HONG KONG YOUNG LEADERS PROGRAMME

NORTHERN METROPOLIS

A Vision for a Liveable & Resilient City

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Honest Inquiry · Asia's Worldview · Ideas to Action





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Executive Summary

Executive Summary

In the 2021 Policy Address, the Hong Kong Government announced the *Northern Metropolis Development Strategy*, that will provide Hong Kong with a new economic engine, meet the housing shortage, and provide closer integration with Shenzhen, the Greater Bay Area (GBA), and the Mainland over the next 15 years.

Hong Kong's recent social unrest and global COVID-19 pandemic have revealed deep fragilities in the city's economic model. While the Government's infrastructure development plans for the region have the potential to address and alleviate some of the quality-of-life challenges within dense urban districts, there is great opportunity to formulate innovative policies to realise a vision for a liveable and resilient city in the Northern Metropolis (NM). The region can also serve as a testing ground to pilot novel polices and ideas that could eventually be replicated across Hong Kong or even in the GBA.

Through cross-sector stakeholder and community engagement led by the future leaders of the city, participants on the Hong Kong Young Leaders Programme developed a set of policy recommendations that offers innovative ideas to support the development of the NM. They focused on creating equitable economic growth, improving quality of life, and ensuring societal resilience in the region via four key pillars:

- Creating a Model for Inclusive Housing
- Developing a Low Carbon Zone
- Building a Robust I&T Ecosystem
- Cultivating Eco-cultural Tourism

Overarching **Guiding Principles** are also proposed to guide policymaking for the NM:

All residents should have access to affordable housing that is reasonably sized and inclusively designed

All residents should have reliable access to basic services such as energy, water, sanitation, transportation, and the internet

There should be high-quality comprehensive healthcare facilities that are convenient, inclusive, and affordable in the region

There should be a diverse range of employment opportunities available in the vicinity of where people live

All residents should have access to quality education (academic, vocational, continuing) that is geared towards gainful employment

All residents should have easy access to natural and biodiverse spaces

There should be a good mix of continuous walkable trails, well-designed bike lanes, and well-connected road networks for daily commuting and recreation purposes

The region should enable people to maintain low carbon lifestyles, minimising their energy and waste consumption and promoting material circularity

The region should actively preserve and celebrate the unique ecological and cultural value of the Northern Metropolis

Urban spaces should be designed to provide easy access to tailored community services and public spaces for leisure, recreation, and social activities close to where people live

There should be close social, economic, and environmental integration with cities in the GBA to advance all Guiding Principles

Key Pillars

The subsequent pages of the Executive Summary demonstrate how the Quality-of-Life Guiding Principles can be realised through the following **four identified key opportunities**. **Key focus areas, targets, and policy recommendations** to realise a liveable and resilient NM are outlined. **Indicators** to measure the success of each policy are detailed in the broader report.

Creating a Model for Inclusive Housing

Developing a Low Carbon Zone

Building a Robust I&T Ecosystem

Cultivating Eco-cultural Tourism

Creating a Model for Inclusive Housing

Key Focus Areas & Targets

1 New Affordable Housing Model

- Increase the proportion of public housing in the NM from 45% to 80% by 2035
- Increase the home ownership rate among young adults (20–35-year-olds) from 8% in 2022 to 65% by 2035

2 Quality Homes

- 100% of new homes in the NM to be compliant with the new Inclusive Home Quality Standard

3 Inclusive Community Design

- Implement the Community Donut model for inclusive community design in the NM at 5 NDAs by 2035
- Provide 1 District Community Primary Care & Support Centre per MTR station/transport node in the NM by 2035

Policy Recommendations

- **1.1** Launch a Development for Affordable and Suitable Housing (DASH) scheme
- **1.2** Pilot a Young Adult Life-Cycle Housing scheme (YALC)
- **2.1** Establish an inclusive home quality standard
- **3.1** Implement a new model for inclusive community planning design: The Community Donut
- **3.2** Establish district Community Primary Care and Support centres

Aligned Guiding Principles:

Developing a Low Carbon Zone

Key Focus Areas & Targets

1 Decarbonising Buildings

- Reduce embodied carbon emissions by 75% in all new building construction by 2040
- 100% of new & retrofitted buildings should integrate energy efficient systems by 2025
- Reduce electricity consumption in all commercial buildings and institutions by 30% by 2040

2 Low Carbon Transportation

- Reduce carbon emissions from transport by 80% by 2040
- 25% of total trips should be made by bike or on foot by 2040

3 Pioneering Material Circularity

- Increase recovery rate of MSW to 40% by 2030 & 70% by 2040

Policy Recommendations

- **1.1** Mandate the use of recycled content and low carbon materials in new building construction
- **1.2** Implement centralised energy efficient systems
- **1.3** Install Building Energy Management Systems in all commercial buildings & institutions
- **2.1** Pilot low carbon transport infrastructure at the Northern Metropolis
- **2.2** Implement Selective Electronic Road Pricing
- **2.3** Establish a Work-near-Home Scheme
- **2.4** Designate ecological corridors at the regional, district & neighbourhood level
- **2.5** Establish shared space zones in areas of high cultural value
- **3.1** Pilot strict waste separation & collection at the Northern Metropolis
- **3.2** Stimulate a circular material economy in the GBA

Aligned Guiding Principles:

Building a Robust I&T Ecosystem

Key Focus Areas

1 Fostering Local Technology Talent

- All primary & secondary schools to implement STEM curriculum under a new STEM Education Framework by 2026
- Increase Tertiary enrolment in Sciences and Engineering & Technology by 30% by 2025

2 Strengthening I&T support & Tech Transfer

- Achieve a success rate of 80% or above for all schemes that support I&T activities such as business development, R&D, hiring, & their related funding by 2024
- Double the commercialization output of universities including patents, spin-offs, and income by 2027

3 NM & GBA Integration

- Set up a GBA Integration Composite Index by 2023
- Increase GBA Integration Index score by 30% by 2027

Policy Recommendations

- **1.1** Launch the Standard STEM Education Framework & STEM Resource Hub
- **1.2** Establish a STEM Direct Admission Scheme
- **1.3** Pilot STEM@Community Education Centres
- **2.1** Form a new I&T Facilitation Office under the new ITIB
- **2.2** Build the Northern Metropolis Technology Transfer Nexus
- **2.3** Create a CUHK Northern Metropolis campus
- **3.1** Create a measurement tool to assess the level of integration with the GBA
- **3.2** Facilitate the flow of talent, technology, goods, and capital
- **3.3** Launch a GBA Support Centre

Aligned Guiding Principles:

Cultivating Eco-Cultural Tourism

Key Focus Areas & Targets

1 Diversifying Tourism

- 25% of total revenue from the tourism industry to come from eco-cultural tourism by 2030

2 Active Conservation

- Map 100% of the eco-cultural assets in the Northern Metropolis by 2025
- Restore 20% of degraded agricultural/aquacultural land by 2030

3 Supporting Rural Businesses

- Grow rural businesses by 30% by 2030

Policy Recommendations

1.1 Establish a dedicated office under the new Culture, Sports and Tourism Bureau (CSTB) to develop eco-cultural tourism in the Northern Metropolis

2.1 Map the Ecological and Cultural Assets in the Northern Metropolis

2.2 Promote cross-border active conservation, rewilding and regenerative design

3.1 Improve quality and access to basic services and infrastructure

3.2 Establish a one-stop resource centre for rural businesses

Aligned Guiding Principles:

Programme Background

Hong Kong Young Leaders Programme

The **Global Institute For Tomorrow (GIFT)** is an independent pan-Asian think tank, committed to purposeful leadership learning and partnering with clients to help them unlearn conventional wisdom and unleash organisational potential to redesign society.

The Young Leaders Programme (YLP) is GIFT's experiential leadership programme designed for a tri-sector cohort of managers from government, leading companies and civil society to think critically about the drivers of change in the 21st century and develop new policies and innovations that address the defining challenges of our time.

During this YLP, 25 participants convened in Hong Kong over the course of 6 – 11 and 19 – 24 June 2022 to undertake classroom discussions, stakeholder meetings, and policy development sessions. The highlights of this proposal were presented at GIFT's Global Hybrid Forum on 24 June 2022, which was attended by over 200 attendees from Hong Kong and around the world.

GIFT would like to thank everyone involved who put in their valuable time and effort to make this possible.

Participating Organisations & Sponsors

We thank the following sponsors for their contribution:

Better Hong Kong Foundation, Chow Tai Fook Enterprises Social Solutions, CLP, Lanson Foundation, River Star Foundation

Supporting Organisations

Our appreciation to all the stakeholders involved!

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University of Hong Kong
Vocational Training Council
Walk DVRC
Walk in Hong Kong

Programme Structure

Objective

- To develop policy proposals that would support the development of a liveable and resilient **Northern Metropolis**, under four key focus areas: **Creating a Model for Inclusive Housing; Developing a Low Carbon Zone; Building a Robust I&T Ecosystem;** and **Cultivating Eco-cultural Tourism**.

Process

- Participants met a diverse range of stakeholders, including but not limited to, business executives, government officials, professors and researchers, and civil society leaders to gain a better understanding of the challenges and opportunities with regard to the Northern Metropolis and the respective focus areas.
- Participants also independently reached out to experts in the field to gain insights.
- The cohort was divided into four teams, each focusing on policies pertaining to the above four key focus areas. Through intensive discussion, debate and planning sessions, the participants generated the contents of this report.

Outcomes

- With GIFT's support, participants developed a set of Quality-of-Life Guiding Principles for the Northern Metropolis, identified sub-focus areas within their key focus areas, determined targets, and produced a number of policy proposals and their respective indicators to measure success.
- Participants presented highlights of their policy proposals at GIFT's Global Hybrid Forum on 24 June 2022, which was attended by over 200 attendees from Hong Kong and around the world.

Project Background

The Northern Metropolis Development Strategy

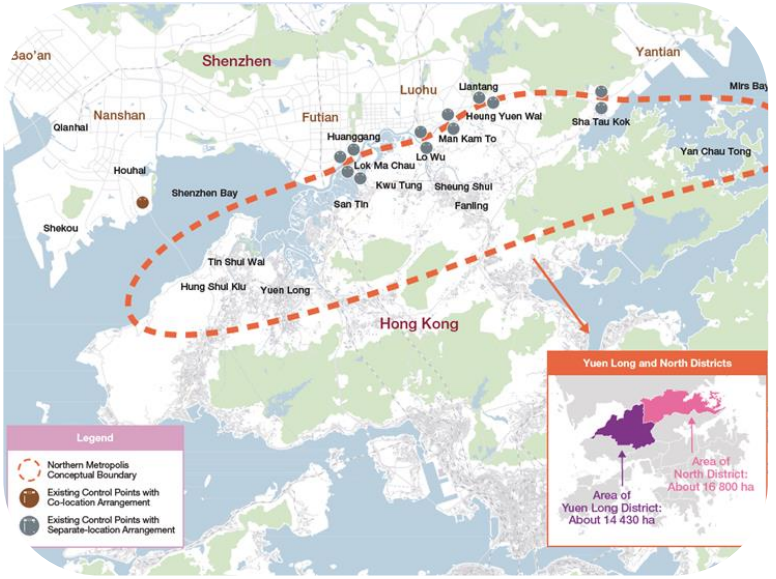
During the 2021 Policy Address, the HKSAR Government announced the *Northern Metropolis Development Strategy* which aims to expand the Northern Economic Belt to cover new towns in Yuen Long, Tin Shui Wai and Fanling / Sheung Shui, various New Development Areas (NDAs) and surrounding rural areas, and consolidate these areas into a holistic metropolis with a total area of 30,000 hectares.

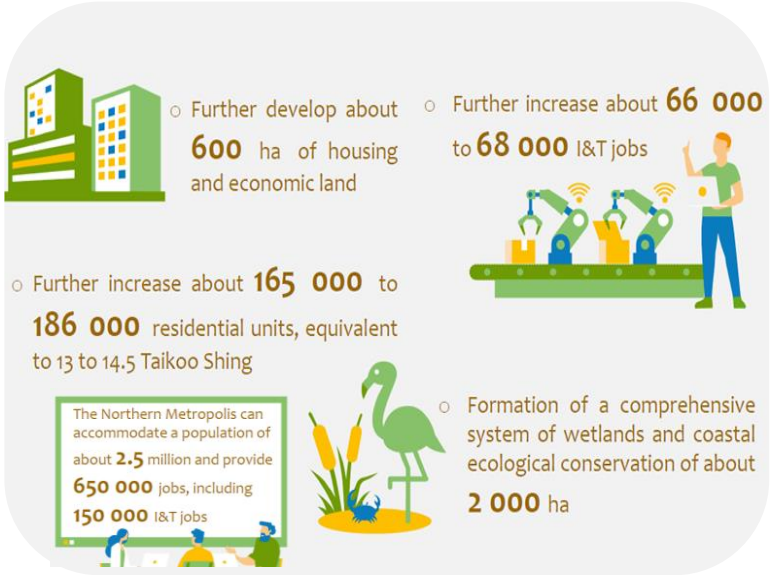
The primary goal of this large-scale development project is to make the metropolis a high-quality urban space for people to live, work and travel, thereby alleviating the burden on Hong Kong's dense urban districts in Kowloon and Hong Kong Island.

The project comprises of large-scale housing and land expansion projects, an Innovation and Technology (I&T) hub in San Tin, new railway projects connecting Hong Kong to other cities in the GBA, wetland conservation parks, and outdoor eco-recreation/tourism space projects.

The Strategy also outlines a set of six planning principles to guide new developments in the region:

- Urban-Rural Integration
- Proactive Conservation
- High-Quality Outdoor Eco-recreation/tourism Outlets
- Optimised Spatial Planning for Economic Land
- Expansion of Development Capacity
- Enhancing the Efficiency, Capacity and Comfort Level of Cross-Boundary Travel





Source: HKSAR Government

The Northern Metropolis Development Strategy

A key factor of the Plan includes mechanisms to take forward the development of the Greater Bay Area (GBA) actively and steadily and support Hong Kong to better integrate into the overall development of the country. In line with this strategic direction, the *Northern Metropolis Development Strategy* includes a spatial framework of "Twin Cities, Three Circles" which identifies focus areas for close collaboration with Shenzhen.

