



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



INTERNATIONAL • COLLABORATIVE • CONSTRUCTION



Topic: A Multi-disciplinary Approach in Developing Sustainable Built Environment A Case Study in Hong Kong Kowloon East Development Project (KEDP-CBD2)

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World Sustainable Built Environment Conference 2017 (HK)

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LACK of Residents and Economic Activities

A nighttime photograph of a modern cityscape. The central focus is a tall, slender skyscraper with a distinctive, tapering top, illuminated from within. To its left, several other high-rise buildings of varying heights are also lit up. In the foreground, a body of water reflects the city lights and the moon. The sky is a deep blue, and a bright moon is visible in the upper right quadrant. The overall scene conveys a sense of a planned, modern urban environment.

SONGDO: a South Korean smart city was planned to rival with Singapore and Hong Kong as a “global center”

Masdar @ Abu Dhabi, UAE: a **SMART CITY** with an aim for realizing the net carbon-neutral & car free sustainable city in the desert.

Smart City model: Many sociologists and historians now blame this model for rising crime rates, social exclusion, limited access to public amenities and heightened class divisions.



HONG KONG

Kowloon East
Development Project
(KEDP)

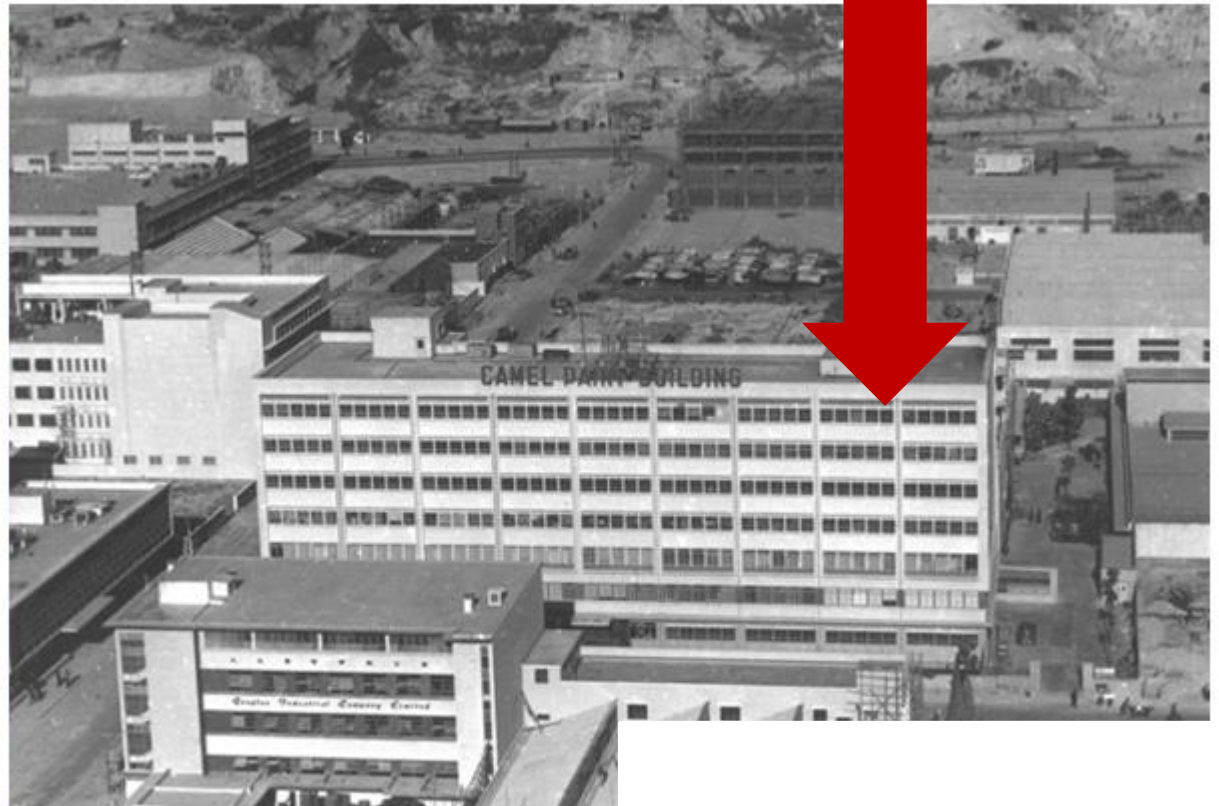
SMART CITY

Pilot Test Proposal
A Multi-
disciplinary
Approach





**1957
Camel
Paint
Building**



1957 Brand-new NLPP plant at Kwun Tong, Hong Kong



2017 Camel Paint Building



Kai Tak: Before





Before



This is the city Mass Transit Railway (MTR), also linking to Mainland China.



