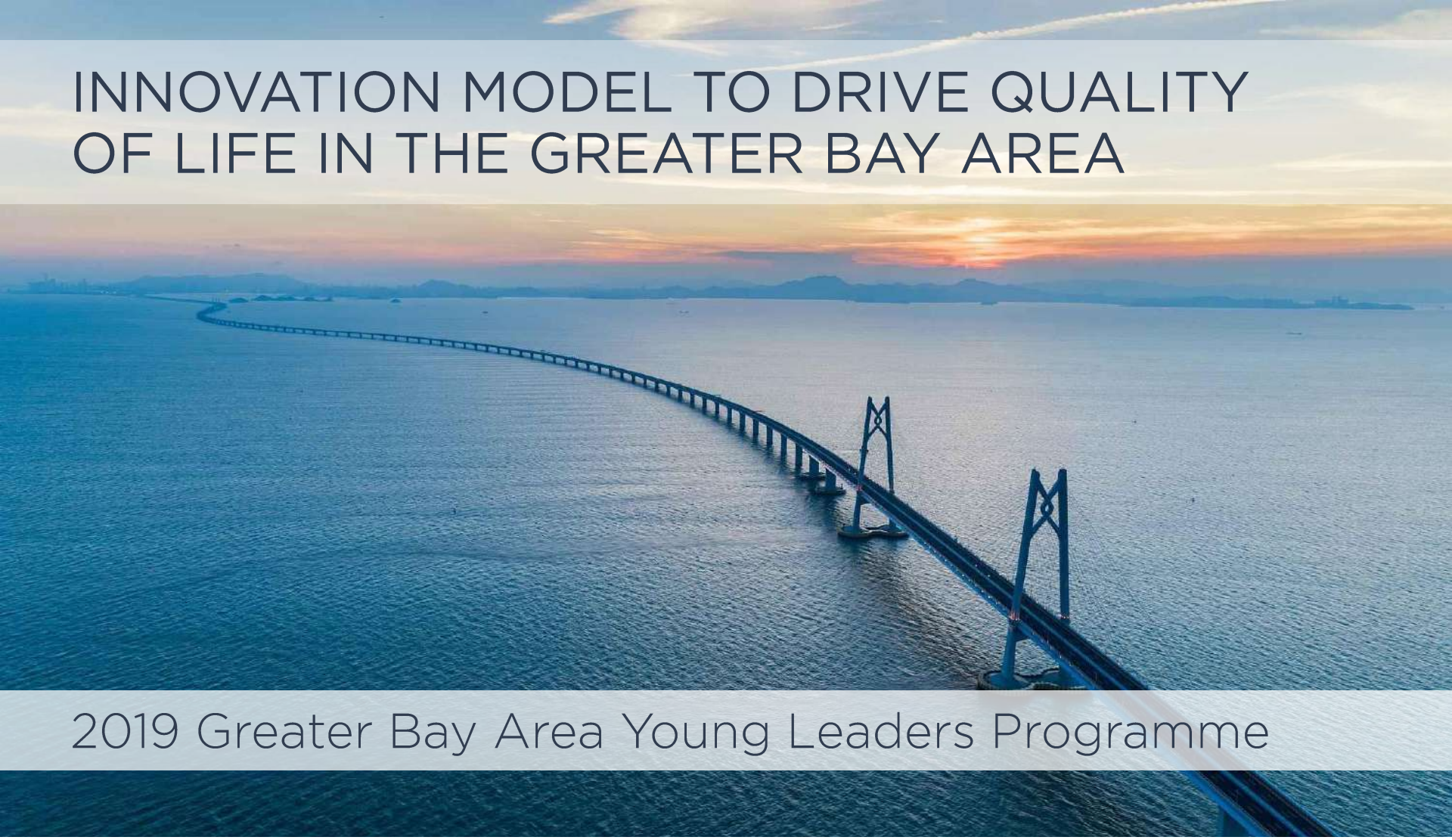
INNOVATION MODEL TO DRIVE QUALITY OF LIFE IN THE GREATER BAY AREA



2019 Greater Bay Area Young Leaders Programme

Honest Inquiry · Asia's Worldview · Ideas to Action

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Table of Contents

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Executive Summary (1/3)

The “Guangdong-Hong Kong-Macao Greater Bay Area” (GBA) – covering 56,000 square kilometres, 69 million people and US$1.5 trillion in GDP – presents countless new economic opportunities.

The GBA is situated within the Pearl River Delta, a region once described as the “Factory of the World”. It is now aspiring to become an economic and technological powerhouse that would rival other bay areas such as San Francisco and Tokyo.

Years of unbalanced economic growth, however, has resulted in unsustainable demands on resources and deep environmental and social costs. Increased demand for high-quality living and unfettered development will only add pressure to already constrained resources in and beyond the region.

The concept of “**Ecological Civilisation**” has become a central part of Chinese policymaking that focuses on using the latest technological innovations, economic instruments and planning frameworks to provide a high quality of life within resource constraints. Relevant, timely and practical, it can provide the basis for a development model that unites the 11 cities in the GBA.

The Model of Innovation

This report takes a different approach to understanding the role of innovation and technology as an effective means to address pressing social and environmental challenges. Using the vision of Ecological Civilisation as a starting point, it proposes **Guiding Principles** for the region’s future development, supported by actionable **Targets**, each with measurable **Indicators**.

These targets and indicators drive the development of original ideas for social, policy and technological innovations that address the region’s core challenges and improve quality of life.

Instead of starting from commercial “painpoints”, this model begins with a **Vision** and subsequently identifies social and environmental issues as a stimulus for innovation.

The following pages summarise the overarching vision for the GBA, the guiding principles and targets for five key focus areas: Connectivity; Talent & Livelihoods; Built Environment; Environment & Resources; and Food & Wellbeing; as well as key innovation ideas derived from this process.

It is expected that the GBA Innovation Model will be a valuable resource for integrating the 11 GBA cities, and inspire entrepreneurs and innovators to respond to the pressing challenges facing society today.

Executive Summary (2/3)

Vision:
The GBA will be a pioneer for a people-centric eco-civilisation megapolis, achieved by adopting innovations in technology and the social sciences through multi-sectoral cooperation across the region.

Focus Area: Connectivity

Targets:
Infrastructure
1. Spread of high-speed and light rail
2. Reduce vehicle emissions

GBA Identity
1. GBA Identity Card
2. GBA sports league
3. World-class film hub

Flow of Everything
1. Free-trade zone expansion
2. Secure exchange of personal information

Talent and Livelihood Targets

Targets:
Education System
1. Workforce to have access to vocational and professional training and certification

Talent Cultivation
1. Recognition of qualifications
2. Access to STEM education
3. Access to Chinese and English education

Quality of Life
1. High standard of living
2. Workplace health and safety

Built Environment Targets

Targets:
Housing
1. Maintain public housing supply
2. Minimum living space

Construction
1. Reduce and recycle construction waste

Urban Planning
1. Common GBA building standard
2. Community proximity to public services

Environment and Resources Targets

Targets:
Pollution
1. Improve air-quality
2. Improve water quality
3. Reduce arable land contamination

Natural Environment
1. Increase nature reserves
2. Increase population of endangered species

Resources
1. Reduce energy consumption
2. Reduce industrial and municipal waste.
3. Eliminate single-use plastics
4. Increase recycle rate

Carbon Emissions
1. Reduce carbon emissions

Food and Wellbeing Targets

Targets:
Food and Water Quality
1. Access to food origination information
2. Reduce food waste
3. Access to potable water and sanitation

Healthcare
1. Reduced waiting times
2. Affordability of care
3. Common medical records database

Arts and Culture
1. Increase GDP contribution of creative industries

Recreation
1. Access to recreation spaces

Further details about guiding principles, targets and indicators can be found later in this report.