The **Shenzhen Bay Quality Development Circle** aims to:

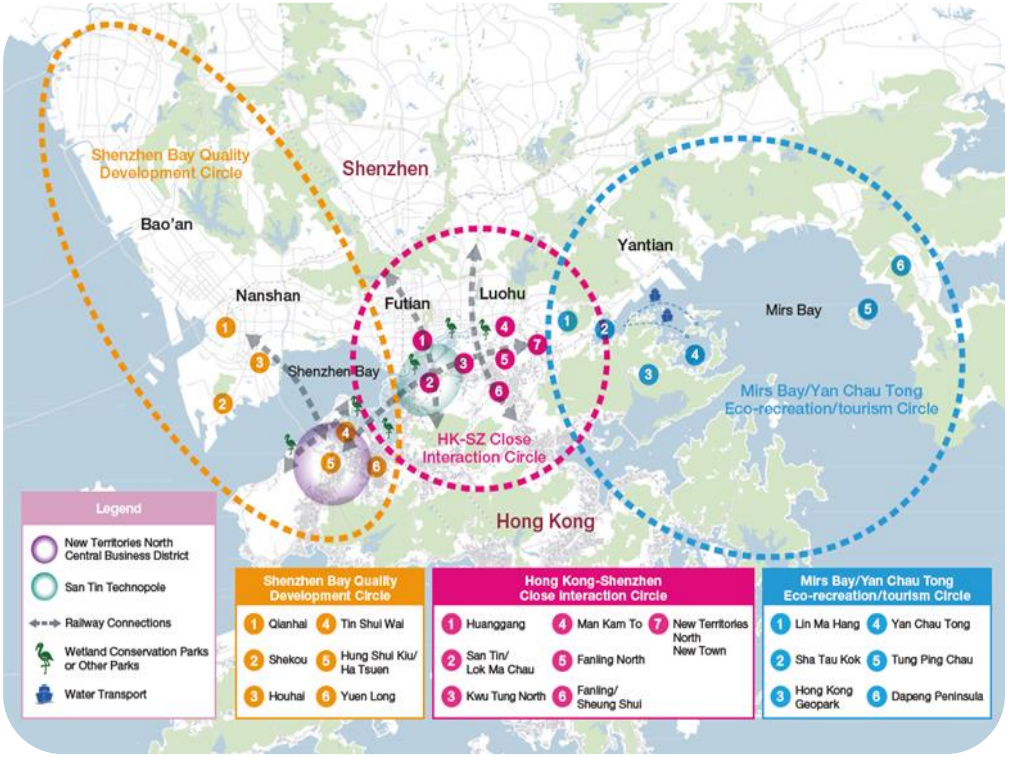
- Upgrade the existing new development area to be turned into the New Territories North Central Business District;
- Develop a rail link between Hung Shui Kiu and Qianhai and implement a co-location arrangement at Qianhai (whereby passengers are able to complete clearance procedures for both Hong Kong and the Mainland at once); and
- Conserve and improve wetlands and mangroves inside the circle.

The **Hong Kong-Shenzhen Close Interaction Circle** aims to:

- Facilitate the development of the San Tin Technopole;
- Optimise cross-boundary transport infrastructure in the circle; and
- Develop an ecological habitat network by taking advantage of the extensive stretch of fishponds and wetlands.

The **Mirs Bay/Yan Chau Tong Eco-recreation/Tourism Circle** aims to:

- Conserve and enhance the circle's overall natural landscape, ecology, and habitat resources; and
- Create opportunities for sustainable eco-recreation/tourism.

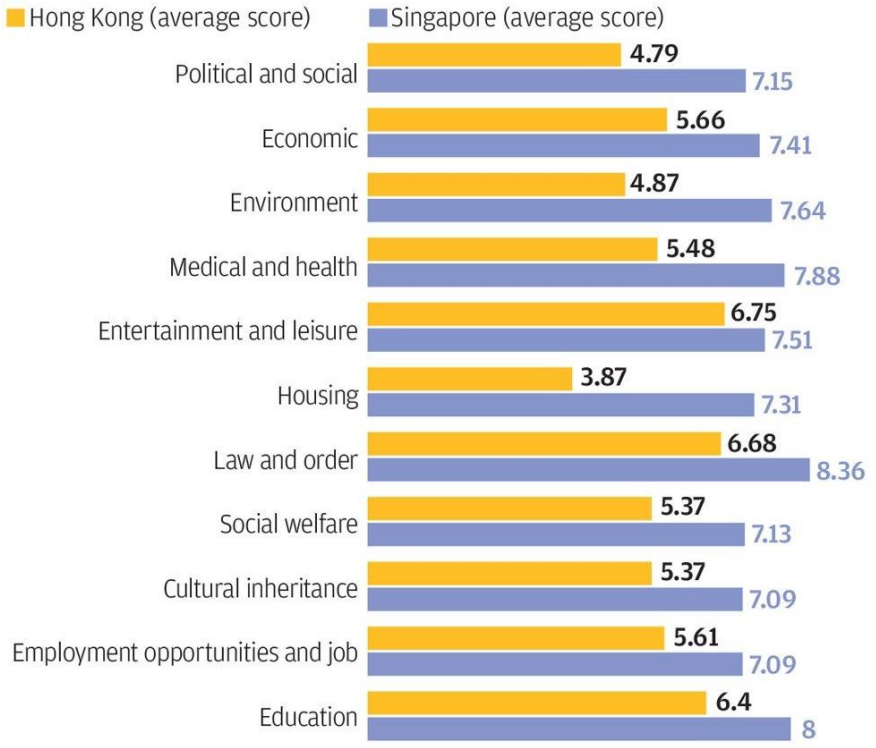


Source: HKSAR Government

A Vision for a Liveable & Resilient Northern Metropolis

Hong Kong's social unrest and the global COVID-19 pandemic have revealed deep fragilities in the city's economic model. Despite being one of the world's wealthiest economies, it is also one of its most unequal, with a higher-than-average Gini coefficient of 0.54. Hong Kong's wealth disparity has created a multitude of socio-economic issues that have impacted citizens' quality of life and contributed to recent discontent.

A 2019 study conducted by the City University of Hong Kong found that Hong Kong lags behind Singapore in all areas determining quality of life:



Source: City University, SCMP

To build a **liveable and resilient NM**, the Government can support its current plans for land and infrastructure development in the region with **strong public policy and urban design** that prioritise improving these areas to **enhance the overall quality of life of Hong Kong citizens**. Key Opportunities include:

- Creating a Model for Inclusive Housing
- Developing a Low Carbon Zone
- Building a Robust I&T Ecosystem
- Cultivating Eco-cultural Tourism

Guiding Principles

What determines a high quality of life?

To build a **liveable and resilient** NM and enable a **high quality of life** for all residents, the following Guiding Principles are proposed to guide policymaking:

- All residents should have access to affordable housing that is reasonably sized and inclusively designed
- All residents should have reliable access to basic services such as energy, water, sanitation, transportation, and the internet
- There should be high-quality comprehensive healthcare facilities that are convenient, inclusive, and affordable in the region
- There should be a diverse range of employment opportunities available in the vicinity of where people live
- All residents should have access to quality education (academic, vocational, continuing) that is geared towards gainful employment

Guiding Principles

What determines a high quality of life?

All residents should have easy access to natural and biodiverse spaces

There should be a good mix of continuous walkable trails, well-designed bike lanes, and well-connected road networks for daily commuting and recreation purposes

The region should enable people to maintain low carbon lifestyles, minimising their energy and waste consumption and promoting material circularity

The region should actively preserve and celebrate the unique ecological and cultural value of the Northern Metropolis

Urban spaces should be designed to provide easy access to tailored community services and public spaces for leisure, recreation, and social activities close to where people live

There should be close social, economic, and environmental integration with cities in the GBA to advance all Guiding Principles

Key Pillars

The subsequent sections of the report demonstrate how the Quality-of-Life Guiding Principles can be realised through the following **four identified key opportunities**. Details on **key focus areas, targets, policy recommendations**, and **indicators** are provided to substantiate bold ideas to create a liveable and resilient NM.

Creating a Model for Inclusive Housing

Developing a Low Carbon Zone

Building a Robust I&T Ecosystem

Cultivating Eco-cultural Tourism

Creating a Model for Inclusive Housing

Introduction

In 2021, Hong Kong ranked as the world's least affordable housing market for the 11th year in a row. On average, families spend over 60% of their monthly income on rent. Families can also expect to save for 20.7 years to afford a home in the city. This is mainly due to pent up demand coupled with low housing supply and high construction costs.

International human rights law recognises every human being's right to an adequate standard of living, which includes adequate housing. The United Nations has highlighted that the right to adequate housing should be seen as the right to live in security, peace, and dignity. This would include considerations of adequate space per capita, building quality, provision of services such as natural light, running water, common areas and public spaces. The diminishing size of new flats in both public and private markets, and the lack of suitable design elements to cater for the ageing and underserved population as well as elements to foster community wellbeing, are worrying trends.

The Northern Metropolis (NM) presents a once-in-a-lifetime opportunity to reimagine the fundamental principles of housing development. With the expected capacity to provide an additional 200,000 new housing units in the next 10 years, the NM should be a testing ground for a new housing model that is inclusive, affordable and community-driven.

Three focus areas have been identified to enable inclusive housing:

- Creating an affordable housing model for NM
- Instituting a new standard for quality homes
- Inclusive community design in the NM

Summary

Key Focus Areas & Targets

1 New Affordable Housing Model

- Increase the proportion of public housing in the NM from 45% to 80% by 2035
- Increase the home ownership rate among young adults (20–35-year-olds) from 8% in 2022 to 65% by 2035

2 Quality Homes

- 100% of new homes in the NM to be compliant with the new Inclusive Home Quality Standard

3 Inclusive Community Design

- Implement the Community Donut model for inclusive community design in the NM at 5 NDAs by 2035
- Provide 1 District Community Primary Care & Support Centre per MTR station/transport node in the NM by 2035

Policy Recommendations

1.1 Launch a Development for Affordable and Suitable Housing (DASH) scheme

1.2 Pilot a Young Adult Life-Cycle Housing scheme (YALC)

2.1 Establish an inclusive home quality standard

3.1 Implement a new model for inclusive community planning design: The Community Donut

3.2 Establish district Community Primary Care and Support centres

Aligned Guiding Principles:

New Affordable Housing Model

KEY FOCUS AREA ONE

Current Outlook

Affordability and availability are the two most important issues that plague the current housing landscape in Hong Kong, giving rise to friction and frustration in communities. Young adults are increasingly under pressure to make ends meet and receive little support to meet their housing needs. Some of the challenges the recommendations in this chapter seek to address include the following:

TARGETS

- Increase the proportion of public housing in the NM from 45% to 80% by 2035
- Increase the home ownership rate among young adults (20–35-year-olds) from 8% in 2022 to 65% by 2035

6.1y Average waiting time for Public Rental Housing (PRH) in 2022, tripled from 2.6 years in 2012

Youth and singles are disadvantaged in their access to PRH, with singles having the longest average waiting time

There is little support for young adults wanting to be independent through the provision of targeted subsidised housing.

In 2022, there were 252,000 applications for nearly 9,000 flats sold under the Home Ownership Scheme (HOS), or 28 times over-subscribed.

Currently, families with a maximum monthly income of HKD 66,000 or singles with an income of HKD 33,000 can apply for HOS flats using the White Form application. A Sandwich Class Housing Scheme was in place between 1995-2001 for those earning above the income threshold but below the means to purchase private flats, but it has since been suspended. With the private housing market at all time highs, it is challenging for middle-income families to purchase a home.

New Affordable Housing Model

KEY FOCUS AREA ONE

Target

Increase the proportion of public housing in the NM from 45% to 80% by 2035

Policy Recommendations

1.1 Development for Affordable and Suitable Housing (DASH) Scheme

The aim of this policy recommendation is to introduce a new pilot scheme in the NM to promote home ownership by increasing the proportion of public housing to private housing, creating new types of public housing to meet the needs of the sandwich class, and providing new avenues for young adults to participate in housing schemes.

Increasing the proportion of public housing in the NM

- Currently the proportion of private housing to public housing including HOS is 55% to 45%. It is recommended that the provision of public housing in NM be increased to meet the target of 80% public housing by 2035, and introducing two new public housing schemes, DASH and DASH+ to replace the HOS. (Fig 1)
- The Development for Affordable and Suitable Housing Scheme, or DASH Scheme, provides those earning above the income threshold for PRH an option to purchase quality homes at cost.
- A higher-tier DASH+ Scheme should also be established to provide flats at cost +30% margin. Proceeds of the DASH+ Scheme will go towards funding the development and management of PRH.

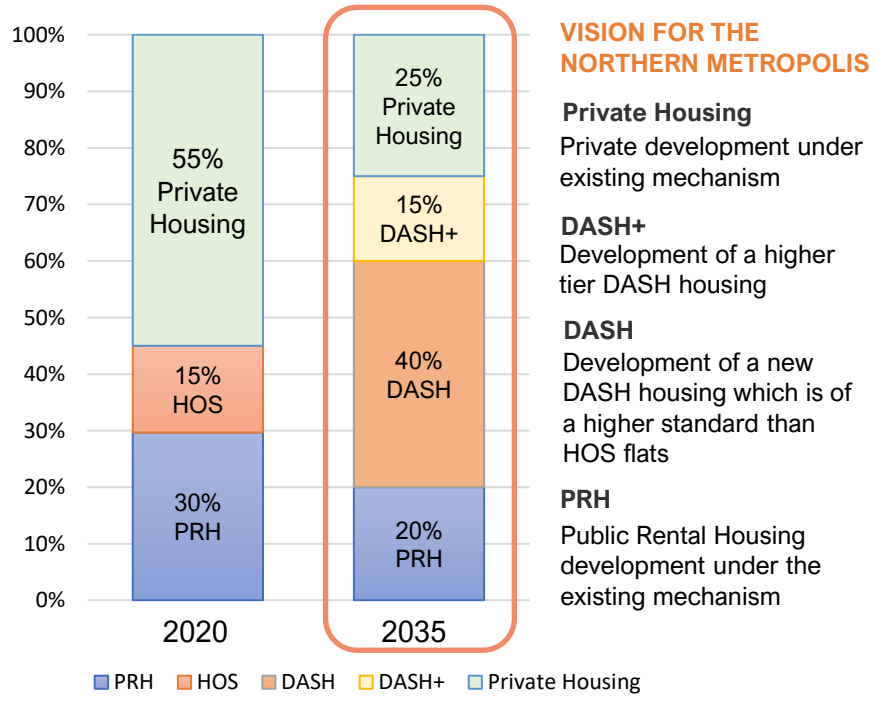


Fig 1; Breakdown of Residential Land Use in Hong Kong

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New Affordable Housing Model

KEY FOCUS AREA ONE

Policy Recommendations

Improved Quality of DASH Homes

- The quality of DASH and DASH+ homes should bridge the current gap between the basic quality of PRH and HOS homes and the high quality of private homes.
- The income and asset limit of eligible applicants of DASH should be comparable to that of the current HOS, while the limit for DASH+ should be double that of DASH homes. (Fig 2)

	HOS	DASH	DASH+	Private
Property Price	$ $ $	$ $	$ $	$ $ $ $
Quality				
Income & Asset Limit				N/A

Fig 2; Assigning Income & Asset Limits to housing schemes

Delinking the HOS & Private Property Market

- To prevent creating volatility in the private and HOS property market, it is recommended to establish an independent secondary market for the buying and selling of DASH Scheme units.
- Only applicants eligible for DASH Scheme units may purchase DASH Scheme units in the secondary market.
- The resale value of DASH Scheme property will be determined based on: **Resale Value = Value of New DASH Property in Year of Assessment x (1 – Age of Property x 0.5%)**

Pilot Zone

- Given its large land area, New Territories New Town is suggested to be the first pilot area for the DASH Scheme.