Local pier to Hong Kong Island



Now

Kai Tak International Cruise Ship Terminal to the world

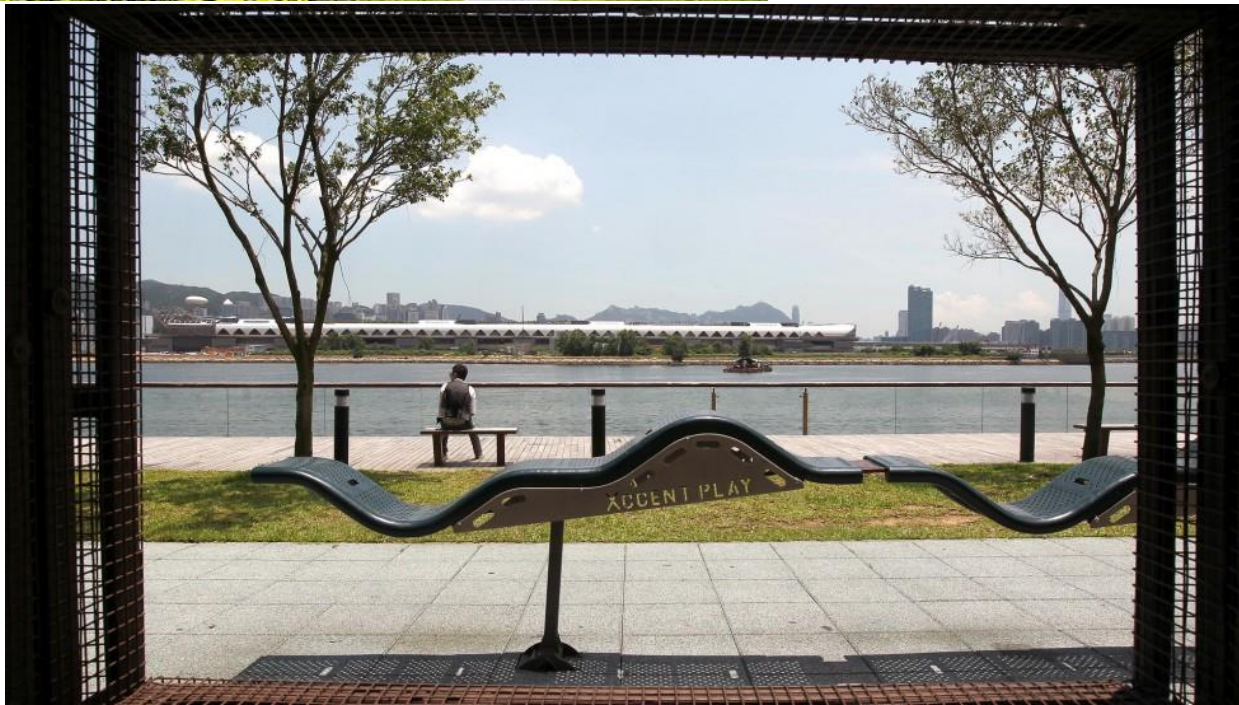
Kowloon East District (CURRENT CBD2)

Now



Proposed Green Belt Promenade (linking East Kowloon to West Kowloon via bike lane)
<http://www.westkowloon.hk/en/visit/smartbike>





Now



Work in Progress



Now you might think, this CBD2 project has done so well, yes, on the surface, HOWEVER, this project is facing a big issue similar to Songdo and Masdar: **Lacking SOCIAL and ECONOMIC Activities due to low foot traffic.**

Built on the site of the former Kai Tak Airport runway, the cruise terminal has been criticised because of its waste of retail space and inconvenient location since its inauguration in June 2013. Photo: Dickson Lee

South China Morning Post

HK CHINA ASIA WORLD COMMENT BUSINESS TECH LIFE CULTURE SPORT WEEK IN ASIA POST MAG STYLE .TV



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NOW READING

Few ship calls, low passenger spending: Hong Kong cruise terminal needs to boost us...

Few ship calls, low passenger spending: Hong Kong cruise terminal needs to boost usage, auditor says

It also says terminal requires easier transport connections and better maintenance of its facilities

PUBLISHED : Wednesday, 26 April, 2017, 10:32pm

UPDATED : Thursday, 27 April, 2017, 7:42pm

COMMENTS: 52

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CULTURE

Mariana Bay Project in Singapore

TOD and Smart City as the Built Environment to facilitate social and economic growth



After studying the bad cases, we also find a successful smart city case to investigate and learn from. The Mariana Bay Project in Singapore. Why is it a success? Because the Mariana Bay Project is not only providing the community with smart built environment, it also integrates Human Environment and Business Environment well connected by the Transit-Oriented-Development system.



Human Environment + Built Environment



Integrating **built environment**, **business environment** and **human environment** for developing a sustainable district where **smart mobility**, **smart economy** and **smart living** would be realized.

Hong Kong and Singapore (Both locate in Asia)