Executive Summary (3/3)

These targets drove the creation of a number of applications of digital technology that would support the GBA's path to becoming an Ecological Civilisation. "Painpoints" – barriers and obstacles arising from the relationships between stakeholders – are prime opportunities for new organisations, business models and technologies that can resolve social/environmental/economic issues and improve quality of life.

Examples of innovations that support the vision of an "Ecological Civilisation" in the GBA:

Connectivity Innovation	Talent and Livelihood Innovation	Built Environment Innovation	Environment and Resources Innovation	Food and Wellbeing Innovation
GBA Identity Card Current situation: • Citizens can only access services in their own city. • Little integration of systems between governments. • Lack of common identity. Proposed solution: The GBA Identity Card can provide access to public and private services across the GBA's 11 cities, and thus help build a common identity amongst its residents. Big data analysis can lead to better service upgrades, efficiency and provision.	**Digital Talent Platform** Current situation: • No cross-border job platform • Need to verify qualifications • Employer-employee matching is done manually. Proposed solution: A cross-GBA digital talent database can help verify qualifications and standardise CV's. Big data analysis can provide accurate job recommendations and inform employer-employee matching, as well as mentor-apprentice matching.	**Waste Footprint Monitoring System** Current situation: • Lack of integration between design and construction leads to waste. Proposed solution: Modern systems can reduce errors and construction redundancies, lowering waste. A monitoring system can track the waste footprint of contractors, rewarding those who achieve excellent standards.	**Carbon-Smart System** Current situation: • Carbon emissions from transport and buildings are not effectively measured. • No incentives to lower carbon footprint. Proposed solution: An IoT system installed in buildings, public transport and industrial equipment can monitor emissions data. Alerts will be sent if quotas are exceeded. Successful reductions will be rewarded with public/social benefits.	**Food Supply Chain Traceability Platform** Current situation: • Lack of transparency in value chain • Sourcing information may be lost/falsified. Proposed solution: A traceability platform can use blockchain technology to record and document every process and alteration, which will enable consumers, retailers and regulators to trust the safety and quality of their produce.

Introduction & Background

2019 Greater Bay Area Young Leaders Programme

The **Global Institute For Tomorrow (GIFT)** is an independent pan-Asian think tank providing content-rich and intellectually challenging executive education from an Asian worldview.

Based on GIFT's internationally recognised experiential Global Leaders Programme, the inaugural **Greater Bay Area Young Leaders Programme (GBA YLP)** is a platform to inspire a new generation of leaders, set new precedents for constructive dialogue, and promote cross-sector and cross-city collaboration.

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Participating Organisations

Twenty-two young professionals from Hong Kong and China's business, civil society and government joined the Greater Bay Area Young Leaders Programme over May and June of 2019.

Experiences from different sectors aided the development of novel innovations for the GBA's sustainable development.

Supporting Organisations

Critical support was provided by the following organisations:
China National GeneBank (国家基因库)
China Spallation Neutron Source (中国散列中子源)
Drainage Services Department, HKSAR Government
Hengqin Free-Trade Zone Hengqin Area Investment Promotion Center (横琴片区招商中心)
Hong Kong Housing Society
Microsoft
PKU-HKUST Shenzhen-Hongkong Institution (深港产学研基地)
Qixi Nature Farm (旗溪自然部落)
Shenzhen Hong Kong Union for Promoting Science and Technology (深港科技合作促进会), Zhang Keke, President
Shenzhen International Low-Carbon City (深圳国际低碳城)
Songshan Lake HK-Macao Project Conversion Service Center (松山湖港澳项目转化服务中心)
Songshan Lake Intelligent Valley (松湖智谷)
Tencent
The Mills by Nan Fung Group

Insights were gained from a wide array of different stakeholders: business, civil society and government agencies.

HKSTP: A Regional Hub for Innovation

This project was formulated in collaboration with **the Hong Kong Science and Technology Parks Corporation (HKSTP)** and their **Global Acceleration Academy (GAA).**

The HKSTP's objective is to make Hong Kong a regional hub for innovation and technology by providing a space for science and technology companies to innovate and grow. These companies are supported by R&D facilities, infrastructure, market-led laboratories and technical centers with professional support services. It also helps start-ups accelerate their growth by offering value-added services and comprehensive incubation programmes.

The GAA connects corporations with start-ups to co-create and commercialise innovations. GAA offers theme accelerators, solution-matching and a corporate innovation journey for its partners in the following eight industry verticals:

Real Estate

Travel & Hospitality

Logistics

Finance

Consumer

Education

Smart City

Healthcare

Programme Structure

Objectives

- To create a **"model for innovation"** that governments and institutions, such as HKSTP, can use to accelerate and support the GBA's development as a tech sector.
- To identify **key focus areas** for cross-city collaboration in order for the GBA to become a global role model for "Ecological Civilisation".
- To develop specific **targets** within these focus areas, as well as **indicators** that can be used to measure progress towards achieving the targets.
- To devise **social, policy or technological innovations** in order to meet stated targets and realise the vision.

Process

- Participants met a diverse range of stakeholders, including but not limited to farmers, government officials, business executives, scientists and start-up founders, to better understand the potential of the GBA.
- Participants also independently reached out to experts in the field to gain greater insights into the key focus areas of **Connectivity, Built Environment, Food and Wellbeing, Talent and Livelihood** and **Environment and Resources.**
- Through intensive discussion, debate and planning sessions, the participants generated the content of this report.

Outcome

- With GIFT's support, participants developed an overarching vision for the GBA based on the principles of Ecological Civilisation. This was backed by a set of guiding principles, actionable targets and measurable indicators.
- Targets drove the identification of opportunities for innovation that would support the overarching vision.
- Participants presented highlights from the model and innovations at a public forum on June 14th, 2019 to a diverse group of stakeholders including business, government and civil society representatives.

Key Site Visits

HONG KONG
HKSTP

ZHUHAI
Hengqin New Area

DONGGUAN
Songshan Lake Intelligent Valley

SHENZHEN
International Low Carbon City

DONGGUAN
China Spallation Neutron Source

SHENZHEN
China National GeneBank

SHENZHEN
Tencent Head Office

SHENZHEN
PKU-HKUST Shenzhen-HK Institution

GIFT GLOBAL INSTITUTE FOR TOMORROW.

What is the Greater Bay Area?

The Greater Bay Area

The Guangdong-Hong Kong-Macao Greater Bay Area, often shortened to the "Greater Bay Area" or "GBA", refers to the urban economies around the Pearl River Delta: nine cities in Guangdong Province and the Special Administrative Regions of Hong Kong and Macao.

The aim of the GBA is to integrate these eleven cities to create a strategic economic and industrial powerhouse, comparable to the Greater New York Area, San Francisco Bay Area, and the Greater Tokyo Area.