Indicators

1.1.1. Ratio of residents living in public housing
1.1.2. Number of applicants to the DASH Scheme
1.1.3. Number of DASH & DASH+ units built
1.1.4. Number of people living in sub-divided flats

New Affordable Housing Model

KEY FOCUS AREA ONE

Target

Increase the home ownership rate among young adults (20–35-year-olds) from 8% in 2022 to 65% by 2035

Policy Recommendations

1.2 Young Adult Life-Cycle Housing Scheme (YALC)

The current HOS system does not offer a viable pathway for youth to enter the housing market. This is reflected in the decline in home ownership for those aged below 35 from 22% in 1990 to less than 8% in 2022.

Youth go through various life-cycle stages in terms of their housing needs. It is important to design a range of housing types catered to these stages, offering them a chance to develop essential life skills, pursue independence and contribute to personal fulfilment in the process (Fig 3).

It is proposed that all new public housing in the NM to include the following elements:

- Youth blocks or units in PRH that are reserved for those under 35 with the option for co-living
- A portion of DASH units allocated for applicants under the age of 35
- Subsidies for first home purchase by new families

Housing life-cycle stages of young adults

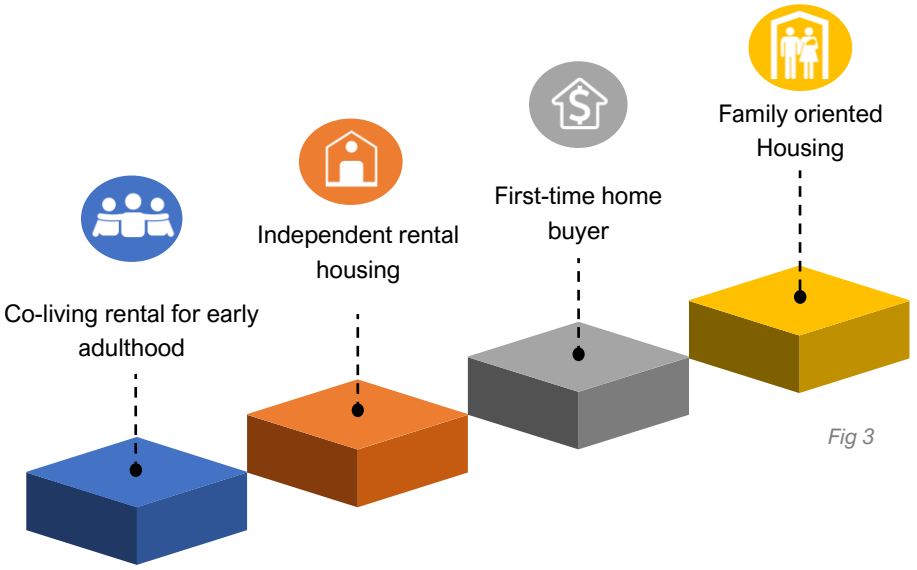

Fig 3

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New Affordable Housing Model

KEY FOCUS AREA ONE

Policy Recommendations

1 PRH Scheme for Youth

- It is recommended to allocate 15% of new PRH units for those under the age of 30.
- Most of these flats should be designed for co-living, which provides an affordable housing alternative that enables the building of interpersonal networks and develops important life skills in youth.
- A portion of these can be independent living units, serving those who are at stage two of their housing lifecycle stage.

2 DASH for Young Adults

- To encourage those looking to purchase their first homes, it is suggested that 10% of the aforementioned DASH units should be reserved for applicants under the age of 35.
- It is proposed that these applicants be stipulated to invest one-third of their annual income for three years towards a down-payment for the flat.

3 New Family Housing Subsidy Scheme

- For those in stage four of their housing lifecycle who are starting new families, it is suggested to create a subsidy scheme for those seeking to upgrade to larger homes, by providing them with up to 25% subsidy on the purchase price based on the household income.
- The resale of these homes should be limited to only those in the YALC housing scheme.

Indicators

1.2.1. Percentage of young adults aged 20-35 who are living independently from their families in YALC homes
1.2.2. Percentage of young adults owning a DASH flat
1.2.3. Number of YALC housing units in the NM
1.2.4. Percentage of youth satisfied with their living conditions

Quality Homes

KEY FOCUS AREA TWO

Current Outlook

170 sqft
15.7 sqm

Average living area per person in Hong Kong in 2021, lowest among major developed economies in Asia. Despite this, “nano-flats” are on the rise. (Fig 4 & 5)

>25%

Do not know their neighbour’s name. There lacks a sense of community and neighbourly support in Hong Kong.

1 in 3

Among the elderly by 2066 will be over 85. This will mean homes and common areas will have to be adapted to suit the ageing population’s needs.

TARGETS

- 100% of new homes in the NM to be compliant with the new Inclusive Home Quality Standard

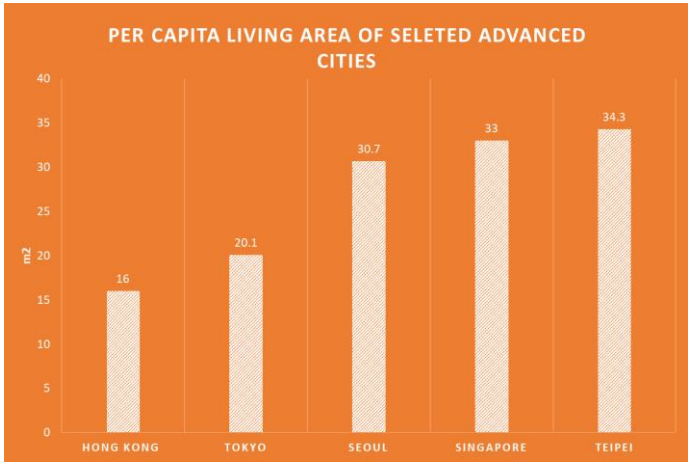

Fig 4; Source: Legislative Council of the HKSAR

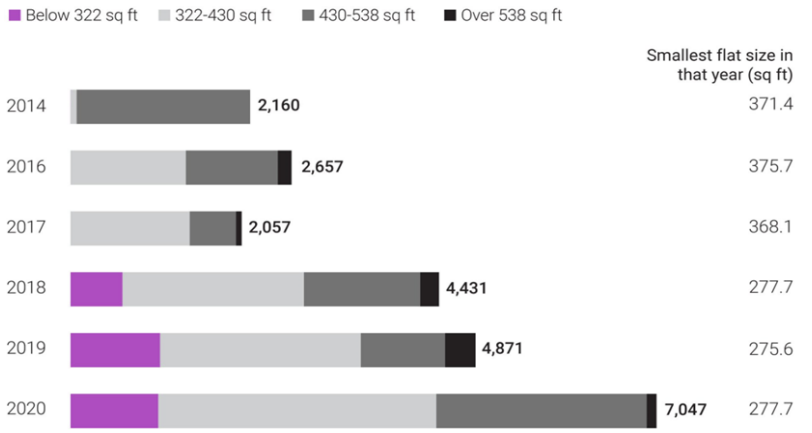

Fig 5; Number of Flats of different sizes built under HOS; Source: Federation of Public Housing Estates, SCMP

Quality Homes

KEY FOCUS AREA TWO

Target

100% of all new homes in the NM to be compliant with the new Inclusive Home Quality Standard

Policy Recommendations

2.1 Establish an Inclusive Home Quality Standard

The concept of "Inclusive Home" requires that every new home in the NM be flexible to support the quality living of any individual, young or old, and to incorporate communal design elements to foster community spirit.

Flexible design

To enable Hong Kong's ageing population to age in place, all new developments in the NM should include flexible design within units and communal areas, including:

- Wider entrances and barrier free design to allow wheelchair access
- Wider space to install railings such as beside toilets and in showers

Minimum size requirements

- Space is needed for daily living, leisure, interaction with family members, and to support flexible renovation.
- Based on the Government's "2030+: Towards a Planning Vision and Strategy Transcending 2030", the average per capita living area for new developments in the NM is suggested to be mandated to be 237 sqft. The table below provides a summary of suggested minimum internal floor areas for the expected number of residents in a given unit.

No. of bedrooms	No. of expected residents	Min. Internal Floor Area*
1	1-2	474 sq.ft
2	3-4	765 sq.ft
3	5-6	846 sq.ft

*Size calculated from the average per capita living area suggested in the 2030+ report and the current size of public housing in Tin Shui Wai and Tung Chung

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Quality Homes

KEY FOCUS AREA TWO

Policy Recommendations

Size & design of communal spaces

- To foster more interaction among neighbours, it is recommended that new developments in the NM be stipulated to have a minimum 8% of total saleable floor area to be designated as communal spaces, excluding corridors and passageways.
- These communal spaces should be adequately designed for interaction, incorporating seating, greenery, natural ventilation, open areas and useful equipment and amenities.
- It is recommended to stipulate communal spaces to be provided within 100m of any unit.
- To increase the utility and engagement with the communal spaces, it is recommended that residents be consulted in the ongoing utilisation and management of communal spaces.

Siu Hei Court, Tuen Mun

Indicators

2.1.1. Average living area per capita in the NM
2.1.2. Proportion of elderly over 85 living in own homes in the NM
2.1.3. Proportion of residents who interact with neighbours each week

Inclusive Community Design

KEY FOCUS AREA THREE

Current Outlook

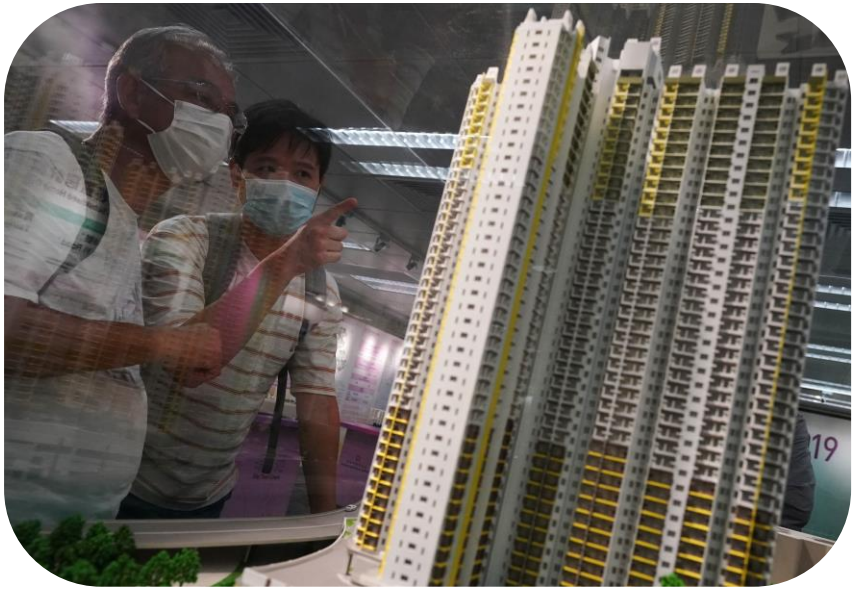
There is disparity in the daily living experiences between those in public housing and those in private housing, causing segregation among society.

The disparity in access to places like schools, medical facilities and recreational facilities, and the lack of interaction between residents in different housing types, further foment prejudice and hamper social mobility.

Community support for underprivileged groups is also lacking. There is a lack of adequate community-based healthcare services and elderly and people with disabilities spend a lot of time travelling to and at medical facilities in order to access basic healthcare services.

TARGETS

- To implement the Community Donut model for inclusive community design in the NM at 5 NDAs by 2035
- To provide one District Community Primary Care & Support Centre per MTR station/transport node in the NM by 2035



Inclusive Community Design

KEY FOCUS AREA THREE

Target

To implement the Community Donut model for inclusive community design in the NM at 5 NDAs by 2035

Policy Recommendations

3.1 The Community Donut: New model for inclusive community planning design

To address the problem of homogeneous housing development and the difference in access to public facilities and services, it is suggested that each New Development Area (NDA) in the Northern Metropolis utilise an adapted Transit-oriented Development (TOD) model – the "Community Donut" – that provides mixed-income housing in the outer ring, and public facilities in the inner ring surrounding a transit stop.

TOD is a well-established urban development model focused on the creation of a comprehensive mixed-use community centre around a public transit system. Building on this model, the Community Donut places housing on the outside and publicly accessible facilities on the inside such that it facilitates interactions among residents at the centre.

Private and public housing developments are interwoven on the outer ring, with good sight lines, greenery and waterways provided in the residual areas such that there is little difference in aesthetics and access to open spaces between private and public housing, thereby removing associated stigma towards public housing residents.

Indicators

3.1.1. Number of people with access to public facilities, services and open spaces within 400m of their residence

3.1.2. Number of people who report an improvement in quality of life (in areas such as health, leisure, housing and environment)

Inclusive Community Design

KEY FOCUS AREA THREE

Target

To provide one District Community Primary Care & Support Centre per MTR station/transport node in the NM by 2035

Policy Recommendations

3.2 District Community Primary Care & Support Centres

To enable residents of NM to be able to easily access community support services, it is recommended that each community area to have a dedicated **Primary Care and Support Centre** that is built by the Government and operated by community NGOs.