LOCATION: World and Asia

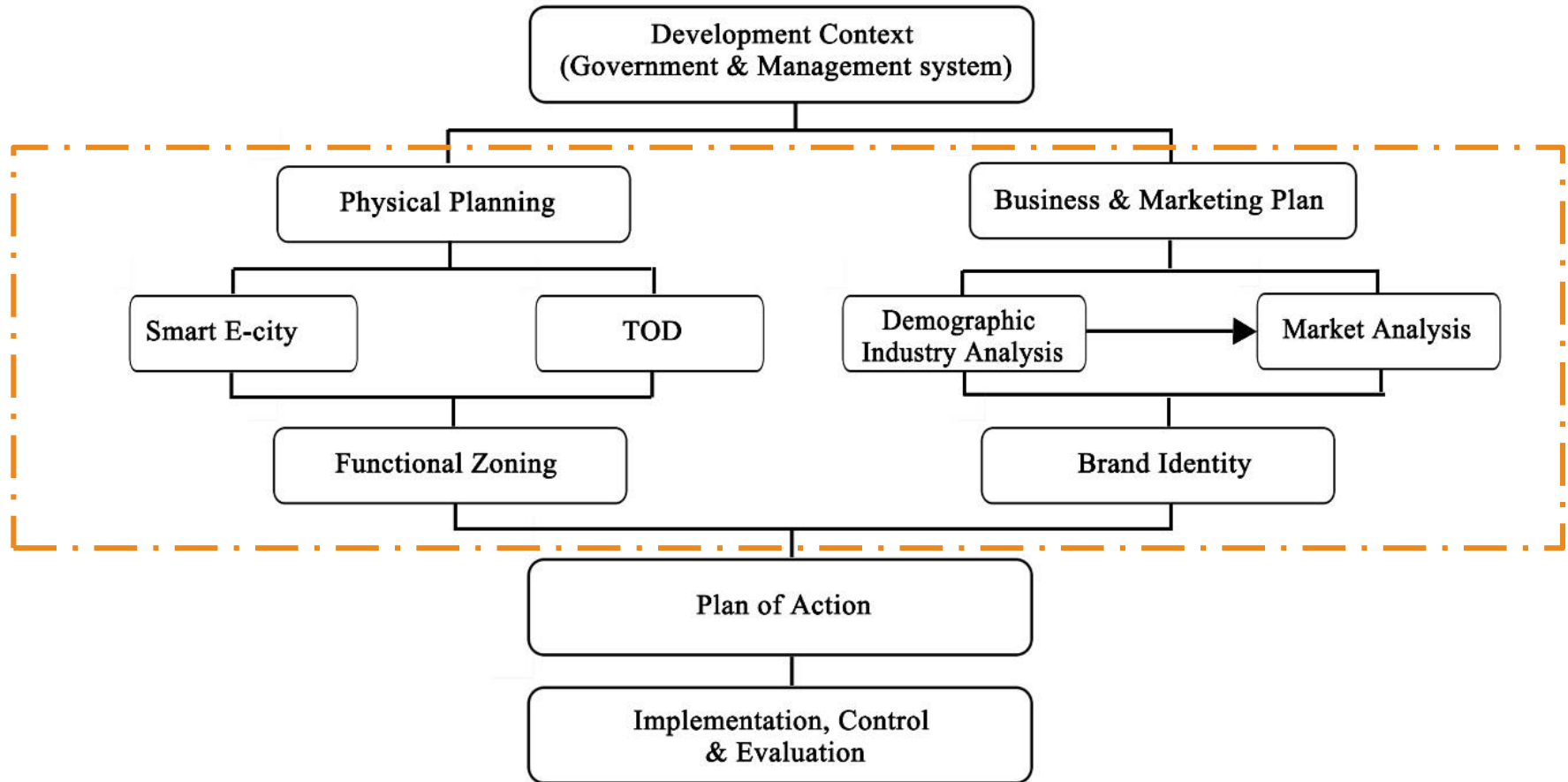


Items	Singapore New CBD 2030 (Marina Bay Development:360 hectare)	Hong Kong CBD2 2030 (Kowloon East Waterfront Development:488 hectare)
Historical Background	<ul style="list-style-type: none"> Singapore is a city-state, a British colony and then a state of Malaysia before its independence to become the Republic of Singapore in 1965. A prominent international financial centre and a port city lived by 74.1% Chinese, 13.4% Malay, 9.2% Indian and 3.3% others. With close tie to adjacent Malaysia and neighbour of Indonesia. 	Hong Kong SAR is a special region of the People's Republic of China (PRC), a British colony before its handover back to the PRC in 1997. A prominent international financial centre and a port city lived by 93.6% Chinese and 6.4% others. With close tie to adjacent PRC and neighbour of Guangdong cities of PRC (one country two system)
Total Population (Million) / Area (2016)	5.6 / 719.2 square km [3]	7.3 / 2,755 square km [6]
Literacy Rate	96.8 (2015) [3]	95.7 (2014) [7]
Density	7,797/square km	6,544/square km
GDP at current market price (US\$ Million) GDP/capita (2015)	\$402,457.9 \$72,711[3]	\$307,300 \$42,100 [8]
Transportation	A TOD-Led City, transporting people by Land: MTR and BRT (Regional), by Air and by Sea (International).	A TOD-Led City, transporting people by Land: MTR and BRT (Regional), by Air and by Sea (International).
Project vision/goal	<p>Becoming a world winning global city with connectivity to the world [4].</p> <p>Creating a new iconic CBD (adjacent to the existing CBD), an international investment hub featuring tourism, state-of-the-art-infrastructure, parks and cultural venues, contemporary high-rise commercial towers [4].</p>	<p>Becoming a global city connecting to the world efficiently.</p> <p>Transforming Kowloon East into the CBD2 of Hong Kong to support economic growth and to strengthen global competitiveness [9].</p>

Items	Singapore New CBD 2030 (Marina Bay Development:360 hectare)	Hong Kong CBD2 2030 (Kowloon East Waterfront Development:488 hectare)
Issues / strength*	<ul style="list-style-type: none"> - old shipping ports with filthy open sewer. - resource-poor (natural and human). - land-scarce: by comparing to HK, more land has been developed which reflected on the density figure. * efficient internet accessibility (internet users: 82.1/100person; secure internet servers: 932/1 million persons: mobile subscriptions: 146 plans/100 persons. 	<ul style="list-style-type: none"> - outdated built environment including the filthy open sewer and inefficient connectivity - old industrial-oriented business environment [10] - low skill labour human environment needs to be upgraded to meet the challenge of the digital world. * plenty of natural and human supply from the cities of PRC. - land-scarce for development because 75% of the land are zoned for preservation (nature). * efficient internet accessibility (internet users: 84.95/100person; secure internet servers: 905/1 million persons: mobile subscriptions: 229 plans/100 persons.
Function zone	<p>Marina South: as the new CBD extension for office and some residential developments, a new lively and mixed-use residential district. Marina Centre (Marina Bay Sand) for commercial, tourism, retail malls, convention and cultural development. Marian East for residential use mostly. A true green, walkable and bikeable sustainable urban living [5]</p>	<p>Area including Kwun Tong (old industrial area), Kai Tak (new development) and Kowloon Bay (commercial section):</p> <ol style="list-style-type: none"> 1) Low-Carbon Green Zone; 2) Industrial Heritage Rehabilitation Zone; 3) Modern Residential Commercial Zone; 4) Multipurpose Sports Centre; 5) Premium Tourist, Residential and Commercial Business Zone
Performance	<ul style="list-style-type: none"> - Marina Bay Sand has become the major tourist point of interest and a new icon of Singapore. - in recent years, Singapore has gained more world recognition than Hong Kong [11]. - the ranking of quality of life organized by different world institutes positioned Singapore over Hong Kong. 	<ul style="list-style-type: none"> - not available yet because this is only a proposed idea as a pilot test. However, the current development is lacking people traffic, business and activities.