Timeline

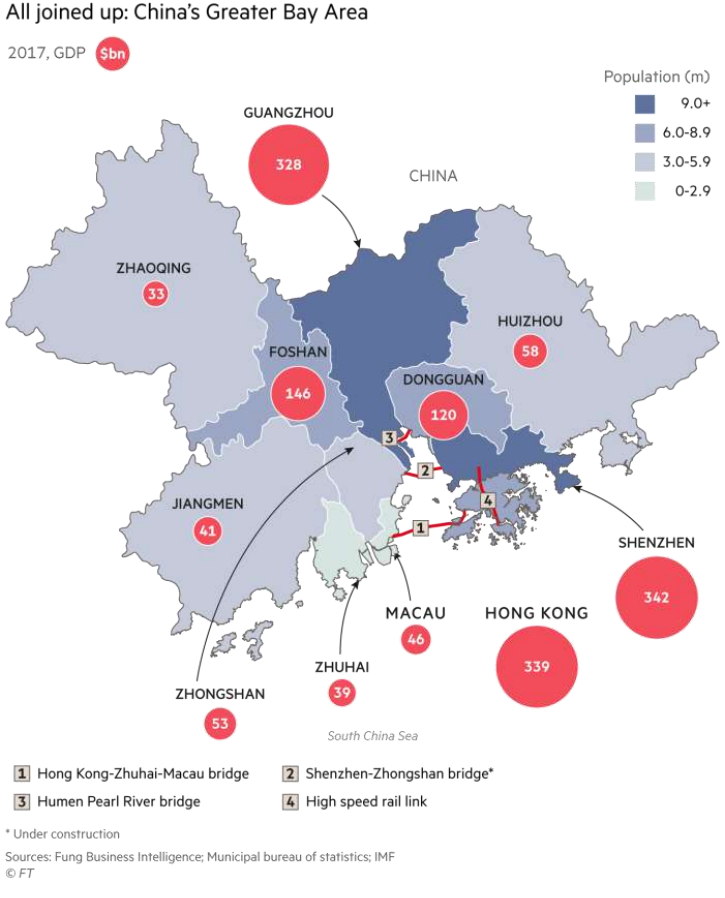
2016: The Greater Bay Area is first mentioned in the Chinese Central Government's 13th Five-Year Plan for Economic and Social Development.

2017: The "Framework Agreement on Deepening Guangdong – Hong Kong – Macao Cooperation in the Development of the Bay Area" further develops the concept.

2018: A high-level steering committee is established, announced by Hong Kong Chief Executive Carrie Lam.

2019: Beijing releases its official plan for the Greater Bay Area in the "Outline Development Plan for the Guangdong – Hong Kong – Macao Greater Bay Area".

The importance of the GBA



Covering 56,000 square kilometres (about three times the size of the San Francisco Bay Area), the GBA has a combined population of over 69 million people and a GDP of around US$1.5 trillion. The GBA is one of China's foremost economic engines, contributing around 12% of China's total GDP with only 5% of its population.

Each of the two special administrative regions and nine cities that make up the GBA possesses unique strengths and specialisations, including:

Hong Kong – A global financial centre with a respected legal system, world-class institutions and a business-friendly regulatory framework.

Macao – A global tourist destination and a potential link with the Portuguese-speaking world.

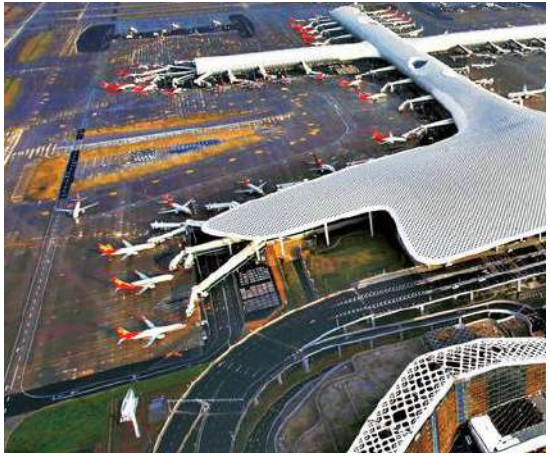
Shenzhen – A major Chinese financial and technological hub that is home to leading Chinese multinationals like ZTE, Huawei, Tencent, Vanke and Ping An.

Guangzhou – The provincial capital and China's third-most important city after Beijing and Shanghai.

Dongguan – A major manufacturing centre for electronics, communications and high-end technology, and a recipient of significant foreign direct investment.

Zhuhai – One of China's most popular tourist destinations and ranked as its most liveable city.

Connections with China and the globe



Transport

The eleven cities of the GBA are closely connected by transport infrastructure.

- Hong Kong, Macao, Shenzhen and Guangzhou all have international airports.
- China's high-speed rail system passes through Guangzhou, Shenzhen, Zhuhai, Macao and Hong Kong.
- The Hong Kong-Zhuhai-Macao Bridge – the world's longest sea crossing – provides a road connection to both sides of the Pearl River Delta.

Freight and Cargo

The GBA is a major entry and exit point for China, and thus handles a significant amount of cargo.

- Guangzhou, Hong Kong and Shenzhen rank among the top-ten container ports in terms of handling twenty-foot equivalent unit sea containers.
- Air freight traffic across the GBA is greater than San Francisco, New York and Tokyo combined.

Trade and Financial Connections

Even before the announcement of the GBA, Hong Kong and Macao were integrating with the rest of China.

- Hong Kong and Macao signed free trade agreements with Mainland China in 2003.
- Hong Kong and Macao signed a free-trade agreement in 2018.
- Hong Kong and Shenzhen established a cross-boundary investment channel in 2016, connecting their two stock markets.

The Outline Development Plan

The **Outline Development Plan for the Guangdong – Hong Kong – Macao Greater Bay Area** is a key national development strategy supporting China's continued reform, and a further step in developing "One Country, Two Systems". By leveraging their competitive advantages, the Plan aims to deepen cooperation between the Mainland and the Special Administrative Regions and develop the region into a world-class city cluster.

7 Core Areas of Development

1. Developing an international innovation and technology hub
2. Expediting infrastructural connectivity
3. Building a globally competitive modern industrial system
4. Taking forward ecological conservation
5. Developing a quality living circle for living, working and travelling
6. Strengthening cooperation and jointly participating in the Belt and Road Initiative
7. Jointly developing Guangdong-Hong Kong-Macao cooperation platforms

6 Basic Principles

1. To be driven by innovation and led by reform
2. To coordinate development and plan holistically
3. To pursue green development and ecological conservation
4. To open up and cooperate and achieve a win-win outcome
5. To share the benefits of development and improve people's livelihoods
6. To adhere to "One Country, Two Systems" and act in accordance with the law

5 Strategic Positions

1. A vibrant world-class city cluster
2. A globally influential international innovation and technology hub
3. An important support pillar for the Belt and Road Initiative
4. A showcase for in-depth cooperation between the Mainland and Hong Kong and Macao
5. A quality living circle for living, working and travelling

From the Outline Development Plan

Drivers of Change in the GBA

Larger trends will affect how the societies in the GBA interact and operate. In turn, the impacts of such trends will present opportunities for issues to be addressed by new innovations (in technologies and policies) and business models.

Drivers of change are defined as social, economic and political changes, some of which may be outside of the control of any government or society in the GBA.

These key drivers of change include the following three, but are not limited to them:

Driver of Change	Expected effects
Ageing populations	A combination of growing incomes and China's One Child Policy have drastically reduced fertility rates across the region. Thus, the population of younger working-age people will decrease, and the elderly population – who will require support from public services – will increase. This is more pronounced in cities such as Hong Kong and Macao. Addressing this issue will require measures to increase labour productivity and an expansion of social care for the elderly population.
Climate change	Global warming will present numerous challenges to the GBA. For example, increased temperatures will mean longer periods of extreme heat, which will present health risks and lower quality of life. Rising sea levels and larger and more frequent storms mean cities will need to protect existing property and modify urban planning to adapt.
Growth of China's middle-class	The increase in China's purchasing power presents numerous economic opportunities for entities based in the GBA. Increased incomes means greater demand for higher-value products, either manufactured in the GBA or traded through its ports. In addition, more Chinese will be able to afford to travel further and will increase spending on hospitality, tourism, transport, and retail. Increased consumption will put pressure on natural resources.

