impact on human thermal comfort, 8 urban climatic classes of Hong Kong are mapped.

**2 Urban Climatic Planning Recommendation Map (UC-ReMap)** - The 8 urban climatic classes of the UC-AnMap are consolidated into 5 **Urban Climatic Planning Zones (UCPZs)** of similar human thermal comfort and planning implications. The UC-ReMap provides a strategic and comprehensive planning framework to guide broad strategic planning actions for each of the UCPZs.



▲ Analysis of Climatic Factors for Formulating the Urban Climatic Analysis Map

**UCPZ 1**  
- mainly to preserve urban climatically valuable areas  
- essential small-scale developments acceptable

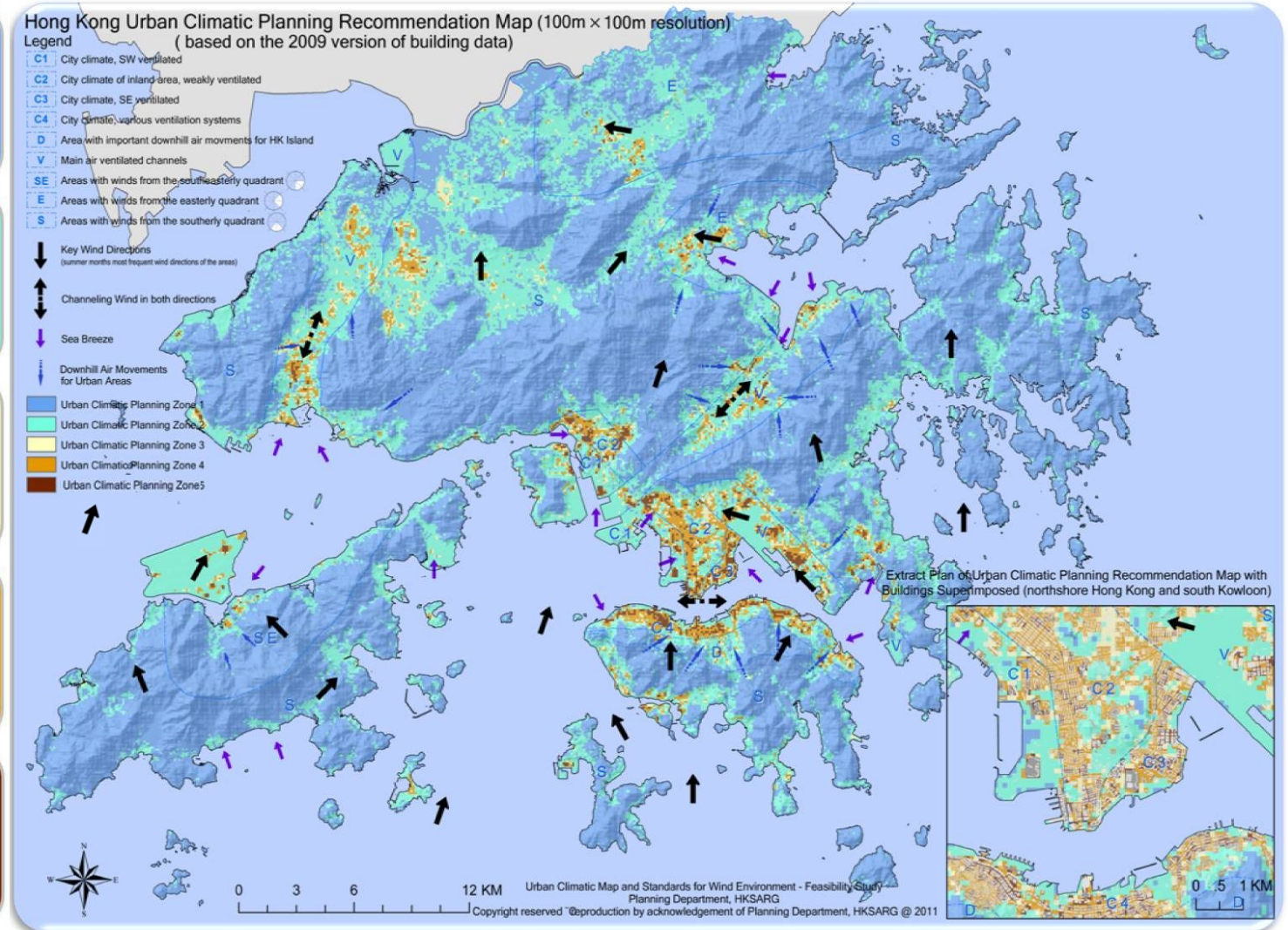
**UCPZ 2**  
- generally to maintain existing urban climatic characteristic  
- subject to careful planning and building design, new low-density individual developments and comprehensive developments possible

**UCPZ 3**  
mitigation measures are encouraged to be carried out by both public and private sectors for long-term improvements of areas subject to some impact on thermal comfort

**UCPZ 4**  
mitigation measures are necessary, in particular for additional developments, to be carried out by both public and private sectors for long-term improvements of areas subject to strong impact on thermal comfort