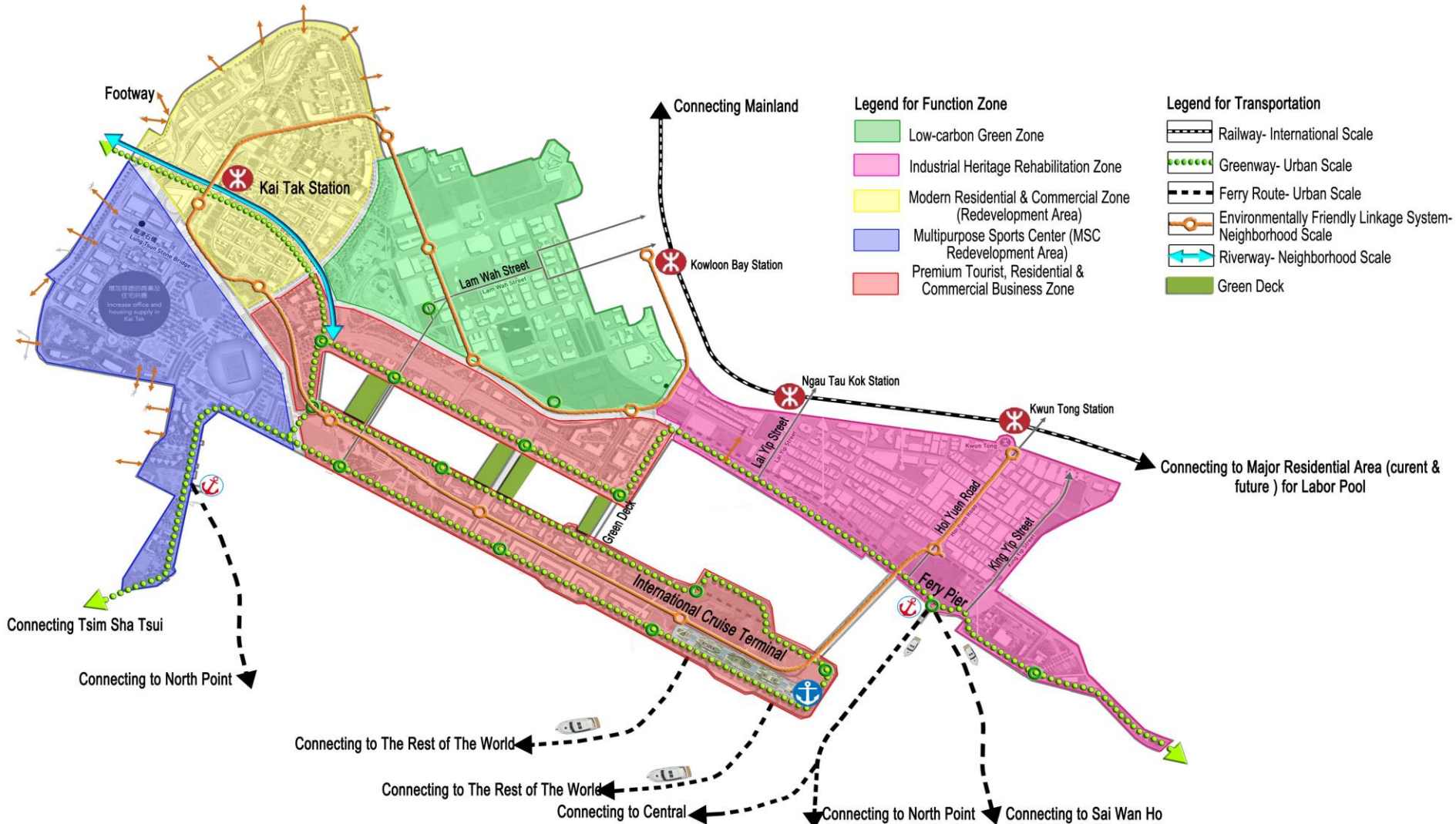
Urban Development Project in Asia (case study for comparison)

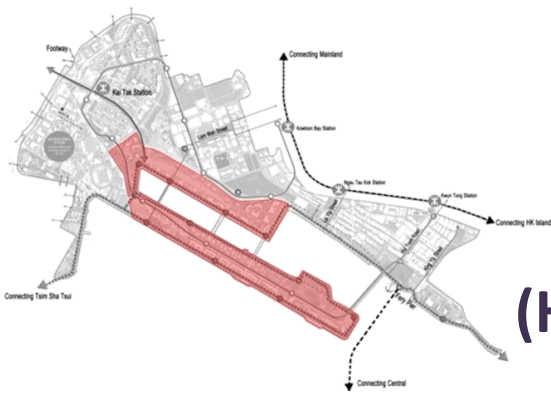
Framework: Multi-disciplinary Approach in Developing Sustainable Built Environment @ CBD2



In this Kowloon East Project, our framework is designed to promote the following themes: connectivity, branding, diversity (youth + expatriates + locales), innovation and sustainability **by integrating Human, Built and Business Environments.**

5 inter-connected-Function-Zone Map generating based on Smart Human E-City Model (Built Environment)