Challenges to the GBA

In addition to these broader social and economic trends, there are also challenges inherent to the integration of the 11 cities of the GBA. The GBA covers three distinct jurisdictions (Hong Kong, Macao, and Mainland China) with different levels of socio-economic development.

① Integrating jurisdictions

The GBA covers three different jurisdictions: Guangdong Province, the Special Administrative Region of Hong Kong and the Special Administrative Region of Macao. Even within Guangdong Province, different cities (i.e. Shenzhen and Zhuhai) have special regulations allowing them to interact with Hong Kong, Macao and the global economy.

This means that different cities in the GBA are governed by different legal systems, taxation regimes, customs systems, and economic regulations. There are even different official languages: Guangdong Province with Mandarin Chinese, Hong Kong with English and "Chinese" (*de facto* Cantonese), and Macao with Portuguese.

② Income inequality between cities

Incomes of the central and coastal cities of Guangzhou, Shenzhen, Hong Kong, and Macao, are much higher than the other cities in the GBA such as Zhaoqing, Jiangmen, and Huizhou.

Similarly, the gap between urban and rural incomes is widening in China and is even more pronounced in Guangdong Province.

A balanced growth and distribution of resources between the cities, and strengthening the roles of the lower tier cities, would allow the GBA to develop equitably and alleviate resource pressures on higher tier cities.

③ Environmental damage and degradation

The GBA used to be known as the "Factory of the World": the manufacturing centre for much of the world's goods and services. However, this manufacturing sector contributed to both air, water and soil pollution throughout the region. While things have improved as regional incomes increased, pollution remains an issue.

In addition, the Pearl River Delta's growing income means greater consumption, which means a greater use of resources and a greater production of waste. This will increase the need for sustainable resource and waste management.

Challenges can be addressed through a unifying vision for development that all cities adopt regardless of their different regulatory systems.

The Need for an Eco-Civilisation Innovation Model

A unifying vision for innovation based on the concept of “Ecological Civilisation” is a relevant and timely aspiration for all 11 cities in the GBA.

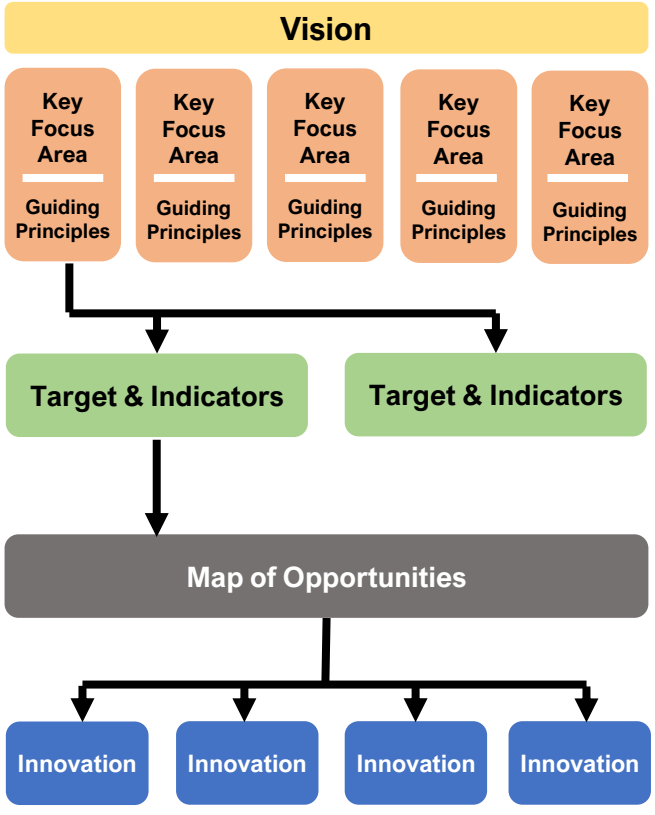
Ecological Civilisation is a new development approach that moves away from a focus on growth via outdated industrial modes of production and wastage, and reliant on over-consumption. Instead, it supports societies that use the latest technological innovations, economic instruments and planning frameworks to produce goods and services to provide a high quality of life while fully appreciative of the high price of externalities and resource constraints.

Ecological Civilisation was identified as a national priority by the Chinese government in 2012, and the GBA in particular has been designated as a pilot zone for the concept. However, despite being used in Chinese policy discussions over the past several years, “Ecological Civilisation” rarely features in discussions on innovation or drives business decisions.

Establishing a common definition for Ecological Civilisation, and connecting it to meaningful innovations and technological applications, will support the realisation of the vast potential of the GBA, and position the region as a role model for China and the rest of the world.

The Eco-Civilisation Innovation Model

The Development of the Model



The objective for the **2019 Greater Bay Area Young Leaders Programme** was to develop a set of innovations that would drive quality of life across the GBA and the realisation of an Ecological Civilisation. These innovations would be motivated from a unifying vision, supported by a set of achievable targets and measurable indicators.

This was achieved through the following process:

1. Developing a single **vision** that designates a clear goal for the GBA. This vision is elaborated through **guiding principles** in five different **focus areas**: Connectivity, Food and Wellbeing, Built Environment, Environment and Resources, and Talent and Livelihood.

2. Developing a set of **targets** that convert these guiding principles into actionable objectives. Each target is backed by a series of measurable **indicators.** These targets and indicators would be used to inspire new innovations for the GBA.

3. For any given target, a **map of opportunities** illustrating the relationships between key stakeholders is developed. This map is used to show particular areas where innovation can play a major role in achieving the vision for the GBA.

4. The painpoints highlighted in the map of opportunities are used to inspire potential social, policy or technological **innovations** which would in turn support achievement of the targets.

Innovation driven by vision

Many attempts to drive innovation focus on *business* relationships and painpoints between stakeholders that would allow goods and services to be provided at a lower cost or with greater efficiency.

Driven primarily by commercial interests, such innovation often ignores wider social or environmental implications. Many tech startups rely on business models that generate significant external costs borne by society and the environment.

So long as innovation is focused on creating “unicorns” and not based on a guiding vision to create social value, societies will continue to bear these costs.

The model presented in this report approaches the question of innovation differently. It starts with a strong and unifying vision as a societal aspiration, and then identifies opportunities for innovation and technology to realise the vision.

The Environmental Effect of E-Commerce

E-commerce is an example of a digital business model premised on scale and market share irrespective of social and environmental costs. The rise of two-day shipping, door-to-door delivery and free returns have helped online retailers build massive market share, but has reshaped logistics to a more inefficient (and thus more polluting and carbon-emitting) point-to-point model of distribution.

Redefining “Innovation” and “Quality of Life”

Relevant model for Asia and beyond

This model offers a practical framework for any government, company or organisation to use in devising strategies for innovation.

Instead of starting from commercial “painpoints”, it begins instead with a vision based on the end goals of an ideal quality of life and subsequently identifies social and environmental issues as a stimulus for innovation.

A number of countries in Asia have strong technology sectors, and have developed successful technology startups (e.g. Grab, Flipkart and DJI), proving they can provide the necessary environment to cultivate startups that succeed against global competitors. However, many continue to face significant social and environmental issues such as pollution, traffic congestion, and food safety – that largely go unaddressed by “innovations”.

Asia also has some of the world’s most developed cities, whose growing middle-classes have some of the highest levels of consumption but ultimately unsustainable lifestyles. They must adjust their lifestyles and adapt to a more resource-constrained environment, aided by much needed innovations.

The “Ecological Civilisation” innovation model suggested herein can apply to many of these societies, in Asia and beyond, and inspire entrepreneurs and innovators to respond to the pressing challenges facing society today.