This Centre should provide services such as:

- Elderly services and caregiving services, rental of assistive equipment
- District Health Centres for the primary healthcare of community residents
- Promotion and hosting of community events
- Support services for ethnic minorities and youth
- Information and promotion of various Government schemes including the aforementioned housing schemes, and those mentioned in other chapters.

The inclusion of District Health Centres will alleviate the pressure on the services of public hospitals from non-urgent cases that lead to congestion and delays for more urgent cases. The distributed deployment of public services will also allow greater awareness and participation in various Government initiatives, leading to greater public engagement.

Indicators

3.2.1. Number of people accessing services at Community Centres
3.2.2. Waiting times of people who require healthcare services at public hospitals
3.2.3. Number of elderly, youth, ethnic minority who report satisfaction with public services

Conclusion

The Northern Metropolis presents a unique opportunity for Hong Kong to pilot new models for housing that is affordable, fit-for-purpose, and community-driven.

From the DASH Scheme that bridges the gap in quality and price between HOS and private flats, to the housing subsidies and preferential DASH allocations for youth to support them in their lifecycle stages, the housing policies herein should help to reinstate Hong Kong as a place that prioritises housing as a basic social right.

A new Inclusive Home Quality Standard ensures that flats are of a suitable size to nurture families and are adaptable to the growing elderly population.

Finally, the Community Donut presents a new model for inclusive community design. While conceptual, there is ample opportunity in the New Development Areas of the NM to pilot such models, which are aimed at improving the community's access to public open spaces, healthcare and youth services, and other useful community facilities and services to foster closer community ties and higher quality of life.

Developing a Low Carbon Zone

Introduction

The past two centuries have witnessed rapid industrialisation and urbanisation at the expense of the environment. Unchecked exploitation of natural resources has released large amounts of greenhouse gases into the atmosphere, leading to unprecedented societal challenges due to the change in climate. As part of the global fight to combat climate change, the Hong Kong Government has set a target to achieve carbon neutrality by 2050.

The bulk of Hong Kong's emissions come from electricity generation (60%), of which 90% come from buildings. Transport is the second largest contributor (20%), followed by waste (9%).

As a major city-building initiative, the Northern Metropolis (NM) offers Hong Kong the unique opportunity to pilot its first low carbon zone without the constraints of the existing built environment. Given the high ecological value of the region, integrating neighbourhood-level low carbon infrastructure and encouraging low carbon lifestyles becomes ever more important.

This pillar proposes three key focus areas to enable the building of a low carbon NM, namely:

- Decarbonising Buildings,
- Low Carbon Transportation, and
- Pioneering Material Circularity.

Summary

Key Focus Areas & Targets

1 Decarbonising Buildings

- Reduce embodied carbon emissions by 75% in all new building construction by 2040
- 100% of new & retrofitted buildings should integrate energy efficient systems by 2025
- Reduce electricity consumption in all commercial buildings and institutions by 30% by 2040

2 Low Carbon Transportation

- Reduce carbon emissions from transport by 80% by 2040
- 25% of total trips should be made by bike or on foot by 2040

3 Pioneering Material Circularity

- Increase recovery rate of MSW to 40% by 2030 & 70% by 2040

Policy Recommendations

- **1.1** Mandate the use of recycled content and low carbon materials in new building construction
- **1.2** Implement centralised energy efficient systems
- **1.3** Install Building Energy Management Systems in all commercial buildings & institutions
- **2.1** Pilot low carbon transport infrastructure at the Northern Metropolis
- **2.2** Implement Selective Electronic Road Pricing
- **2.3** Establish a Work-near-Home Scheme
- **2.4** Designate ecological corridors at the regional, district & neighbourhood level
- **2.5** Establish shared space zones in areas of high cultural value
- **3.1** Pilot strict waste separation & collection at the Northern Metropolis
- **3.2** Stimulate a circular material economy in the GBA

Aligned Guiding Principles:

Decarbonising Buildings

KEY FOCUS AREA ONE

Current Outlook

Given the foreseeable large-scale developments in the NM, the following lifecycle issues in buildings will need to be tackled:

64% Of total energy consumption in Hong Kong comes from residential and commercial buildings.

2/3 Of these emissions come from the commercial sector.

Despite embodied carbon* emissions accounting for one-third of total life cycle emissions in buildings, they are unregulated in Hong Kong.

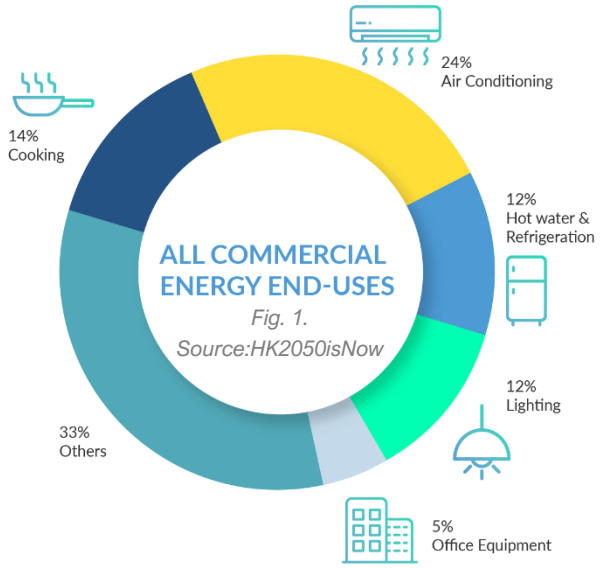
Due to the city's hot and humid climate, the most intensive use of energy in buildings is air conditioning, followed by cooking and heating which are difficult to decarbonise. (Fig 1)

There is no standardised infrastructure or policy in place to monitor energy consumption.

Embodied carbon is the amount of carbon emitted during the construction of a building, including the extraction, transportation, manufacturing, and installation of building materials on site.

TARGETS

- Reduce embodied carbon emissions by 75% in all new building construction by 2040
- 100% of new & retrofitted buildings should integrate energy efficient systems by 2025
- Reduce electricity consumption in all commercial buildings and institutions by 30% by 2040



Decarbonising Buildings

KEY FOCUS AREA ONE

Target

Reduce embodied carbon emissions by 75% in all new building construction by 2040

Policy Recommendations

1.1 Mandate the use of recycled content and low carbon materials in new building construction

- By 2040, all new and retrofitted buildings in the NM should be mandated to use a minimum of 50% recycled material recovered from Hong Kong or surrounding areas such as the GBA in their construction phase.
- *Aggregate, Asphalt, Excavated Materials, Public Fill, Pulverized Fuel Ash (PFA), Metals, Glass, Plastic, Rubber,* and *Expanded Polystyrene* are common examples of recycled material that can be considered for new building construction. (Fig. 2)
- Apart from the use of recycled content in construction, the use of low carbon transport and construction equipment should be incentivised. *Biodiesel, Battery Energy Storage Systems (BESS), Low Carbon Concrete, Steel from Electric Arc Furnaces (EAF), Fibre Reinforced Concrete,* and *Engineered Timber* are common examples of low carbon transport and construction material or equipment.
- Government subsidies can be provided to support early uptake and compliance through revenue generated from Producer Responsibility Schemes (PRS) or other related low carbon funds.
- The use of recycled or low carbon materials in new building development in the NM would reduce up to 75% of embedded emissions when compared to the use of virgin / high carbon material; enable all new buildings to be BEAM Plus Silver certified; and promote material circularity in Hong Kong and GBA. (learn more on P.51)

Recycled Materials	Uses	Local examples
Aggregate	Sub-base material for road construction,hardcore for foundation works, base/fill for drainage,aggregate for concrete manufacture and general bulk fill	Pilot studies carried out by works departments
Asphalt	Aggregate fill and sub-base fill	Under investigation by Highways Department
Excavated materials	Filling materials	Housing Department's building projects
Public fill	Land reclamation	Land formation at Public Filling Areas
Pulverized fuel ash	Manufacture of concrete products, uses in fill and reclamation, highway construction and reinforced soil structures	Construction of Chek Lap Kok Airport, use in structural concrete for foundation works in the Housing Department's building projects
Metals	Manufacture of new metals	Widely practised in local construction industry
Glass	Manufacture of eco-pavers, eco-partition blocks and glassphalt, substitute for sand and aggregates as mortar, backfilling and reclamation materials	Use of eco-pavers by Works Departments for road paving. Studies and trial uses are being carried out by Works Departments for other applications
Plastic	Synthetic materials in form of plastic lumber for landscaping, horticulture and hydraulic engineering	Use at some public recreational facilities as garden furniture
Rubber	Manufacture of rubber slate tile use in roofing and sport / playground surface mat	Use at some public recreational facilities as playground surface mat
Expanded polystyrene	Manufacture of lightweight concrete for non-structural works	Use in manufacturing lightweight concrete in Housing Department's building projects

Fig. 2. Source: Environmental Protection Department

Indicators

1.1.1. Percentage of recycled content adopted during building construction

1.1.2. Quantity of carbon embodied emissions emitted during building construction

1.1.3. Quantity of carbon emissions emitted during transportation of construction materials

Decarbonising Buildings

KEY FOCUS AREA ONE

Target

100% of new & retrofitted buildings should integrate energy efficient systems by 2025

Policy Recommendations

1.2 Implement centralised energy efficient systems

- **Air conditioning:** To enable efficient air conditioning, District Cooling Systems (DCS) should be introduced in the NM for both residential and commercial buildings. Residential buildings can utilise DCS as the primary source of air conditioning, supplemented by private air conditioning. Whereas commercial buildings should source 100% of air conditioning from DCS. DCS can reduce electricity consumption by 35% and 20% when compared to conventional air-cooled and water-cooled air conditioners respectively. Implementation will require considerations on location of the cooling plant, piping layout, and interface with building internal systems.
- **Humidity:** Humidity exacerbates hot and cold weather leading to higher energy consumption. To reduce the strong effect of humidity on "real-feel" temperature and enable energy efficiency, humidity control systems should be integrated in all new and retrofitted buildings.
- **Cooking & water heating:** Gas appliances should be phased out and replaced with low carbon technologies such as rooftop solar water heating, trigeneration plants utilising biodiesel, or vehicle-to-grid. Trigeneration plants can simultaneously produce chilled water, heat, and electricity increasing system efficiency to 75% from the fuel source, compared to 40% from conventional thermal power plants. Through such a system, Hong Kong's Zero Carbon Park (Fig 3) has also reduced building energy consumption by 45% compared to the baseline Building Energy Code.

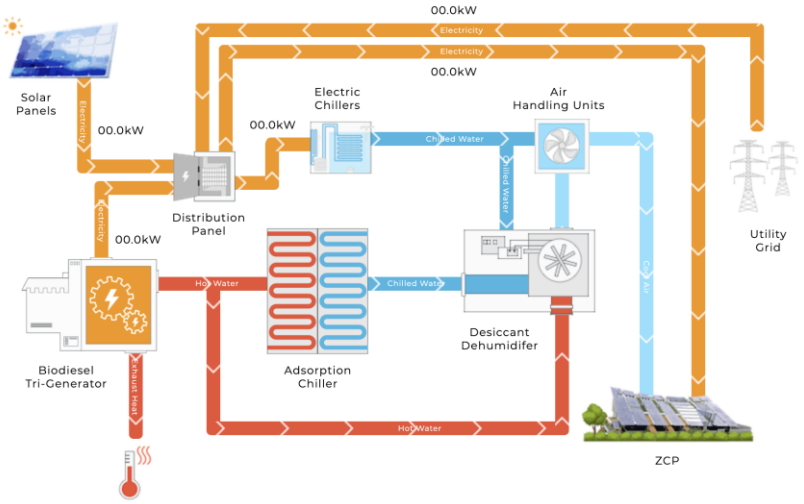


Fig. 3. Electricity generation process in Hong Kong's Zero Carbon Park showcasing high-potential low carbon technologies that can be implemented in the city.

Indicators

1.2.1. Total household / commercial space energy consumption per month

1.2.2. Energy consumption savings by low carbon system/technology application

Decarbonising Buildings

KEY FOCUS AREA ONE

Target

Reduce electricity consumption in all commercial buildings and institutions by 30% by 2040

Policy Recommendations

1.3 Install Building Energy Management Systems in all commercial buildings & institutions

- The Government should implement Building Energy Management Systems (BEMS) in all commercial buildings and institutions in the NM. BEMS are automation systems capable of a vast range of functions with energy management automation as a core capability. Development of BEMS is moving at a fast pace to incorporate elements of cloud computing, real time analytics, and utilities integration.
- Sensors and controllers should be installed to enable interaction between BEMS and other building components and systems such as HVAC, shades and lighting. Data gathered from buildings should be augmented with external parameters such as temperature, energy prices, and weather information. This should allow near real-time continuous optimisation to maintain highest energy efficiency levels.
- Energy use data disclosure should be made mandatory for all commercial buildings. This would allow benchmarking and comparison of building performances, and development of algorithms to offer suggestions to occupants for energy saving purposes and encourage demand side management. Sub-metering within commercial buildings should further be implemented to allow individual tenants to manage their energy consumption levels.
- The Government should directly or indirectly (through encouraging the private sector), provide rebates or other incentives to reward low energy consumption.

Indicators

1.3.1. Energy consumption of commercial buildings & institutions

1.3.2. Number of buildings with BEMS installed

Low Carbon Transportation

KEY FOCUS AREA TWO

Current Outlook

To successfully pilot low carbon transport in the Northern Metropolis region, the following points will need to be addressed:

82% Of energy consumption in the transport sector comes from oil and coal products i.e., fossil fuels.

Mobility is relatively poor in the region leading to higher- than-average car ownership rates. Despite this, current government plans do not include low carbon transport development.

Electric Vehicle (EV) use is predicted to double to 10% by 2025, but supporting infrastructure such as charging stations are lacking.

Walkability in the Northern Metropolis is poor (Fig. 4).

The region's high ecological value will need to be maintained.

A job-housing imbalance has left a vast majority of residents in the New Territories commuting over long distances, thereby increasing emissions.