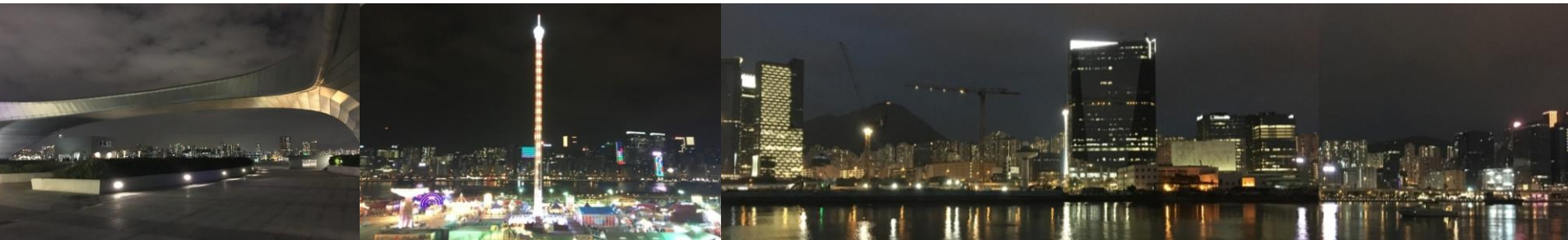


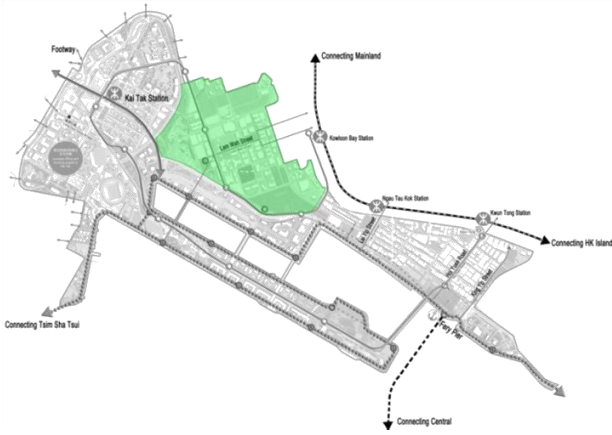
Premium Tourist, Residential and Commercial Business Zone

(Human Environment + Business Environment)

Ideas to develop this area:

- ❖ **Premium Food and Beverage Tasting Event**, Wedding Banquets, and Business Banquets by Hong Kong Trade Development Council who organize many successful international trade exhibitions. A HK brand of lifestyle.
- ❖ Green decks are constructed to connect the buildings on both sides of Kowloon Bay, which not only increases the walkability for pedestrians, but also creates a great waterfront landscape.
- ❖ Modern commercial shops
- ❖ Smart digital techniques.



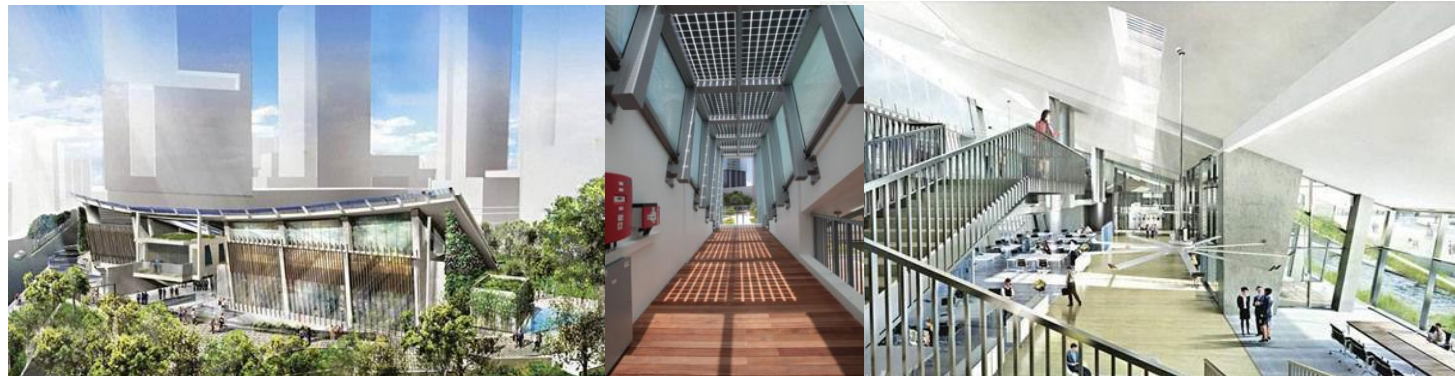


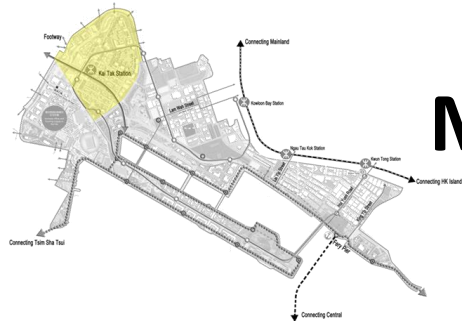
Low-carbon Green Zone (Built Environment)

Ideas to develop this area:

- ❖ Social enterprise and mid-price hotels **help promoting green environment for green living.**
- ❖ A centralized parking-lot: the residents and workers will transfer to local transportation system or walk.
- ❖ Highly concentration of green buildings so that this zone is like a green building exhibition district. Currently, the Zero Carbon World can act as the core for a HK brand of Green Campaign and extend to other districts.

The Current Landscape of Zero-carbon Building





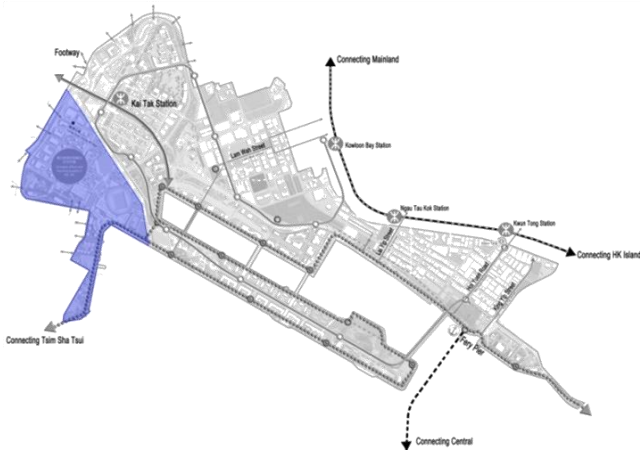
Modern Residential & Commercial Zone (Human Environment + Business Environment)

Ideas to develop this area:

- ❖ **Street fairs and community activities.**
- ❖ Mostly where the new public housing developed, activities to enhance sense of belonging in the neighborhood would encourage green behavior for supporting Low Carbon Green Zone.
- ❖ **Neighborhood job fair to encourage employment** within the involved transit nodes will provide labor pool to the adjacent wholesale and commercial zones.