Clockwise from top left: Seoul, Singapore, Tokyo, and Los Angeles.

These cities have strong manufacturing, services and technology sectors with a high but ultimately unsustainable quality of life where the Ecological Civilisation model can be applied.

GBA Eco-Civilisation: Innovations with a purpose

The GBA Vision

The Vision

The GBA will be a **pioneer** for a **people-centric eco-civilisation** megapolis, achieved by adopting **innovations** in technology and the social sciences through multi-sectoral **cooperation** across the region.

Pioneer

By creating a contemporary vision for development, the region will be a role model for both China and the rest of the world.

People-Centric

Development will be focused on the needs and quality of life of people.

Eco-Civilisation

Sustainable development will be at the heart of the GBA's approach to growth and progress.

Innovation

The future will be shaped by the ability to promote and nurture the creative use of technology to achieve the GBA's eco-civilisation goals.

Cooperation

The GBA cities must take common ownership of the vision and work together to achieve their shared ambitions.

A vision to position the GBA as a role model for sustainable prosperity.

Focus Areas, Guiding Principles, Targets and Indicators

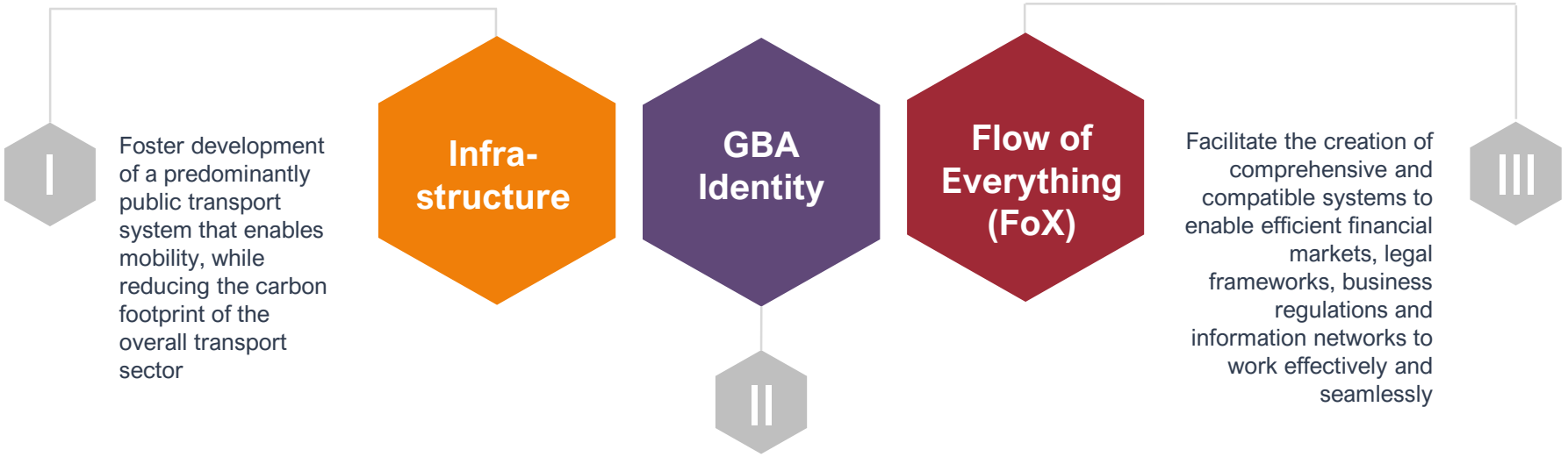
Key Focus Areas

Connectivity	Talent and Livelihood	Built Environment	Environment and Resources	Food and Wellbeing
The connections across the 11 cities of the GBA, between the GBA and the rest of China, and between the GBA and the rest of the world. Includes transport, communications and financial infrastructure in order to provide the easy flow of people, goods, culture, ideas, services and capital.	The employment opportunities and working environments across the GBA, as well as issues related to human capital. Includes vocational training, education, ease of starting a business, and the balance between rural and urban opportunities.	The urban environments of the 11 cities of the GBA and the management systems and utilities that support it. Includes construction, housing affordability, green spaces, urban planning, traffic management and waste management.	The ecological footprint of the GBA and its overall use of resources. Includes pollution controls, sustainable resource management and renewable energy provision.	The food value chain for the GBA, as well as the overall standard of living of GBA residents. Includes food self-sufficiency and safety, quality and affordability of health care, and cultural development.
				
				

Focus Area: Connectivity

Guiding Principles

Connectivity between the cities of the GBA should facilitate the flow of people, capital and goods, promote social and economic development, enhance regional cooperation, and cultivate a common identity among GBA residents built on inclusivity, mutual respect and collective welfare.



Targets & Indicators (1/3)

Infra-structure

The cities of the GBA need to be connected by efficient, affordable and reliable transport infrastructure in order to facilitate the flow of goods and people. However, this infrastructure must be built and maintained in a manner that reduces the region's ecological footprint and minimises its impact on the environment and natural resources.

Target: The GBA will, by 2030, have integrated high-speed rail systems connecting all cities with travel times not exceeding 1 hour, and light rail networks connecting urban and rural areas with a population of over 100,000.

Indicator 1: Annual increase in passenger volumes using rail transport of 10%.

Indicator 2: 70% of all GBA inter-city personal travel to be by rail transportation by 2030.

Target: Reduce emission of carbon dioxide (CO_2) and nitrogen oxides (NO_x) from road transport in 10 years.

Indicator 1: Reduce carbon emission from road vehicles by at least 3% annually from 2020.

Indicator 2: Reduce nitrogen oxides emission from road vehicles by at least 3% annually from 2020.

Targets & Indicators (2/3)

GBA Identity

A GBA identity across the eleven cities can foster greater integration and consensus amongst its different populations. By giving residents common access to regional public services, resources can be better shared among the jurisdictions and facilities can be enjoyed by all who live and work in the GBA. Joint sporting and cultural ventures will also contribute to a greater sense of pride in the GBA.

Target: Issue a GBA identity card to all residents for easy access to all GBA cities and public services by 2030.
Indicator 1: 95% of GBA residents to possess the card by 2030.
Indicator 2: GBA card to cover key types of public services by 2025, including but not limited to: medical services, recreational facilities, transport.

Target: Form GBA sports leagues in 3 years.
Indicator 1: At least 10 different GBA sports leagues to be formed by 2022.
Indicator 2: At least 10 different junior sports leagues comprising of GBA youth to be formed by 2022.

Target: GBA to attract investment to become a world-class movie-making hub by 2030.
Indicator 1: 5% growth in number of movies produced in the GBA that are national or international box office hits by 2025.
Indicator 2: Output of film industry accounting for 3% of GBA's GDP by 2030.

Targets & Indicators (3/3)

Flow of Everything

Compatible systems and minimal administrative barriers can enable the free-flow of people, ideas, capital and goods and thus drive socio-economic development within the GBA.

Target: Free trade zones to be extended to all GBA cities by 2030.

Indicator 1: Create at least one free trade economic zone for each GBA city by 2030.

Indicator 2: Increase the number of corporate headquarters (including China and Asia-Pacific headquarters) by 30% by 2030.

Indicator 3: Increase the number of SMEs by 6% annually.

Target: The GBA to establish a mechanism for the secure exchange of personal information to allow citizens to access services such as healthcare, finance, education, housing, welfare, etc.