TARGETS

- Reduce carbon emissions from transport by 80% by 2040
- 25% of total trips should be made by bike or on foot by 2040

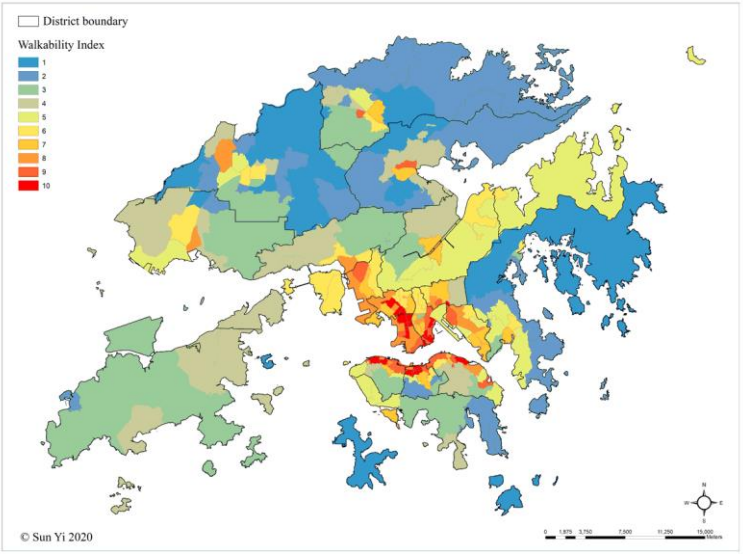


Fig. 4. Walkability in Hong Kong; red = very walkable, blue = not walkable; Source: Urban Planning International

Low Carbon Transportation

KEY FOCUS AREA TWO

Target

Reduce carbon emissions from transport by 80% by 2040

Policy Recommendations

2.1 Pilot low carbon transport infrastructure at the Northern Metropolis

To improve low carbon connectivity across the NM and encourage public transport use over private car use for daily commuting, the Government should consider investing in infrastructure for the following low carbon modes of transport:

- **Electric Vehicles:** Mandate all existing bus companies to transition to EV. Install EV charging facilities in all new and existing private & public parking lots to cover a minimum of 20% of parking spots.
- **Bikes:** Pilot third-party dockless bikeshares in the region and provide supporting infrastructure such as bike lanes and routes fit for safe daily commuting, designated parking zones and geofencing for proper parking, and a public education campaign to raise awareness and safety.
- **Trains:** Expand the existing Light Rail system to effectively cover all districts - particularly new development areas in the NM. Given they are relatively low-cost and low-emissions; introduce dedicated trackless tram lanes in selected carriageways of new development areas.

Fig. 5. Spatial distribution of EV charging stations in 2021; Source: ESRI China HK

Indicators

2.1.1. Car ownership rate in the NM

2.1.2. Percentage of private and public carparks in the NM with >20% EV charging coverage

2.1.3. – 2.1.4. No. of EV chargers and dockless bikes available in every district respectively

2.1.5. Walking distance between residential buildings and Light Rail and/or trackless tram stops

Low Carbon Transportation

KEY FOCUS AREA TWO

Target

Reduce carbon emissions from transport by 80% by 2040

Policy Recommendations

2.2 Implement Selective Electronic Road Pricing (ERP)*

- By 2025, toll charges should be implemented on all fossil-fuel powered private vehicles during peak congestion periods within the NM official boundary lines.
- Electric Vehicles can be exempted to encourage adoption of EV.
- Toll charges can be used to subsidise any low carbon infrastructure development in the NM.
- Given historic backlash against such a policy, to increase buy-in from the public, a comprehensive education campaign should be carried out to:
    - Increase transparency about the objective of the policy and how it should work
    - Spread awareness about the benefits of such a policy for individuals, the community as a whole, and the environment
    - Provide comparisons of similar policies in other cities, e.g., Singapore, London, Milan, etc.

Indicators

2.2.1. No. of fossil-fuel private vehicles passing tolls with ERP per day

2.2.2. No. of private EVs passing tolls with ERP per day

2.2.3. No. of passengers using public transport passing tolls with ERP per day

2.3 Establish a Work-near-Home Scheme

- To reduce emissions emitted and daily commute times for residents living in the NM, the Government should prioritise creating employment opportunities within the NM itself, thereby reducing the burden on the central business districts in Hong Kong Island and Kowloon.
- Apart from creating jobs in the Innovation and Technology sector (learn more on P.53), the Government should provide incentives (e.g., rent subsidies, tax rebates, infrastructural and capacity building support) to other key Hong Kong industries such as tourism, trading and logistics for whom relocating to or setting up in the region may offer a new competitive advantage. Small and medium sized enterprises could be targeted given their existing financial and capacity challenges.
- Provision of incentives can hinge upon meeting a percentage minimum of hiring employees living in the region. As an alternative, residents who live and work in the region can be provided a monthly government stipend in their first year.

Indicators

2.3.1. Average daily commute times for residents in the NM

2.3.2. Number of Northern Metropolis residents working in the NM

*ERP is a traffic management tool to alleviate traffic congestion and encourage public transportation, thereby reducing emissions.

Low Carbon Transportation

KEY FOCUS AREA TWO

Target

25% of total trips should be made by bike or on foot by 2040

Policy Recommendations

2.4 Designate ecological corridors at the regional, district & neighbourhood level

Regional

Build the planned Urban-Rural Greenway as the first-level ecological corridor to conserve high-quality rural and eco-recreation resources that span across Hong Kong and Shenzhen. (learn more on P. 79)

District

Identify a cross-district ecological corridor covering country parks and waterways.

Neighbourhood

Integrate urban farming and community gardens in the neighborhood ecological corridors.

Provide barrier-free walkways and bicycle lanes linking all the ecological corridors to enable direct access.

Given the large-scale development that will be undertaken in the coming years to form the NM, establishing ecological corridors at all levels, as shown by the diagram above, will actively conserve the high ecological value of the region, as well as increase accessibility to natural resources for all citizens, thereby increasing mental health and wellbeing.

Indicators

2.4.1. Percentage land of high ecological value conserved

2.4.2. No. of urban farms and community gardens established

Low Carbon Transportation

KEY FOCUS AREA TWO

Target

25% of total trips should be made by bike or on foot by 2040

Policy Recommendations

2.5 Establish shared space zones in areas of high cultural value

- Allow pedestrian and vehicular traffic to share access to areas of high cultural value in the NM. Such areas are to be determined by the results of an eco-cultural assets mapping assessment (learn more on P. 78)
- Restrict the vehicular speed limit to 10 kilometers per hour in the shared space zones to ensure pedestrian safety
- Integrate Universal Design to enable access for all regardless of age, disability, or other factors. For example, the zones can be designed to include continuously flat surfaces to improve access for wheelchair users
- Prevalent across the world, research shows that shared space zones:
    - increase space flexibility and accessibility, without compromising pedestrian safety,
    - encourage walkability and cyclability, thereby reducing emissions, and
    - highlight the cultural and architectural merit of the streetscape.
- In the long term, Hong Kong can consider pedestrian only zones as well to further enhance walkability and reduce emissions in low vehicular trafficked areas.

Fig. 6. Example of a cultural shared space zone at Exhibition Road in London, United Kingdom

Fig. 7. Example of a pedestrian only zone in Hung Hom, Kowloon, Hong Kong

Indicators

2.5.1. – 2.5.3. Percentage changes in annual foot, bike, and vehicle traffic in shared space zones between 2030 and 2040 respectively

2.5.4. Number of areas deemed high cultural value converted to shared space zones

Pioneering Material Circularity

KEY FOCUS AREA THREE

Current Outlook

To enable a closed loop between the production, consumption, and recovery of used materials in Hong Kong with the NM as a pilot testing zone, the following issues will need to be addressed:

29% The recovery rate for Municipal Solid Waste (MSW)* remains poor. The majority of MSW is disposed of at landfills (71%).

$700B Landfilling used material has led to a global loss of US $700 billion annually.

There is insufficient regulation to enforce collection and sorting of used materials.

Food waste, plastics and paper are the top 3 types of high-value waste materials disposed of at landfills (Fig 8).

The city lacks land and processing and manufacturing capacity which is a key component of material circularity.

**MSW includes all domestic, commercial and industrial solid waste excluding construction, demolition, chemical or other special waste.*

TARGETS

- Increase recovery rate of MSW to 40% by 2030 & 70% by 2040

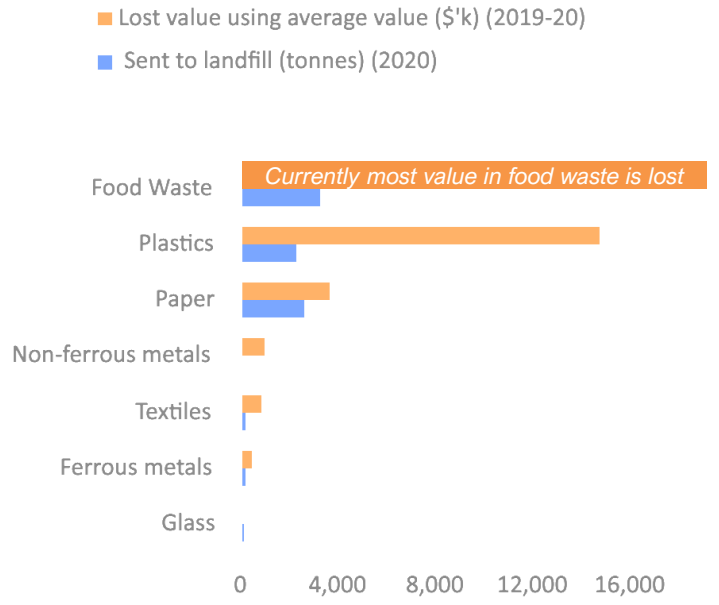


Fig. 8. MSW disposed of at landfill and subsequent value lost to the economy ; Source: Environment Protection Department

Pioneering Material Circularity

KEY FOCUS AREA THREE

Target

Increase recovery rate of Municipal Solid Waste by 40% by 2030 & 70% by 2040

Policy Recommendations

3.1 Pilot strict waste separation & collection at the Northern Metropolis

To pioneer material circularity at the NM and increase the city's material recovery rate, interventions at the separation and collection stages of recycling would complement Hong Kong's upcoming waste charging scheme.

Waste separation:

- Mandate MSW waste separation at the NM for all residential and commercial buildings for high-value, high-consumption waste materials: food waste, paper, and plastics. Install MSW separation bins qualified by the Environment Protection Department (EPD) for high-value, high-consumption waste materials in all residential and commercial buildings in the NM. Enlist district authorities to be responsible for strong enforcement and accountability of residential and commercial tenants. A city-wide public education campaign should be carried out to ensure proper waste separation.

Waste collection:

- Expand existing network of EPD Green@Community centres to cover each district in the NM and build infrastructural capacity to enable these district centres to collect food waste and the predicted increased quantities of all recyclables. Hire private contractors to be responsible for transportation of recovered material from residential and commercial buildings to district centres as well as transportation from district centres to local processing plants or for exportation to Mainland China and/or Southeast Asia for international processing. (learn more on P.51)
- Introduce a Producer Responsibility Scheme (PRS) for the Food and Beverage industry in the NM including restaurants and food manufacturers to enable commercial food waste collection for processing at the city's organic resources recovery centre: O-Park.

Indicators

3.1.1. Quantity & percentage of high-value high-consumption MSW recovered, separated & collected in the NM

3.1.2. – 3.1.3. Quantity & percentage of high-value high-consumption MSW collected for local processing and international processing respectively

3.1.3. PRS participation in Food & Beverage industry and food waste sent for processing at O Park from the industry

Pioneering Material Circularity

KEY FOCUS AREA THREE

Target

Increase recovery rate of Municipal Solid Waste by 40% by 2030 & 70% by 2040

Policy Recommendations

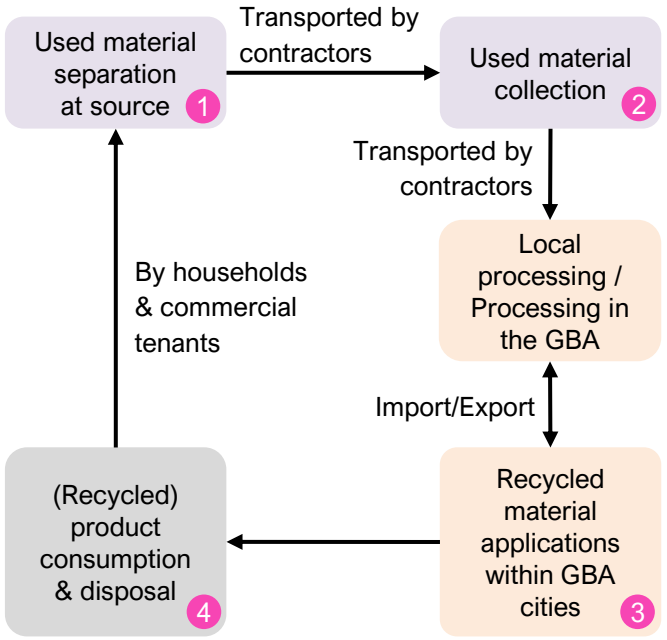
3.2 Stimulate a circular material economy in the GBA

Processes to be managed by the EPD, including strong enforcement and accountability, and hiring of contractors for transportation.

Processes to be managed by the Trade and Industry Department (TID) in collaboration with authorities from other GBA cities.

Examples of recycled products resulting from a circular material economy:

- New building construction from recycled material
- Tri-generators running on biofuels recycled from food waste
- Farms using compost recycled from food waste



1 *Such as food waste, paper, plastic etc.*

2 *Used Material Collection at EPD Green@Community centres with advanced capacities to handle food waste and increased collection quantities of all recyclables.*

3 *To leverage the GBA's manufacturing capabilities, Hong Kong should trade with other GBA cities to enable processing, recycling, and upcycling of materials. A material exchange platform can be set up jointly by the EPD and TID to enable healthy supply, procurement, and trade of used material and data disclosure of materials among GBA cities.*

4 *A consumption subsidy should be provided to businesses to incentivise use of recycled materials.*

Indicators

3.2.1. Quantity & percentage of recovered material processed and converted into intermediate or final products

3.2.2. Quantity of recycled material traded on the material exchange platform among GBA cities

Conclusion

The impacts of climate change can no longer be ignored. Hong Kong has pledged to be carbon neutral by 2050 and its ability to achieve its goal will require multisectoral involvement. The NM as a major city-building initiative in Hong Kong is expected to become densely populated with high energy demand and considerable waste generation. Therefore, it is imperative to plan the region at this early stage as a low carbon zone. To realise the vision of carbon net-zero, we must abandon old development blueprints that prioritise economic growth over environmental sustainability.