The Current Landscape of Northwestern Corner





Multipurpose Sports Center (Human Environment)

Ideas to develop this area:

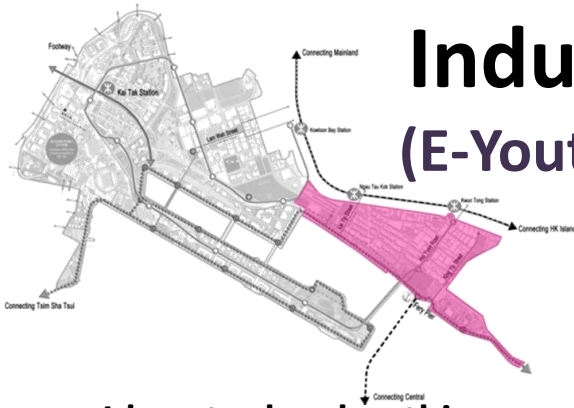
- ❖ workmanship, knowledge and health are the key elements for nurturing sustainable individual in the society.
- ❖ Place Making: **sport and well-being driven community activities: outdoor yoga free community classes or outdoor martial art classes...**

The Current Landscape of The Southwestern Corner, the far end is where the MSC zone



Industrial Heritage Rehabilitation Zone

(E-Youth: Human Environment + Business Environment)



Ideas to develop this area:

- ❖ **Industrial Spiritual Culture:** organizing industrial art installation or competition in the area through event management.
- ❖ **Youthful Culture:** rehabilitating historical industrial buildings such as transforming the below [Kowloon Flour Factory into a youthful Back Packing Guest House](#) and youthful oriented studio, bookshops and coffee shops....band rooms.
- ❖ **Food Culture:** international wholesale food hub supported by international tourists from cruise terminals and tourists from Mainland China (inter-city-train). Jump starting local economic growth and building international friendship.
- ❖ **World Culture Exchange (East Meets West):** a youthful lifestyle hub for local, Mainland China and International exchange through public gathering, youth-oriented events and social gathering such as a younger LKF.

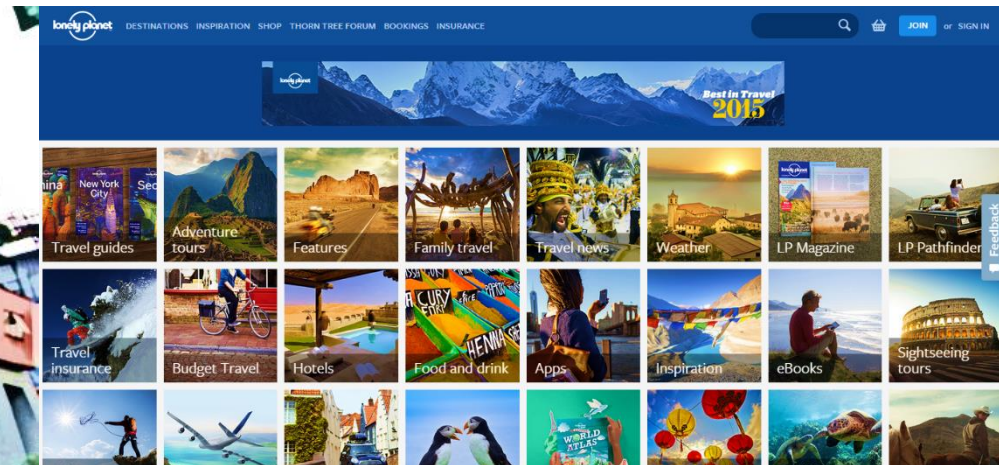
The Current Landscape of The Industrial Area



E-Youth: Catalyst to CBD2 (APM 101 Industrial Heritage Rehabilitation Zone)

A community for nurturing youthful culture (Human Environment)

Purpose: dedicate a domain to HK Youth and let them have a sense of belonging and harness their youthful energy as the catalyst to transform Kowloon East into the jewel crown of Asia's World City.

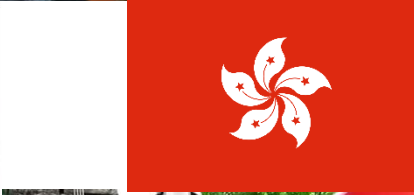


Target
Market

United FOOD Nation

(Human Environment + Business Environment)

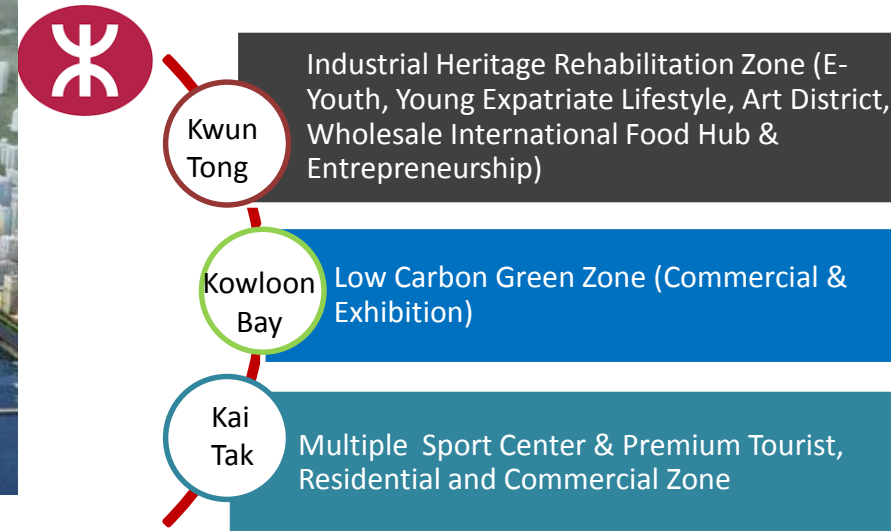
- **Inter-nation-festival:** international street food parade (Brazilian carnival, Cinco de Mayo, Irish Fest. Le French May & Rugby 7
- Reflects the essence of the place: culture & people
- Increases foot traffic and retail business
- Expands international friendship