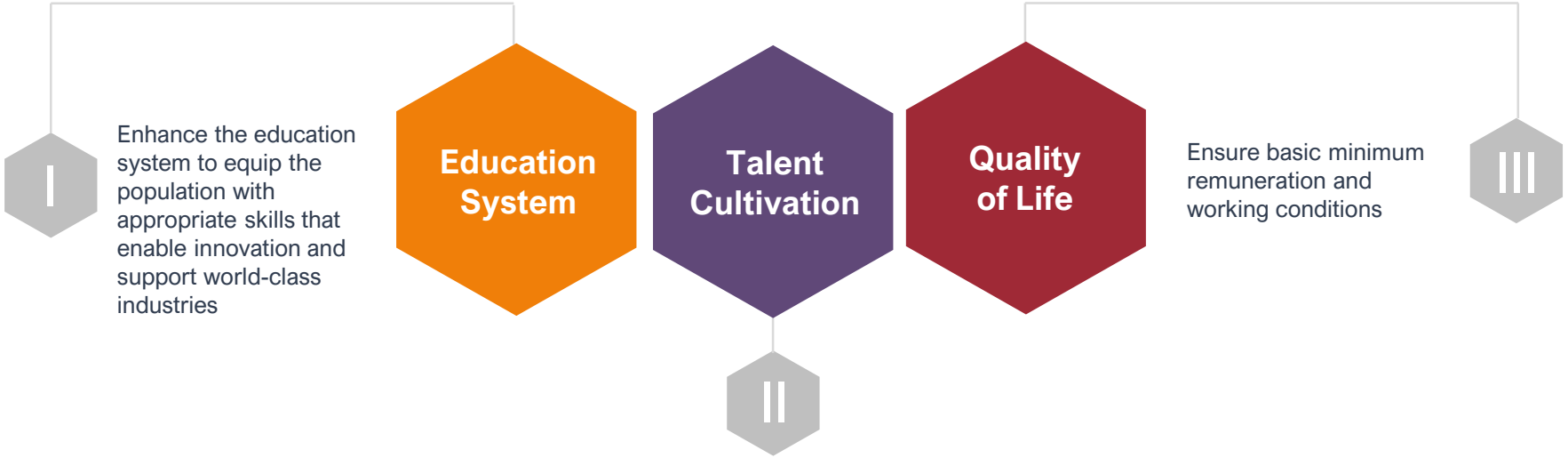
Indicator 1: 90% of financial institutions to be able to access the financial information of GBA residents from a secure central database to provide banking services such as loans by 2025.

Indicator 2: 90% of healthcare providers in the GBA to be able to access patient medical history from a secure central database to provide accurate medical diagnosis and treatment by 2030.

Focus Area: Talent & Livelihoods

Guiding Principles

The GBA will cultivate talent by equipping its population with knowledge and skillsets that respond to current needs, in an economy that can attract and retain labour with meaningful work.



Targets & Indicators (1/3)

Education System

As the GBA evolves into a multi-faceted and diverse economy, its workforce should be given opportunities to undergo vocational and professional training to strengthen the overall quality of regional services and industries.

Target: All active members of the workforce to have access to vocational and professional education and training leading to certification and professional recognition by 2030.

Indicator 1: At least 50% of working staff to have undergone at least one training course per year by 2030.

Indicator 2: At least 15% of all adults to be undertaking vocational and professional education and training (including continuous vocational training and lifelong learning) by 2030.

Indicator 3: At least 50% of secondary school students to have completed vocational and professional training by 2030.

Indicator 4: 90% of the workforce to spend at least 20 hours on training courses per year by 2030.

Targets & Indicators (2/3)

Talent Cultivation

Schools across the GBA follow different education systems and curricula, which can make it difficult for qualifications to be accepted across jurisdictions. In addition, schools throughout the GBA vary in quality. Ensuring that all schools in the GBA teach their different curricula to the same high standard, and students have access to STEM and bi-lingual education, will help young talent succeed in the GBA and beyond.

Target: All qualifications achieved at mainstream schools in the GBA to be recognised by all GBA cities by 2030.

Indicator 1: 95% of all school qualifications to be recognised by all GBA cities by 2030.

Indicator 2: 95% of mainstream schools and educational institutions to comply with a common educational organisation management standard such as ISO21001 or its equivalent by 2025.

Target: All students in mainstream schools to have access to STEM education by 2030.

Indicator 1: 80% of all schools in the GBA to have integrated STEM education into their core curriculum by 2025.

Indicator 2: Girls to represent 40% or more of total number of students who enter into STEM-related higher/vocational education upon graduating from high school by 2025.

Target: All students in mainstream schools to have access to Chinese & English bi-lingual education by 2025.

Indicator 1: 80% of students in mainstream secondary schools receiving 120 hours of bi-lingual education per semester by 2025.

Indicator 2: 70% of students in the final year of mainstream secondary schools scoring 6.3 or above in IELTS (International English Language Testing System) examination or its equivalent by 2025.

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Targets & Indicators (3/3)

Quality of Life

Quality of life is crucial to attracting and retaining talent. Adequate wages that support a good standard of living and strong protections for health and safety are required for a talent-friendly environment.

Target: All citizens in the GBA will enjoy a good standard of living, with a living wage, affordable cost of living, and adequate social and health protections, by 2030.

Indicator 1: All GBA cities to score 75 or above in "Living Quality Index" (中国城市生活质量指数) by the Institute of Economic Chinese Academy of Social Sciences (中国社会科学院经济所) by 2030.

Indicator 2: Engel's coefficient (proportion of income spent on food) of all GBA cities to be at or below 30% by 2030.

Indicator 3: Gini coefficient of all GBA cities to be at or below 0.3 by 2030.

Target: Health and safety standards at workplaces to reach international standards by 2030.

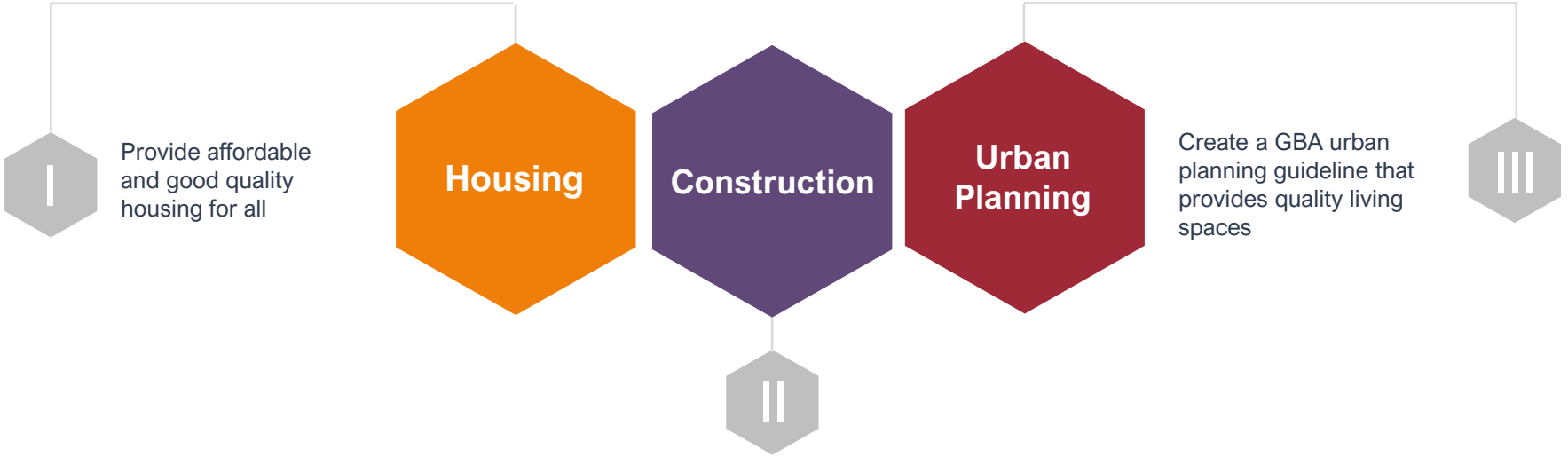
Indicator 1: 95% of employers to contribute 10% or more of employees' salary to urban employee basic medical insurance by 2030.