Collectively, with the policies proposed in this section to decarbonise buildings, implement low carbon transportation, and pioneer material circularity, the three largest sources of carbon emissions can be largely reduced.

The NM is a trial ground for ground-breaking designs and regulations to promote low carbon lifestyles and integrate low carbon infrastructure. It has the potential to be an excellent showcase to the rest of Hong Kong and the world that humans and nature can co-exist and thrive.

Building a Robust I&T Ecosystem

Introduction

Hong Kong aspires to be an I&T hub rivalling Silicon Valley and Singapore. As part of China's 14th Five-Year Plan, Hong Kong is encouraged to elevate its status as an international Innovation and Technology (I&T) hub, and reinforce its unique position within the GBA and other key global markets.

The Northern Metropolis (NM) aims to fulfil these aspirations through the "Twin Cities, Three Circles" concept, and the development of the San Tin Technopole and Shenzhen-Hong Kong I&T Cooperation Zone. Lok Ma Chau and San Tin will be consolidated to form the Technopole with approximately 240 hectares of land for I&T-related use. It is expected that 150,000 I&T jobs will be created in the NM.

Building a robust I&T ecosystem requires a number of critical elements: talent, education, research capabilities and facilities, productisation, production, land, investment and related professional services. At present Hong Kong lacks a solid foundation for many of these elements. However, with concerted effort by the various stakeholders in the public and private sectors, led by effective policy and in coordination with the GBA, Hong Kong should be able to leverage its unique advantages to grow its I&T sector and provide the city with a new economic engine.

This chapter will recommend policies in the following three focus areas:

- Fostering local technology talent
- Strengthening I&T support and development
- NM and GBA integration

Summary

Key Focus Areas

1 Fostering Local Technology Talent

- All primary & secondary schools to implement STEM curriculum under a new STEM Education Framework by 2026
- Increase Tertiary enrolmnet in Sciences and Engineering & Technology by 30% by 2025

2 Strengthening I&T support & Tech Transfer

- Achieve a success rate of 80% or above for all schemes that support I&T activities such as business development, R&D, hiring, & their related funding by 2024
- Double the commercialization output of universities including patents, spin-offs, and income by 2027

3 NM & GBA Integration

- Set up a GBA Integration Composite Index by 2023
- Increase GBA Integration Index score by 30% by 2027

Policy Recommendations

- **1.1** Launch the Standard STEM Education Framework & STEM Resource Hub
- **1.2** Establish a STEM Direct Admission Scheme
- **1.3** Pilot STEM@Community Education Centres
- **2.1** Form a new I&T Facilitation Office under the new ITIB
- **2.2** Build the Northern Metropolis Technology Transfer Nexus
- **2.3** Create a CUHK Northern Metropolis campus
- **3.1** Create a measurement tool to assess the level of integration with the GBA
- **3.2** Facilitate the flow of talent, technology, goods, and capital
- **3.3** Launch a GBA Support Centre

Aligned Guiding Principles:

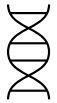
Fostering Local Technology Talent

KEY FOCUS AREA ONE

Current Outlook

60,000 Projected growth in demand for I&T talent by 2021, according to the Labour and Welfare Bureau.

85m Estimated global shortage of tech workers by 2030 in millions.



Science, Technology, Engineering and Mathematics (STEM) education is not integrated into the primary and secondary school curricula in ways that reflect the central role it will play in society going forward as well as the wide range of career options it will open up for students.

The Education Bureau funds STEM education but there is no standardised curricula or adequate resources to help teachers design and deliver STEM curricula. There is also a lack of industry collaboration in STEM education.

The current perception is that Hong Kong's I&T sector does not provide competitive opportunities, relative to other industries such as finance, medicine and law. The high costs of living and a rigid societal view of what professional development should look like (i.e., stable incomes, need to buy property, careers at large established companies, etc.), has perpetuated the perception amongst parents and students that I&T is a less attractive career path and young people are not encouraged to join the sector.

TARGETS

- All primary and secondary schools to implement STEM curriculum under a new STEM Education Framework by 2026
- Increase tertiary enrolment in Sciences and Engineering & Technology by 30% by 2025

Fostering Local Technology Talent

KEY FOCUS AREA ONE

TARGET

All primary and secondary schools to implement STEM curriculum under a new STEM Education Framework by 2026

Policy Recommendations

1.1 Launch the Standard STEM Education Framework and STEM Resource Hub

It is recommended that the Education Bureau (EDB) and the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) establish a standardised STEM Education Framework and support the implementation of STEM curricula at all primary and secondary schools, to enable youth to gain systematic and diversified skills that would enable them to thrive in the I&T sector.

The Framework should be designed by a body comprised of education and industry professionals from Hong Kong, overseas and the GBA, and be accompanied by a one-stop resource hub for teachers and the public alike.

Once drafted, the framework should be piloted and rolled out to as many schools as possible quickly, to allow Hong Kong to catch up to its global peers.

Framework Design

- The framework should articulate the compulsory, elective, and practicum-based subjects, as well as the minimum hours of teaching, competencies gained, teacher training and industry relevance.

Pilot & Evaluation

- It should be piloted in schools with subsidies in place to support hiring, curriculum design, equipment purchase and general administration.
- These pilot programs should be quickly evaluated and refined versions rolled out in as many schools as possible, with priority given to the NM.

Training & Resources

- Teachers should be given appropriate training by industry professionals, and their training frequently updated.
- They should also be provided with a **one-stop resource hub** to help them with curriculum design and teaching.

Industry Collaboration

- Industry should be enlisted to provide framework advice and practical experience as appropriate.
- This should include GBA and NM businesses and industries.
- For applicable applied learning (ApL) and VPET programmes, minimum hours of industrial attachment programmes should be extended.

Continued on next page →

Fostering Local Technology Talent

KEY FOCUS AREA ONE

Policy Recommendations

Creating the One-stop STEM Resource Hub

To support teacher training and curriculum design and promote public awareness of STEM, it is suggested that a One-stop STEM Resource Hub be created to provide educational resources and content for teachers, students and the public alike. Currently the Hong Kong Education City (EdCity) website provides information and resources to promote the use of technology to boost the effectiveness of learning and teaching, but there lacks a consolidated platform for STEM resources. It is therefore suggested that this website be repositioned or relaunched as the "STEM Resource Hub" to serve as the one-stop hub for STEM resources. The Hub should:

- Consolidate all STEM-related resources
- Provide teachers with course materials, curriculum design guidelines, and examples aligned to the STEM Education Framework
- Facilitate the exchange between teachers, industry practitioners, students and parents
- Facilitate and provide information on STEM internships and exchange programmes
- Provide career overview and guidance information
- Provide information on educational institutions, academies and courses offering STEM education and training
- Provide information on funding, financial assistance and scholarships
- Manage and provide access to a database of collaborating I&T companies, organisations and institutions

香港教育城 HKedCity → 香港教育城 HKSTEMCity

Fig. 1. Suggested new logo for the HK STEM City Resource Hub

Indicators

1.1.1. Number of teachers who report confidence in teaching STEM
1.1.2. Number of schools providing courses under the STEM Education Framework
1.1.3. Number of students entering STEM programmes at tertiary institutions or STEM-related careers

Fostering Local Technology Talent

KEY FOCUS AREA ONE

TARGET

Increase tertiary enrolment in Sciences and Engineering & Technology by 30% by 2025

Policy Recommendations

1.2 STEM Direct Admission Scheme

Young STEM Direct Admission Scheme

To increase the appeal and prestige of STEM careers, it is recommended to fast-track talented young STEM students through a new Young STEM Direct Admission Scheme. There are two pathways (Fig 2):

- S6 students who have shown outstanding performance in STEM subjects will be considered for admission to local UGC-funded universities regardless of performance in public examinations.
- Students who have attained "Distinction" in Applied Learning (ApL) subjects related to STEM will be considered for admission to VPET programmes at Hong Kong institutions, regardless of performance in public examinations.

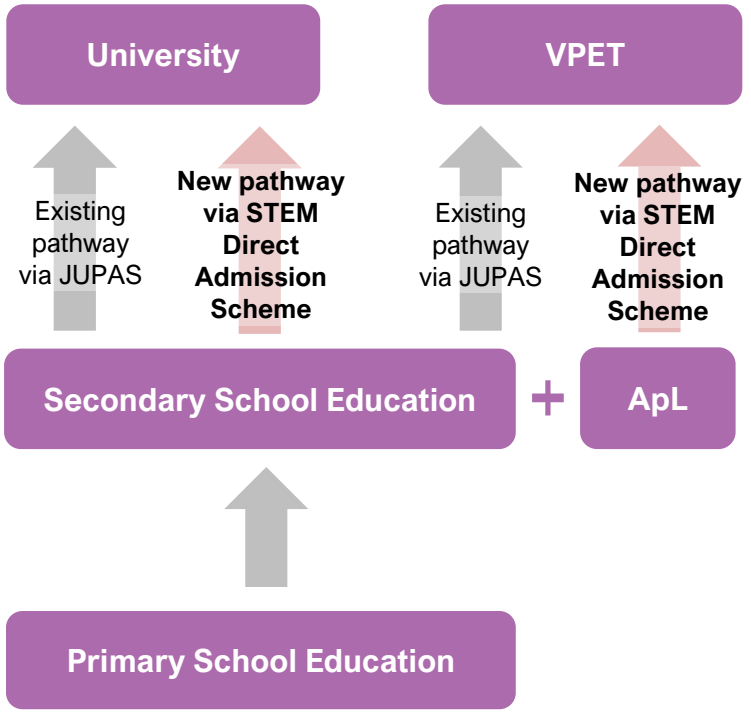


Fig. 2. New matriculation pathways for STEM talent

Indicators

1.2.1. Number of students entering STEM programmes (i.e. Sciences; Engineering & Technology) at tertiary institutions

Fostering Local Technology Talent

KEY FOCUS AREA ONE

TARGET

Increase tertiary enrolment in Sciences and Engineering & Technology by 30% by 2025

Policy Recommendations

1.3 Launch STEM@Community Education Centres

It is recommended that the Government launch STEM@Community Education Centres at eye-catching locations around Hong Kong. In much the same way that Green@Community recycling stores have increased the public's awareness of recycling, it is hoped that STEM@Community Centres will increase the public's awareness and understanding of STEM education and related careers.

The Centres should:

- Be commissioned and funded by the Government, and run by NGOs who have expertise in community engagement
- Collaborate with industry to host workshops, talks, and industry trips and experiences
- Collaborate with schools and tertiary institutions to co-host events and extra-curricular activities
- Host exhibitions showcasing interesting science and technology topics, and local success stories

Indicators

1.3.1. Number of people visiting the STEM Centre
1.3.2. Number of school children who report an interest in STEM careers
1.3.3. Number of parents in support of their children to advance careers in STEM

Strengthening Support & Tech Transfer

KEY FOCUS AREA TWO

Current Outlook

The strength of an I&T ecosystem is determined by a number of factors, including how easy it is to access funding, to find and retain the best talent, and to collaborate with various stakeholders on R&D.

There exists 47 different funding schemes for I&T companies managed by different bureaus and institutions. Companies express difficulty in accessing information and making applications, and success rate of I&T funding schemes is low.

Quality Migrant Admission Scheme (QMAS) and Technology Talent Admission Scheme (TechTAS) are two schemes that encourage foreign talent to live and work in Hong Kong. However right of abode requires 7 years which compares unfavourably to other countries. TechTAS also has local talent employment requirements for every non-local hire, which has been described as restrictive.

Universities make up 50% of all R&D in Hong Kong, however, they rank low on Reuter's list of Asia's most innovative universities, behind Korea, Japan and Singapore. The number of patents granted, income generated from IP, number of spin-off companies, and the number of spin-off series A companies reflect low rates of commercialisation at Hong Kong universities.

TARGETS

- Achieve a success rate of 80% or above for all schemes that support I&T activities such as business development, R&D, hiring, and their related funding by 2024
- Double the commercialisation output of universities including patents, spin-offs, and income by 2027

Strengthening Support & Tech Transfer

KEY FOCUS AREA TWO

TARGET

Achieve a success rate of 80% or above for all schemes that support I&T activities such as business development, R&D, hiring, and their related funding by 2024

Policy Recommendations

2.1 Form a new I&T Facilitation Office under the new ITIB

In order to facilitate more seamless coordination of funding, resources and support for I&T companies, it is recommended that the Government establishes a new I&T Facilitation Office under the new Innovation, Technology and Industry Bureau (ITIB).

The Office should take the lead in coordinating with various Government bureaus and departments to ensure:

- Funding is easy to access and apply for
- Immigration policies are simplified and relaxed
- Subsidies are provided where needed (i.e., hiring, training and housing)

Other suggested roles and responsibilities of the Office are outlined in Fig 3.

Expanding the Innovation and Technology Venture Fund (ITVF)

The Innovation and Technology Venture Fund (ITVF) should also be considerably expanded by raising its co-investment ratio from 2:1 to 1:1 (Venture Capital to ITVF), increase its co-investment partners, and provide more patient capital for deep tech innovations with the potential for long term social or environmental benefit.

Fig. 3

Indicators

2.1.1. Success rate of I&T-related government schemes
2.1.2. Number of new hires in I&T
2.1.3. Gross economic output of I&T companies

Strengthening Support & Tech Transfer

KEY FOCUS AREA TWO

TARGET

Double the commercialisation output of universities including patents, spin-offs, and income by 2027

Policy Recommendations

2.2 Build the Northern Metropolis Technology Transfer Nexus

Universities are currently equipped with Technology Transfer Offices that help inventors disclose and patent their findings. However, they generally do not have the capability to connect researchers with industry and investors, nor the ability to offer meaningful support in commercialisation.

It is suggested that the Northern Metropolis be home to a new "Technology Transfer Nexus" (Fig. 4) that facilitates industry and local universities to collaborate on commercialising university research.

The Nexus will have the following functions:

- Provide expertise and services such as market research, staffing, legal, financial, and connecting to customers, industry players and investors
- Work closely with the I&T Facilitation Office in matters related to funding and policies, talent acquisition and promotion
- Work closely and coordinate strategy with all university Tech Transfer Offices
- Connect with GBA stakeholders including universities, industries, prototyping, testing and manufacturing stakeholders.