LE FRENCH MAY 法國五月



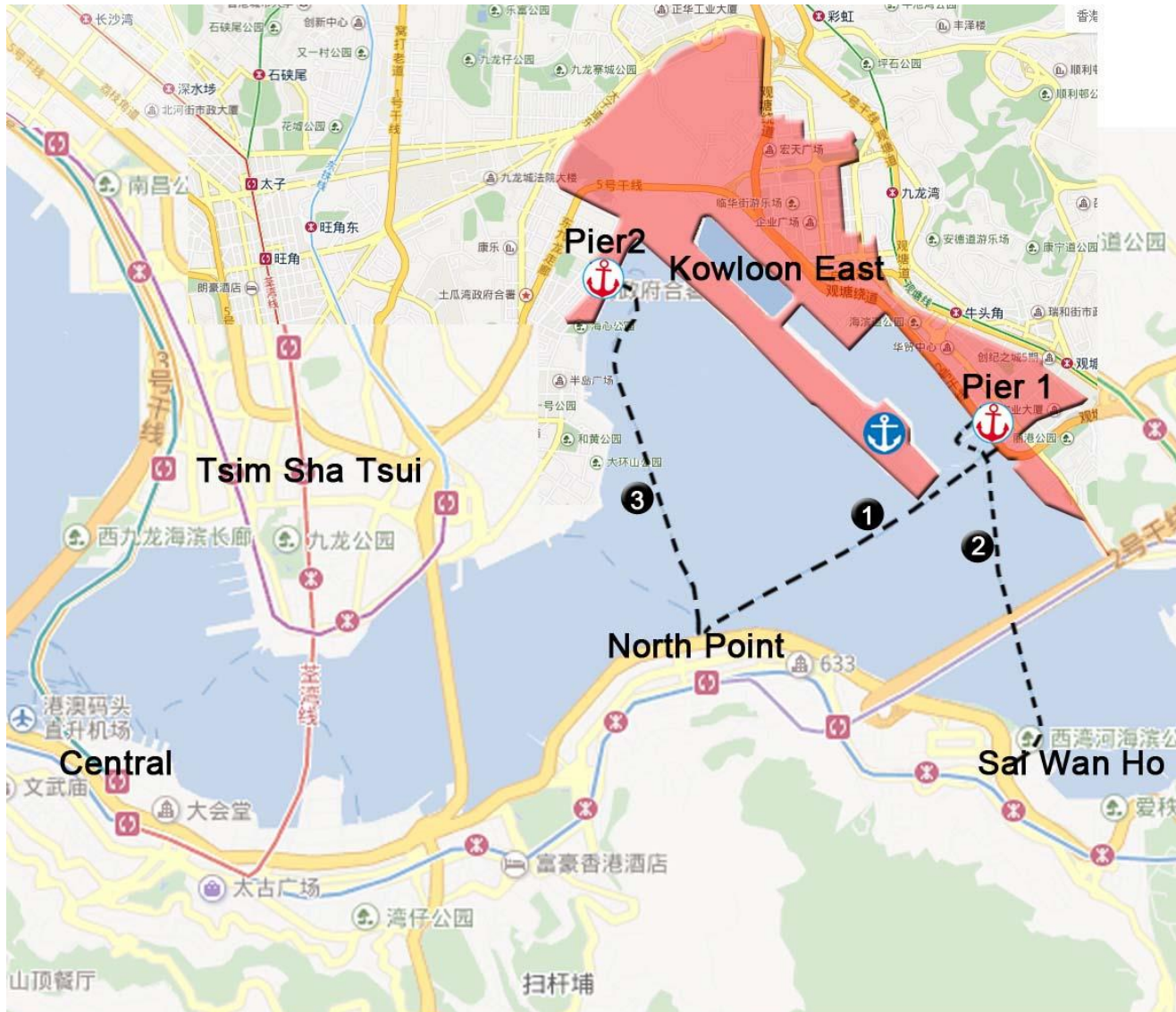
TOD concept is used to connect the 5 function zones, major transit nodes are Kwun Tong, Kowloon Bay and Kai Tak (**Built Environment**)



Definition:

Transit-Oriented-Development (TOD) is a sustainable urban strategy to encourage transit, walking and cycling as a travel mode by clustering mixed-use, high density development around transit stations (Calthorpe 1993)

The Navigation Routes of Ferries within the Site



- ① Route: Pier 1--North Point
 - ② Route: Pier 1--Sai Wan Ho
 - ③ Route: Pier 2--North Point
- International Cruise Terminal
Ferry Pier

Environmental Sustainability

(Green Belt for Bicycle Sharing Link)

Objective: Green transportation, city exploration & green development and linking to West Kowloon Cultural District.

Interlinking



Tsim Sha Tsui



Kai Tak Airport



Kwun Tong



West Kowloon Cultural District



Master Plan: Work in Progress (20-year plan and onwards)

TOD SYSTEM

- Refining the railways system
- Building the greenways up
- Opening the new ferry routes
- Constructing the environmental friendly linkage system
- Building the pedestrian system



MARKETING PLAN FOR BRANDING CBD2

- Analyzing the market situation
- Finding the market position for CBD2
- Branding CBD2



PLAN OF ACTION (SOCIAL)

- Gentrification
- Industrial heritage rehabilitation zone
- Economics of scale
- Value added workshops for labor upgrading

PLAN OF ACTION (ENVIRONMENT)

- Bicycle Sharing System
- Industrial heritage rehabilitation zone-
- Isim Sha Tsui-Kai Tak Cruise Terminal and green development
- Green transportation, touristic exploration
- Promoting sustainable transportation, faster connectivity in underserved areas: an action-based promotion for Low Carbon Green Zone
- Partners and cooperation