Indicator 2: 95% of workplaces to comply with ISO45001 (Occupational Health & Safety) or its equivalent by 2030.

Focus Area: Built Environment

Guiding Principles

Cities in the GBA should be planned and operate based on the principles of a “circular economy” that moves away from the tradition of “take-make-waste”. With better use of existing assets, resources and technologies, the GBA can create high-quality spaces where people desire to live, work and play, thus fostering continued prosperity, reducing environmental impact and improving quality of life.



Targets & Indicators (1/3)

Housing

A decent and dignified living space should be a guaranteed human right. The provision of adequate public housing is essential to protect this right for residents and those in need.

Target: Maintain public housing supply at 70% of total housing supply for each city by 2030.
Indicator: Starting from 2024, the annually percentage growth of public housing units to meet or exceed the annual domestic household growth for that city.

Target: All residents in the GBA to have at least 30 m^2 of housing space per individual by 2030.
Indicator: Starting from 2024, average housing space per individual to increase year on year.

Targets & Indicators (2/3)

Construction

The expansion and renewal of cities in the GBA will inevitably involve the demolition of old buildings and the construction of new buildings. Traditional demolition and construction methods generate large amounts of waste that is inadequately recycled or repurposed. Green building standards that optimise the use of materials and minimise waste sent to landfill should be implemented across the GBA.

Target: To recycle 80% of all construction & demolition waste by 2030.

Indicator 1: Starting from 2022, reduce the volume of construction waste in landfills by 10% each year.

Indicator 2: 80% of inert construction waste to be reused locally in other construction sites or made into recycled construction materials by 2025.

Targets & Indicators (3/3)

Urban Planning

Urban planning that promotes a greener environment and improves access to public services should be a key element in GBA city planning. Vibrant communities should protect and enhance the safety, health, comfort and convenience of residents.

Target: To create a GBA building standard based on best practices from leading countries (e.g. Germany - DGNB, UK - LEED, Hong Kong -BEAM) to which all new construction will comply.

Indicator 1: 90% of all new buildings from 2023 to comply with the new GBA building standard.

Indicator 2: All new residential buildings to have 0.5 sqm of green space per person by 2025.

Target: To ensure that all communities are close to and have convenient access to important public services.

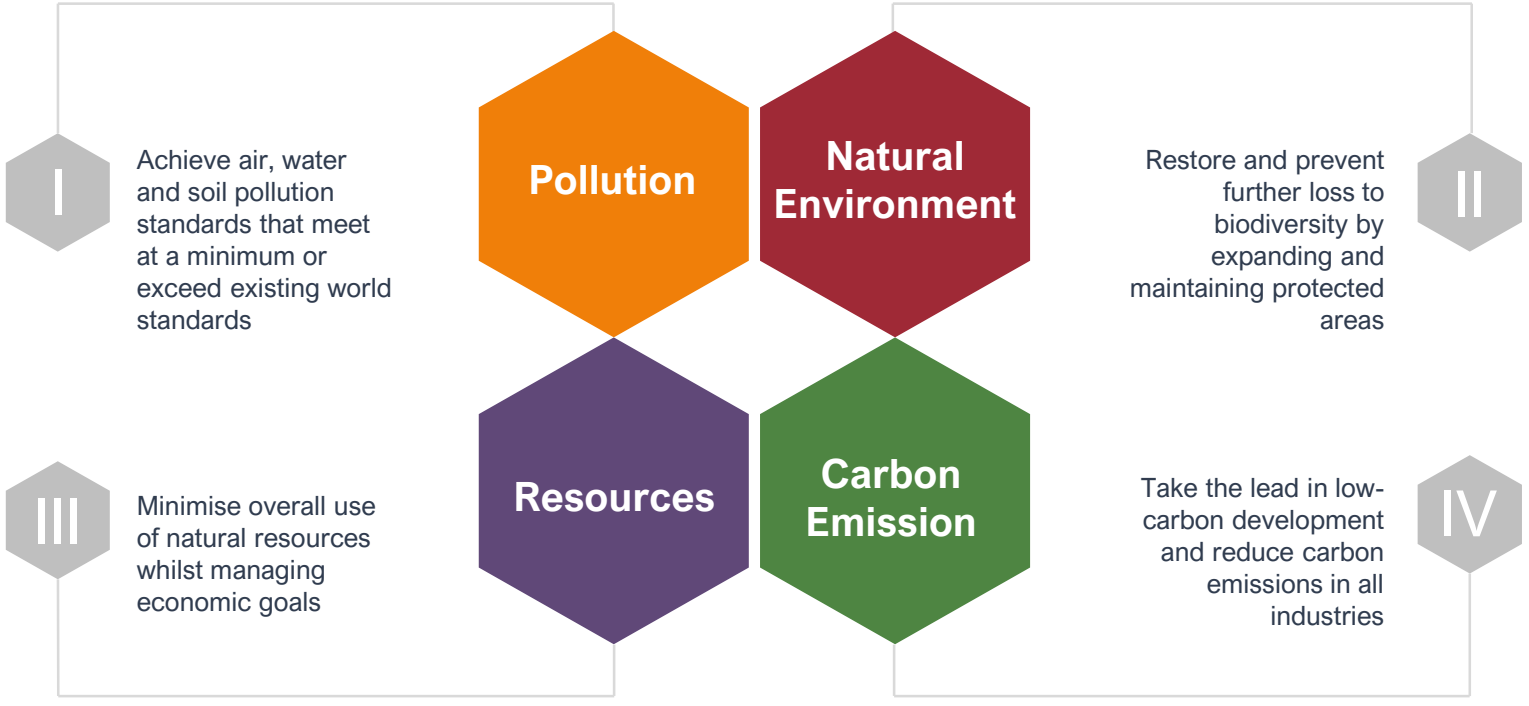
Indicator 1: By 2025, 50% of the population in each city to be within:

- 500 meters of a primary school
- 1,000 meters of a general hospital
- 500 meters of a park and/or recreation facility

Focus Area: Environment and Resources

Guiding Principles

The GBA's ecological footprint should be controlled and even reduced through policy and technological innovations that would limit its impact on natural resources, promote a circular economy and improve environmental quality for all residents.



Targets & Indicators (1/4)

Pollution

Air, water and soil pollution have become severe environmental and public health issues in the GBA due to rapid industrialisation. Pollution control is thus essential for the wellbeing and quality of life of all citizens in the GBA.

Target: To meet World Health Organisation standards on Ambient Air Quality and Indoor Air Quality.

Indicator 1: Fine suspended particulates ($PM_{2.5}$) concentration level to not exceed 30 ug/m^3 for more than 30 days per year by 2030.

Indicator 2: Zero concentration of radon in all indoor areas by 2025.

Target: All surface water at drinking water supply sources and at ecologically-significant bodies of water to achieve Grade II and Grade III in the Environmental Quality Standards for Surface Water of the PRC respectively by 2030.

Indicator 1: From 2023, annual increase in the number of drinking water extraction points achieving Grade II or above to meet the target.

Indicator 2: From 2023, annual increase in the number of individual surface water systems of ecological significance achieving Grade III or above to meet the target.

Target: Reduce arable land contamination by 50% by 2030.

Indicator: Annual increase in the area of arable land in the GBA that meets or exceeds Level II in the Soil Environmental Quality Standard of the PRC from 2023.