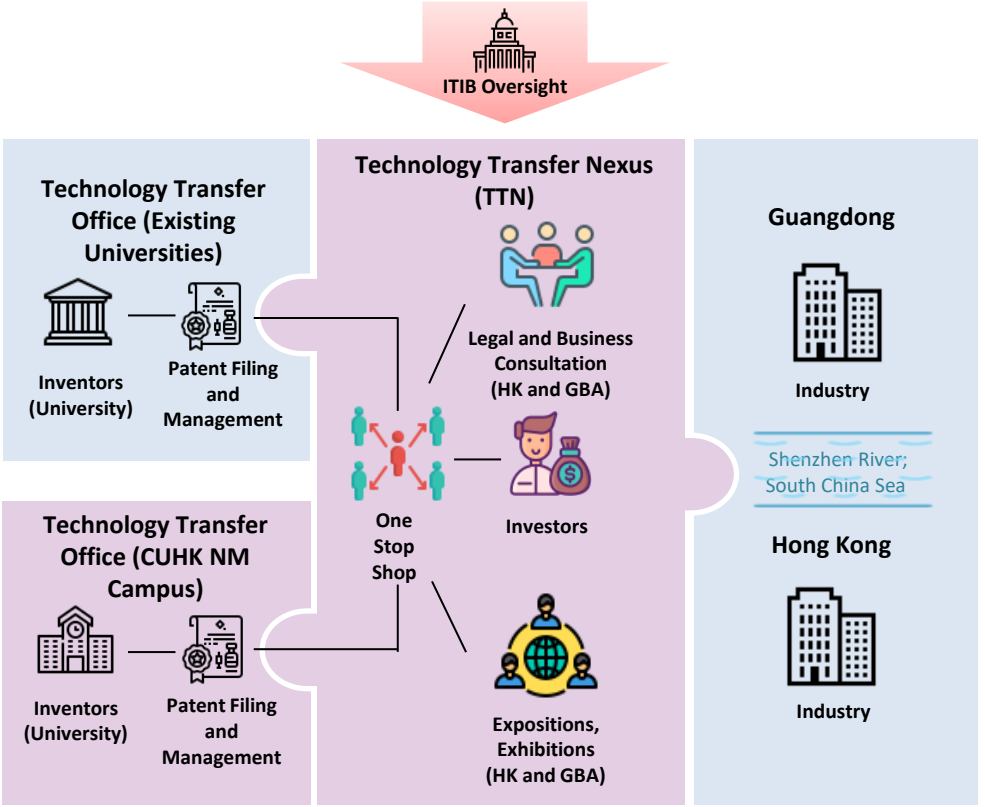


Fig. 4. Schematic diagram of the Technology Transfer Nexus

Strengthening Support & Tech Transfer

KEY FOCUS AREA TWO

TARGET

Double the commercialisation output of universities including patents, spin-offs, and income by 2027

Policy Recommendations

2.3 Create a CUHK Northern Metropolis Campus

Given the NM will be home to the San Tin Technopole and currently lacks an anchor university, it is proposed that the first university campus to be located in the NM to be Chinese University of Hong Kong (CUHK). CUHK is currently the recipient of many global patents and has a good track record in generating income from intellectual property. It also has a campus in Shenzhen (Fig 5).

This campus can be located in close proximity to the NM Tech Transfer Nexus, to serve as the spearhead for university-industry collaboration, leveraging its links with the GBA.

Fig 5. CUHK Campus in Shenzhen

Relaxing Restrictions of Academic Researchers

Currently, there is little incentive for university researchers to commercialise research, due to patents being owned by the university and low licensing revenue for the researcher. Academic staff are also disincentivised to spend time on engaging in activities outside of universities, which are essential for socialising and commercialising research.

It is suggested that these restrictions be removed, with CUHK NM being the spearhead for this new model.

Indicators

2.2.1. Number of patents filed by Hong Kong universities
2.2.2. Number of spin-off companies from universities
2.2.3. Amount of income generated from commercialisation of university research
2.3.1. Number of hours spent on activities related to commercialisation of research by university researchers

NM & GBA Integration

KEY FOCUS AREA THREE

Current Outlook

The Guangdong-Hong Kong-Macao Greater Bay Area (GBA) has considerable potential to become the new economic engine for China, but it currently strides multiple legal systems and customs zones.

While “GBA integration” is an aspiration often talked about in recent years, there is currently no definition of what this means, nor is there a measurement of the degree of integration and reporting on its progress.

Border challenges, differing standards, import tariffs and differing legal and financial systems continue to hinder the free flow of talent, technology, goods and capital.

The differences in the jurisdictions in the GBA can be hard for businesses and individuals to navigate, hampering the attractiveness of investing in the GBA.

TARGETS

- Set up a GBA Integration Composite Index by 2023
- Increase GBA Integration Index score by 30% by 2027

NM & GBA Integration

KEY FOCUS AREA THREE

TARGET

Set up a GBA Integration Composite Index by 2023

Policy Recommendations

3.1 Create a measurement tool to assess the level of integration with the GBA

It is recommended to create the GBA Composite Index as a tool to measure and assess the level of GBA integration between the cities. Since the NM will be the key region for this integration, a sub-index for the NM is suggested to be measured as well.

The Index will measure factors under the following five categories:

1. Economic Performance
2. Government Efficiency
3. Business Efficiency
4. Infrastructure
5. Software

- It is suggested that this Index be compiled by a joint research team comprised of the GBA Governments, universities and research institutions.
- The Index should be released once a year to the public, with recommendations for improving each category in the index, and KPIs set by the various Governments to drive progress.
- Select measurements related to the I&T sector are listed in the diagram to the right and on the next page.

Economic Performance

- Trade value of cross-border I&T products and services
- No. of I&T companies with cross-border operations/supply chains
- Cross-border investment value in I&T businesses
- Number of joint patents across borders
- Cross-border remittances

Government Efficiency

- Allocation of Government funding to support I&T businesses to operate across borders
- Allocation of Government funding in cross-border trade in I&T
- Compatibility of cross-border I&T regulatory framework
- Expenditure in cooperation between public scientific institutions across borders

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NM & GBA Integration

KEY FOCUS AREA THREE

Policy Recommendations

Business Efficiency

- Production value of I&T businesses with cross-border operations
- No. of cross-border I&T workers employed
- Attitudes on business efficiency in the GBA

Infrastructure

- Compatibility of technical standards
- Time taken on immigration clearance of I&T workers
- Time taken on customs clearance of I&T goods

Software

- Youth and student exchanges across borders related to I&T studies, internships or employment
- Attitudes on GBA mobility
- Attitudes on GBA quality of life issues

Indicators

3.1.1. Consistency and reliability of data collected
3.1.2. Number of recommendations taken forward

NM & GBA Integration

KEY FOCUS AREA THREE

TARGET

Increase GBA Integration Index score by 30% by 2027

Policy Recommendations

3.2 Facilitate the flow of talent, technology, goods and capital

In order to increase the integration index, it is suggested the following policies be implemented to facilitate the free flow of talent, technology, goods and capital across the GBA cities.

1 Flow of goods and equipment

- Waive import tariffs and VAT of all I&T products to lower cost of exporting semi-finished products across the border for completing manufacturing processes

2 Flow of technology

- Streamline and align regulations and standards of I&T products/services across the GBA, in areas such as AI, robotics, biotech, greentech, etc.

3 Flow of talent

- Create a white-list of people working in the I&T sector to enable free and fast-tracked immigration clearance across borders in the GBA

4 Flow of capital

- Create a new **GBA I&T Fund** jointly managed by the Hong Kong and Shenzhen Governments with the following objectives:
  - Invest in I&T projects and R&D that contribute to GBA integration
  - Support GBA startups to start operations across the border
  - Attract international I&T companies to set up in the GBA and NM

Indicators

3.2.1. Value of traded I&T goods with reduced/removed tariffs/VAT
3.2.2. Number of regulations and standards streamlined/aligned
3.2.3. Number of people/types of jobs on the white-list for cross-border travel
3.2.4. Amount allocated from the GBA I&T Fund

NM & GBA Integration

KEY FOCUS AREA THREE

Policy Recommendations

3.3 GBA Support Centre

It is recommended to establish GBA Support Centres in the NM to help I&T and other companies build businesses across the GBA.

The Centre will be able to help businesses:

- Clarify and help to resolve legal, financial, accounting and intellectual property issues across the GBA
- Work with the I&T Facilitation Office and Tech Transfer Nexus on regulatory affairs related to the GBA, to support the smooth operations of cross-border I&T businesses and R&D
- Provide information and support on the preceding page's policies related to the flow of goods, technology, talent and capital.

Indicators

3.3.1. Number of enquiries at the GBA Support Centre
3.3.2. Number of businesses who express confidence in investing/operating in the GBA
3.3.3. Increase in the score of "Business Efficiency" and "Software" on the GBA Integration Composite Index

Conclusion

Developing a robust I&T ecosystem will help to generate employment opportunities in the Northern Metropolis. In order to achieve this, Hong Kong will need to develop a pipeline of local I&T talent. This will require a retooling of its STEM education system to be more systematised and rigorous through a new STEM Education Framework and Resource Hub, whilst building community awareness and understanding of the profession through STEM@Community Centres.

Business development support for I&T companies should also be better facilitated, through a new I&T Facilitation Office under the ITIB. University-Industry collaboration should be strengthened through a new NM Tech Transfer Nexus, and commercialisation of university research spearheaded by a new CUHK NM campus.

GBA's comparative advantages should be leveraged, by supportive policies that aid the flow of goods, talent, technology and capital, and businesses supported to engage in cross-border operations and R&D through a new GBA Support Centre. A new measurement tool aimed at driving GBA integration is also suggested.

Through these measures it is hoped that the NM will become the new economic engine of Hong Kong through its I&T industries, contributing to Hong Kong's future success and China's national development.

Cultivating Eco-cultural Tourism

Introduction

Hong Kong is a global vibrant city, boasting rich natural and cultural resources that can be leveraged to attract visitors from around the world. Despite this, the city is almost exclusively known as a tourist destination for shopping and dining.

The Northern Metropolis (NM), in particular, is home to a wide range of environments and freshwater habitats, as well as rural heritage townships. The planned large-scale housing, industry, and transport developments – while crucial to developing the area into the city's new economic engine – have the potential to damage these rich resources.

Taking inspiration from ecological civilisation in the Mainland, cultivating eco-cultural tourism can be pivotal in conserving the region's ecological corridors and preserving local cultural heritage, while contributing to the vision of the NM as the city's new economic engine.

This pillar proposes three interdependent focus areas that would enable both development and conservation in the NM, and in the process make Hong Kong renowned for something novel:

- Diversifying Tourism
- Active Conservation
- Supporting Rural Businesses

Summary

Key Focus Areas & Targets

1 Diversifying Tourism

- 25% of total revenue from the tourism industry to come from eco-cultural tourism by 2030

2 Active Conservation

- Map 100% of the eco-cultural assets in the Northern Metropolis by 2025
- Restore 20% of degraded agricultural/aquacultural land by 2030

3 Supporting Rural Businesses

- Grow rural businesses by 30% by 2030

Policy Recommendations

1.1 Establish a dedicated office under the new Culture, Sports and Tourism Bureau (CSTB) to develop eco-cultural tourism in the Northern Metropolis

2.1 Map the Ecological and Cultural Assets in the Northern Metropolis

2.2 Promote cross-border active conservation, rewilding and regenerative design

3.1 Improve quality and access to basic services and infrastructure

3.2 Establish a one-stop resource centre for rural businesses

Aligned Guiding Principles:

Diversifying Tourism

KEY FOCUS AREA ONE

Current Outlook

The NM is ecologically and culturally unique, presenting an opportunity for the city to diversify its tourism strategy and build the region into a high-quality eco-cultural tourism destination for local and overseas visitors alike.

The region is home to freshwater/brackish wetlands, fish ponds, marshes, reedbeds, mangroves, and agricultural land. The region is also home to several rural townships and traditional villages. These eco-cultural features can be leveraged to develop tourism in the NM.

$700B

The global eco-tourism industry is expected to grow exponentially, generating HK$770 billion per year.

Current eco-cultural tourism projects are not at scale.

Apart from attracting international visitors, the region can also attract local city dwellers.

Despite tourism being a key policy area for the GBA region, there is no supporting soft infrastructure in place.

TARGETS

- 25% of total revenue from the tourism industry to come from eco-cultural tourism by 2030

Fig. 1. Lai Chi Wo – a successful example of eco-cultural tourism

Fig. 2. Yim Tin Tsai – a successful example of eco-cultural tourism

Diversifying Tourism

KEY FOCUS AREA ONE

Target

25% of total revenue from the tourism industry to come from eco-cultural tourism by 2030

Policy Recommendations

1.1 Establish a dedicated office under the new Culture, Sports and Tourism Bureau (CSTB) to develop eco-cultural tourism in the Northern Metropolis

Similar to the development scale and unique character of the West Kowloon Cultural District, the NM presents ample opportunity for the development of a region-specific tourism strategy. A **Northern Metropolis Project Management Team office** should be set up under CSTB to enable rapid resource mobilisation. The following are the proposed objectives for the Office:

1. Launch and facilitate the development of the eco-cultural tourism industry in the NM
2. Attract international as well as local visitors to the region
3. Promote responsible tourism
4. Collaborate with the GBA to co-manage shared ecological and cultural resources and enhance regional tourism

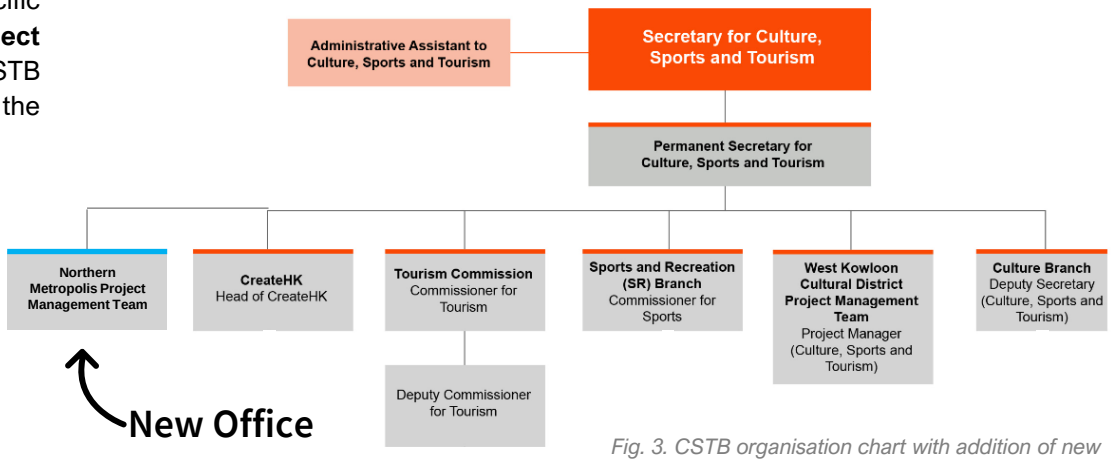

Fig. 3. CSTB organisation chart with addition of new NM office; Source: CSTB

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Diversifying Tourism

KEY FOCUS AREA ONE

Policy Recommendations

1 Launch and facilitate the development of the eco-cultural tourism industry in the NM

- Develop **3i** tourism activities around the unique ecological and cultural features in the NM in partnership with service providers, i.e., creative activities that are **i**mmersive, **i**nteractive, and **i**nnovative rather than reliant on passive culture consumption.
- Examples: walking trails, mountain bike routes, and bike lanes to enable access to ecological corridors and wildlife encounters;

  traditional farming, craft making, village-based activities and interactive museums to enable exchanges with cultural heritage;

  eco-cultural lodges and dining options to provide an immersive lifestyle experience; and

  tourism souvenirs or by-products from activities.
- Diversify Hong Kong's official destination branding to attract visitors for the city's newly developed and serviced eco-cultural experience.