EVALUATION, REVIEW & FINE TUNING, IMPLEMENTATION, CONTROL

- Developing evaluation tool to measure and review the result of conducted pilot plans.
- Fine tuning the conducted pilot plans for full scale implementation
- Building perfect control strategies

THE FIRST STAGE

THE SECOND STAGE

THE THIRD STAGE

THE FINAL STAGE

E-INFRASTRUCTURE

- Building IT infrastructure, including the Internet of things, cloud computing platform and big data platform
- Building general public infrastructure
- Improving various kinds of hardware facilities
- more research in big data capability is needed



Digital Marketing with speciality in Marketing Analytics



PLAN OF ACTION (ECONOMIC)

- International Wholesale Food Hub
- Industrial heritage rehabilitation zone
- Well-connected local, regional and international transportation system
- Well established supply and demand sides
- Branding through effective event management and Hong Kong Tourism Board



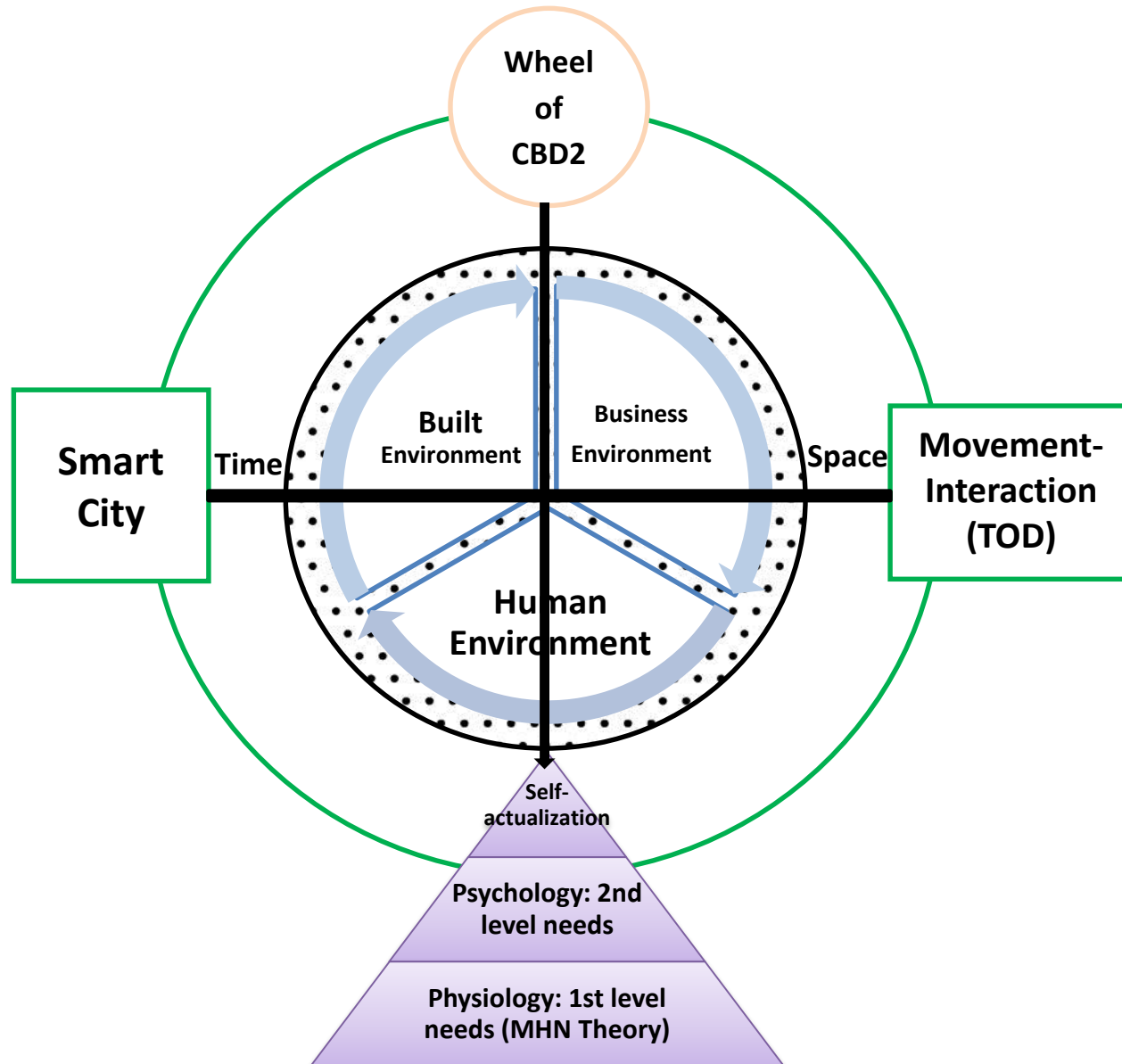
Evaluation: as urban development is a long-term financial project, extensive amount of money and effort would be invested and of course, result should be evaluated for the purpose of further improvement.

Evaluation tool: using the custom-made Wheel of CBD2 & Serious Game Learning Tool to help collect data and fine tune the performance of the smart district by altering users/residents behavior.

Future Development: The Wheel of CBD2 & Serious Game Learning Tool

An evaluation composite indicators for policy analysis and communication

Our current research project developed with Politecnico Di Torino (PoliTO) Italy.



Now let me conclude this presentation, we believe that a smart city addresses not only built environment, but also human environment and business environment exist in every level of urban development. It allows room for creativity, flexibility and mobility. It should welcome diversity and embraces transparency rather than division...definitely not a gated community. In the end, a city is only a reflection of its citizens and their collective will to achieve the common goal which is enhancing our quality of life.

People

This is a feasible proposal providing a solution to the current challenges facing by the Kowloon East Development Project. We expect problems would be turned into opportunities as envisaged by the Hong Kong Government.

Thank you

**Topic: A Multi-disciplinary Approach in Developing Sustainable Built Environment
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Promoting Policies and Practices for Sustainability



Global Alliance
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