**UCPZ 5**  
mitigation measures are essential, in particular for intensification of use and additional development, to be carried out by both public and private sectors for long-term improvement of areas subject to very strong impact on thermal comfort

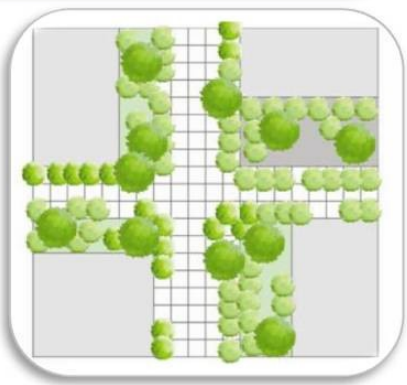
▲ Recommended Strategic Planning Actions



▲ Urban Climatic Planning Recommendation Map



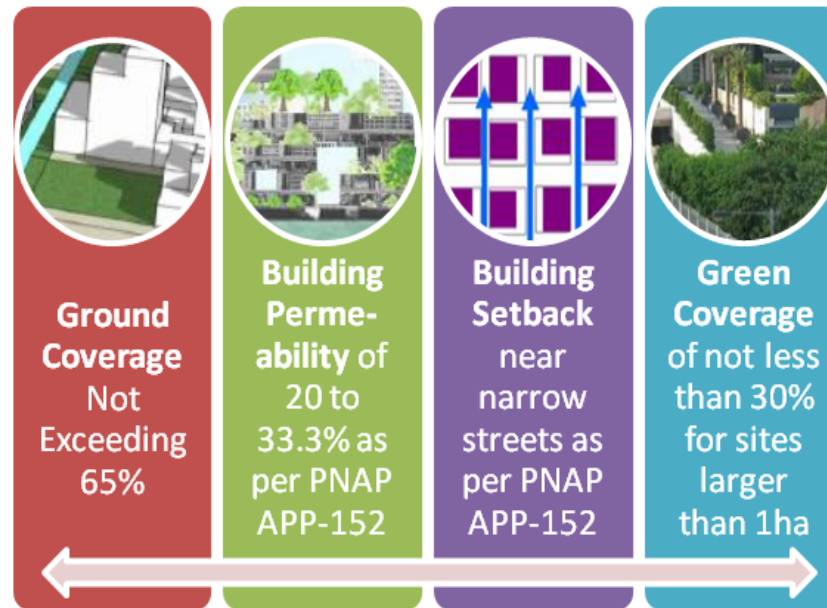
**3 Planning Guidelines** - Planning and design measures to improve the urban climate are proposed to guide project planning, formulation of development parameters and layout/building design. They aim to lower thermal load through greening and to promote air ventilation through reducing ground coverage, improving building permeability and connecting low-rise developments/ open areas to create air paths, etc.



▲ Planning and Building Design Measures to Improve Urban Climate

**4 Wind Performance Criterion for Air Ventilation Assessment (AVA)** - The AVA System has been in force since 2006. The Study proposes a minimum wind speed of 1 metre per second at street level to achieve pedestrian thermal comfort for projects requiring AVA. Due to the existing compact building morphology in some areas of Hong Kong, this may not be practically achievable. Therefore, the Study proposes an Alternative (Prescriptive) Approach comprising four mitigating design requirements detailed below, which has taken into account the recent Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) No. APP-152 on *Sustainable Building Design Guidelines* issued by the Building Authority.

**Exemptions** - Developments with demonstrated functional requirements in terms of building length and/or ground coverage could be exempted, e.g. infrastructural facilities, transport terminus, sports and civic facilities, etc.



▲ Requirements under Alternative (Prescriptive) Approach

**5 Refinements to the Air Ventilation Assessment System** - The AVA System is to be refined to incorporate the wind performance criterion, extend the scope of application to cover both public and private projects and include other methodological/ technical refinements.

### OUR FUTURE

Through the implementation of the Study recommendations with concerted efforts of the public and private sectors, the urban climatic condition and quality of the living environment in Hong Kong would gradually improve for the better, to the benefit of our future generations.



▲ A Quality Urban Environment for the Future

### SUGGESTIONS AND COMMENTS

Your views and comments on the Study recommendations are very important to us. They will form a valuable reference for finalizing the way forward. If you wish to know more about the Study before forwarding your views, please visit our website at:

[www.pland.gov.hk/pland\\_en/p\\_study/prog\\_s/ucmapweb/index.htm](http://www.pland.gov.hk/pland_en/p_study/prog_s/ucmapweb/index.htm)

You may forward your views and comments **by 15 February 2012** to

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You are cordially invited to the stakeholder engagement forum to be held in early 2012. The detailed arrangements for the forum shall be announced on our website shortly.

**THANK YOU**

Planning Department  
December 2011



**Disclaimer:** A person or organization providing any comments and views on the Urban Climatic Map and Standards for Wind Environment - Feasibility Study shall be deemed to have given consent to the Planning Department to wholly or partially publish the relevant comments and views (including the names of the individuals and organizations). If you do not agree with this arrangement, please state so when providing your comments and views.