2 Attract international as well as local visitors to the region

- Apart from short visits, the countryside can offer an alternative lifestyle for those wishing to escape the stress and strain of busy city life e.g., for two to three-month periods. Taking inspiration from other countries like Japan and Australia, farm stay or seasonal programmes can be offered, in which city residents are offered medium term stay with accommodation if they contribute to the local farming industry or to conservation and restoration efforts.

3 Promote responsible tourism

- Increase public awareness on responsible tourism by positioning residents and visitors as the Guardians / Protectors of the region.
- Add responsible tourism as a key education component of tour guide qualification requirements.
- Introduce attendance quotas for ecologically sensitive zones in the region.
- Provide students from kindergarten to secondary levels with annual 3i eco-cultural activities focused on conservation and sustainable production and consumption.

4 Collaborate with the GBA to co-manage shared ecological and cultural resources and enhance GBA tourism

- Position Hong Kong's destination branding as an opportunity to travel across the GBA region in a single visit.
- Relax or simplify immigration clearance for tourists e.g., introduce a GBA Tourist Visa that allows easy tourist travel between GBA cities in the Mainland, Macao, and Hong Kong.
- Co-design and co-implement eco-cultural tourism activities with Shenzhen if natural resources are spread across borders e.g., the Niagara Falls is co-managed by the U.S. and Canada.

Indicators

3.1.1. Revenue generated from eco-cultural tourism
3.1.2. Total tourism expenditure associated to eco-cultural tourism
3.1.3. Total visitor arrivals associated to eco-cultural tourism
3.1.4. Job creation from developing the eco-cultural tourism industry
3.1.5. Impact on natural resources (water, waste, biodiversity)

Active Conservation

KEY FOCUS AREA TWO

Current Outlook

The *Northern Metropolis Development Strategy* is the city's first strategy which prioritises conservation together with development. Finding a balance can be difficult; the following will be important considerations as the Government moves forward with its plans.

The region is home to the city's highest levels of biodiversity in natural systems and species, which will need to be preserved.

While some valuable sites have been identified, such as wetlands, there is no clear, comprehensive outlook on the high value ecological resources present in the region that would need to be conserved.

There is also no set strategy on the identification or conservation of cultural resources. Current initiatives are not at scale (Fig 4).

Many brownfield sites in the region were previously high-value agricultural or aquacultural land.

Most development projects cannot fully offset their environmental impact, demonstrating the need for sustainable design strategies during the planning stage to generate a net positive impact.

TARGETS

- Map 100% of the eco-cultural assets in the Northern Metropolis by 2025
- Restore 20% of degraded agricultural/aquacultural land by 2030

Fig. 4. Example of cultural preservation initiative;
Source: Hong Kong Countryside Foundation

Active Conservation

KEY FOCUS AREA TWO

Target

Map 100% of the eco-cultural assets in the Northern Metropolis by 2025

Policy Recommendations

2.1 Map the Ecological and Cultural Assets in the Northern Metropolis

- The tangible and intangible ecological and cultural assets in the NM should be comprehensively mapped out to accurately identify, protect and manage such resources in the region. The assessment criteria can be derived from the globally recognised selection criteria used by the World Heritage Convention, which links together concepts of nature conservation and the preservation of cultural properties. The Convention recognises the way in which people interact with nature, and the fundamental need to preserve the balance between the two: https://whc.unesco.org/en/criteria/ The following are two relevant examples extracted from the criteria used:
    - Natural Criteria: (ix) examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
    - Cultural Criteria: (v) example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change.
- The Government should commission GBA conservation experts in academia to carry out this assessment. The results of the asset mapping should be a pre-requisite consideration to measure the environmental and cultural impact of any planned development projects in the region as well as a means to identify high-potential eco-cultural tourism activities to pursue.

Fig. 5. Example of cultural resource mapping; Source: Walk in Hong Kong

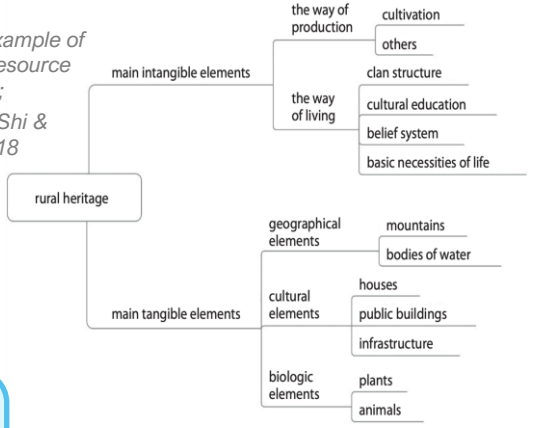

Fig. 6. Example of natural resource mapping; Source: Shi & Zhou 2018

Indicators

2.1.1. Number of development projects utilising the eco-cultural assets map in their environmental impact assessment

2.1.2. Number of high potential eco-cultural tourism zones identified from the eco-cultural assets map

Active Conservation

KEY FOCUS AREA TWO

Target

Restore 20% of degraded agricultural/aquacultural land by 2030

Policy Recommendations

2.2 Promote cross-border active conservation, rewilding and regenerative design

- **Cross-border Active Conservation:** Government conservation efforts should be co-managed between Shenzhen and Hong Kong given the borderless footprint of natural resources including key Ramsar sites. One example is the Wutong Mountain/Robin's Nest/Pat Sin Leng Ecological Corridor which can be co-managed to conserve and enhance the site's ecology and habitat.

- **Rewilding:** Based on the results of the eco-cultural assets assessment, land use should be determined for brownfield sites. Sites that were previously well-cultivated, high quality agricultural land should be zoned for "rewilding", which requires active conservation efforts to enable natural processes to repair damaged ecosystems and restore degraded landscapes.

- **Regenerative Design:** All new large-scale housing/ transport / industry developments in the NM should integrate regenerative design (Fig 7) at the planning phase to ensure the built environment has a net positive impact on natural systems and species' habitats. Examples include biodiverse roofs, constructed wetlands for stormwater retention, tree canopies, permeable surfaces, undisturbed waterways, etc.

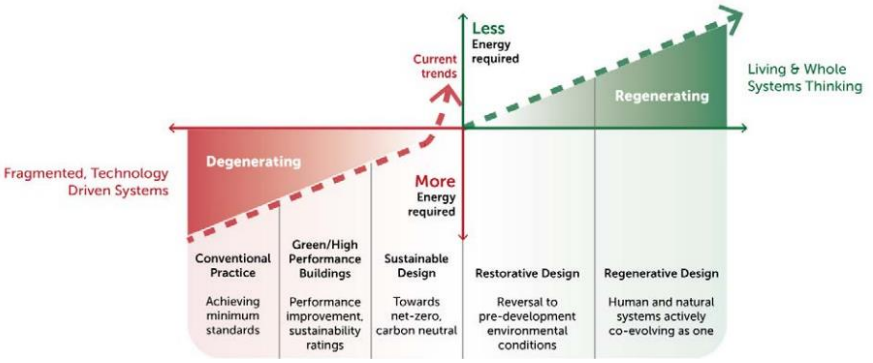

Fig. 7. Ranges of sustainability approaches; Source: Reed 2007

Indicators

2.2.1. – 2.2.2. Annual change in biodiversity levels and soil quality respectively
2.2.3. Total area of regenerated land
2.2.4. Conservation zones identified for cross-border management
2.2.5. Environmental impact of new development projects

Supporting Rural Businesses

KEY FOCUS AREA THREE

Current Outlook

To become more economically resilient, fulfil its vision to make the NM the city's new economic engine, and be self-sufficient in food production, Hong Kong should leverage the strengths of the historical and existing rural industry in the region.

0.1% The agricultural and fisheries industries have been in rapid decline over the last few decades, currently contributing to 0.1% of the city's total GDP.

Once home to active agricultural and trading communities, mass emigration from the 1950s onwards led to the decline of rural businesses and livelihoods.

Agricultural & aquaculture activities in Hong Kong are mainly conducted in the rural New Territories & urban fringes. There are now some 2500 farms employing 4300 farmers & workers.

The Government has recognised the importance of diversifying the city's economy to make it more resilient to economic shocks.

Several rural businesses have expressed concerns over the impact of the new large-scale developments planned for the region on their livelihoods.

TARGETS

- Grow rural businesses by 30% by 2030

Supporting Rural Businesses

KEY FOCUS AREA THREE

Target

Grow rural businesses by 30% by 2030

Policy Recommendations

3.1 Improve quality and access to basic services and infrastructure

To encourage the successful upkeep of rural businesses and attraction of international and local visitors to the region, upgrades to improve the quality and access to basic services and infrastructure is essential. The Government should:

- **Improve provision of basic services**; such as water and sanitation systems, waste management, stable electricity, and internet connection
- **Increase rural-urban connectivity within the region and to/from the region**; conduct an assessment to identify required infrastructure improvements or additions as well as increased service frequency in current or future high trafficked zones. Infrastructure enabling low carbon road/ sea transport, bikeability, and walkability should be prioritised. (learn more on P. 45)
- **Restore traditional housing infrastructure**; village houses should be fit for living for rural residents as well as overnight tourists. Lai Chi Wo can be used as a model for restoration where traditional architecture was preserved while providing modern fixtures. Their operational model is also a good case study of collaborating with landowners to be provided with a temporary license of 20 years to lease out restored houses for eco-cultural tourism activities.

Indicators

3.1.1. Proportion of rural population with access to various basic services, including improved water, sanitation, and waste services, stable electricity, and internet

3.1.2. Commute time between rural and urban areas

3.1.3. Percentage of village houses restored

Supporting Rural Businesses

KEY FOCUS AREA THREE

Target

Grow rural businesses by 30% by 2030

Policy Recommendations

3.2 Establish a one-stop resource centre for rural businesses

The Government should set up a one-stop resource centre to offer full-service support to rural businesses. The proposed services for the Centre can help provide rural businesses an enabling environment, to set up, operate and prosper:

1. **Provide low interest loans**

   Pilot a funding scheme catered for rural enterprises in the NM, i.e., rural businesses from the farming, food & beverage, retail, hotel, or other relevant eco-cultural tourism industries. Similar to Hong Kong's SME Loan Guarantee Scheme, this funding scheme can help rural businesses secure loans from participating lending institutions (PLIs) for acquiring business installations and equipment or meeting working capital needs. The amount of guarantee for an enterprise can be 50% of the loan amount, subject to a maximum total guarantee amount of $2 million. The interest rate can be capped at 1%, with any interest premium to be subsidised by the Government.

2. **Scale up farming businesses**

   Work closely with farmers to promote crop diversity to increase resilience to shocks, as well as commercialisation to upscale farm produce to high value consumer products. Similar to other countries, the Centre can identify high-potential local fruits and vegetables to be marketed as unique tourism food products.

3. **Provide capacity building and displacement support**

   Offer one-on-one license and registration support to rural businesses. Offer subsidised training courses to help businesses scale up such as organic farming courses with official certification to support higher prices. Offer annual review and tailored recommendations to improve sales and operations. Work closely with displaced farmers and the Government to ensure favourable terms on compensation and new allotted land. For instance, farmers should be allowed to build residential huts on their land, or at least be provided with subsidised living quarters close to their farmland.

Indicators

3.2.1. Annual number of rural businesses operating in the NM

3.2.2. Annual number of rural businesses utilising services by the one-stop resource centre

Conclusion

As the *Northern Metropolis Development Strategy* has outlined, conservation and development must go hand in hand to conserve our city's biodiversity and cultural heritage. With the need to develop the NM into the city's new economic engine, diverse economic strategies aligned with Hong Kong's strengths are also pertinent.

Tourism is already an important and established industry in Hong Kong. With the NM's unique natural and cultural assets, eco-cultural tourism has significant potential to thrive in the region.

By diversifying the city's tourism strategy, actively conserving the region, and supporting the rural businesses that will be key enablers for this new industry, new employment opportunities can be created locally and Hong Kong can create a resilient metropolis that balances conservation and development.

Apart from being known as an international hub for finance, and a destination for shopping and dining, with this new strategy, Hong Kong will be able to diversify its brand image as a destination for natural and cultural sights comparable to other parts of Asia.

Next Steps

A Vision for a Liveable & Resilient Northern Metropolis

Hong Kong often ranks highly on global development indexes – among other factors – due to its strong economy, infrastructure, and safety. However, the city lags behind in quality-of-life indicators. The Government's development of the Northern Metropolis aims to remedy this through policy and large-scale infrastructure development.

At this early stage of planning, it is crucial to consider how strategic development of this region can improve liveability and resilience. By factoring in inclusive housing, low carbon development, I&T ecosystem-building, and eco-cultural tourism in policymaking, we can ensure a high quality of life for all its residents. As a relatively unbuilt region, the Northern Metropolis is uniquely positioned to pilot bold ideas without the normal constraints that come with developments in the rest of Hong Kong. The Guiding Principles and Policy Recommendations detailed in this report can be considered as the Government moves on to the next planning phase of the region's development.

While catered for application in the Northern Metropolis, these ideas provide opportunities for implementation in the rest of Hong Kong, as well as other GBA cities – where collaboration can lead to stronger outcomes.

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