Targets & Indicators (2/4)

Natural Environment

The rapid development of land for economic growth can damage the natural environment and reduce nature reserves. Balanced economic growth that takes into account the preservation of natural environment and conservation of biodiversity is vital to the development of an ecological civilisation in the GBA.

Target: To increase the total amount of land designated as nature reserve.
Indicator: Nature reserves to cover at a minimum 20% of land area in the GBA by 2030.

Target: To increase the total population of currently threatened species in the GBA.
Indicator: Total populations of endangered species (as determined by the IUCN Red List) in the GBA to increase by 10% by 2030, relative to 2019 populations.

Targets & Indicators (3/4)

Resources

The level and mismanagement of waste are serious issues affecting the GBA and the world today. The GBA should advocate and practise efficient resource use, minimise wastage, increase recycling and promote a circular economy.

Target: To reduce energy consumption per unit of GDP by 50% by 2030 relative to 2015 levels.

Indicator 1: From 2023, 6% annual reduction of energy consumption per unit of GDP.

Indicator 2: From 2023, 8% annual increase in number of buildings meeting the GBA's energy standards.

Target: Reduce municipal and industrial solid waste by 50% and 30% respectively by 2030 relative to 2018 levels.

Indicator 1: From 2020, 7% annual decline in volume of municipal solid waste disposed at landfill.

Indicator 2: From 2020, 4% annual decline in volume of industrial solid waste disposed at landfill.

Target: Eliminate single-use plastic by 2025.

Indicator 1: 90% reduction of unrecycled single-use plastic bottles for water and soft drinks in supermarkets by 2025.

Indicator 2: Complete elimination of unrecycled single-use plastic for food delivery and take-away by 2025.

Target: Increase recycle rate of key municipal waste components by 30% by 2030.

Indicator 1: Provide waste separation and segregation systems at 90% of all households by 2025.

Indicator 2: Implement public awareness campaigns related to recycling and reuse at all schools, eateries, and workplaces by 2023.

Targets & Indicators (4/4)

Carbon Emission

Carbon emissions from human activities, mainly in the form of burning fossil fuels, has been the primary driver of climate change. The cities of the GBA should take the lead in low-carbon development as part of the Central Government's aim to slash carbon emission intensity by up to 65% by 2030 over 2005 levels.

Target: Carbon emissions per unit of GDP to be reduced by 50% by 2030 relative to 2015 levels.

Indicator 1: Annual increase in the cumulative installed capacity of renewable energy from 2023.

Indicator 2: Establish a carbon tax regime across the industrial sector by 2025.

Focus Area: Food and Wellbeing

Guiding Principles

The GBA should focus on creating a “quality living circle”, to provide for a safe, secure and fulfilling standard of living across the eleven cities of the GBA. This means not just the provision of safe and secure basic needs (such as nutritious food and clean water), but also a vibrant space for culture and recreation.

Targets & Indicators (1/4)

Food & Water Quality

Numerous food safety incidents and increasing food consumption (with associated wastage) is affecting the GBA and the health of its residents. Within the GBA, only Hong Kong and Macao are on China's list of top 10 cities for food safety. With the exception of Hong Kong and Macao, potable water standards in the GBA cities have not yet reached international standards, and a large proportion of people are not connected to basic sanitation systems.*

Target: All restaurants, supermarkets and wet markets in the GBA to provide food origination information and ensure that all food produced in the region meets international safety standards by 2030.

Indicator 1: 95% of all restaurants, supermarkets and wet markets to provide sourcing & nutrient information, and wet markets to provide food sourcing information, by 2030.

Indicator 2: Number of food & water borne illness outbreaks to reduce by 80% by 2025.

Indicator 3: 95% of all food produced in the GBA to meet Maximum Residue Limits set by the FAO by 2030.

Target: Reduce food wastage from supermarkets, restaurants and households by 80% by 2030.

Indicator 1: Volume of food wastage in GBA landfills decreased by 50% by 2025, and 80% by 2030.

Target: All households to have access to potable water & sanitation systems by 2030.

Indicator 1: 95% of household drinking water quality in the GBA to have fulfilled WHO guidelines by 2025.

Indicator 2: 95% of households in the GBA to be connected to public sewerage/sanitation systems by 2030.

*Data from the Hong Kong Gui Qiang Fang Institute of Global Competitiveness (香港桂强芳全球竞争力研究会), Hong Kong Chinese and Foreign Institute of City Competitiveness (中外城市竞争力研究院) and China Business Industry Research Institute (中商产业研究院整理).

Targets & Indicators (2/4)

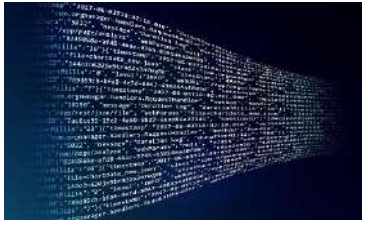
Healthcare

The lack of timely and affordable basic medical diagnosis and treatment is a challenge facing many countries around the world. The GBA should aspire to be a leader in providing proper medical care and services to all in the region.

Target: All GBA residents to receive medical diagnosis & treatment within 3 months of first request, by 2030.
Indicator: Percentage of people waiting for more than 3 months for treatment to fall by 50% by 2025, and 95% by 2030.

Target: All GBA residents to have access to affordable medical services by 2030.
Indicator: Average medical service and insurance expenses not exceeding 5% of an individual's annual income by 2030.

Target: Create a common GBA medical record database shared by all GBA medical institutions for all citizens by 2030.
Indicator 1: 95% of GBA residents to have profiles created on a common medical record database by 2030.
Indicator 2: 100% of medical institutions in the GBA signed up to the database system by 2030.



Targets & Indicators (3/4)

Arts & Culture

A unique and vibrant culture is the soul and symbol of a city. Culture can serve the purposes of unifying the population and also promoting the image of an area. As a fast-growing multi-cultural and multi-racial community, the GBA has the potential to create its own culture through harmonisation and evolution.

Target: Creative & cultural industries to contribute 6% of GDP in the GBA by 2030.

Indicator 1: Annual increase in the number of activities, exhibitions and conventions promoting arts and culture held in the GBA from 2020.

Indicator 2: 3% of the fiscal budget of all 11 cities in the GBA to be allocated to the creative & cultural industries by 2030.

Indicator 3: GBA cities to jointly host at least 5 annual international events promoting GBA artists and creative industries from 2023.

Targets & Indicators (4/4)

Recreation

Greater involvement in recreational activities can increase happiness and improve health. Abundant recreational facilities and programmes are essential if the GBA is to become an international role model.

Target: Promote physical activities and provide adequate recreational and sports facilities for all GBA residents.

Indicator 1: Annual increase in the number of public sports and recreational facilities that are accessible by seniors, people with disabilities, and children from 2022.

Indicator 2: Annual increase in the utilisation rate of leisure and recreational facilities by GBA residents in respective age groups from 2022.

Opportunities for Innovation

Selected Targets & Innovations

Based on the guiding principles and targets developed for each key focus area, one target has been selected to be further developed. A "**Map of Opportunities**" for that target was drawn to map out the ecosystem that highlights the key stakeholders, as well as the painpoints and opportunities inherent in that ecosystem.

From this Map, opportunities have been identified where innovation can be applied to address the specific challenge and achieve the chosen target and associated guiding principles.

Innovations identified include:

Connectivity

GBA Identity Card

Talent & Livelihoods

Digital Talent Platform

Built Environment

Waste Footprint Monitoring for Construction

Environment & Resources

Carbon Footprint Measurement Scheme

Food & Wellbeing

Food Supply Chain Traceability Platform

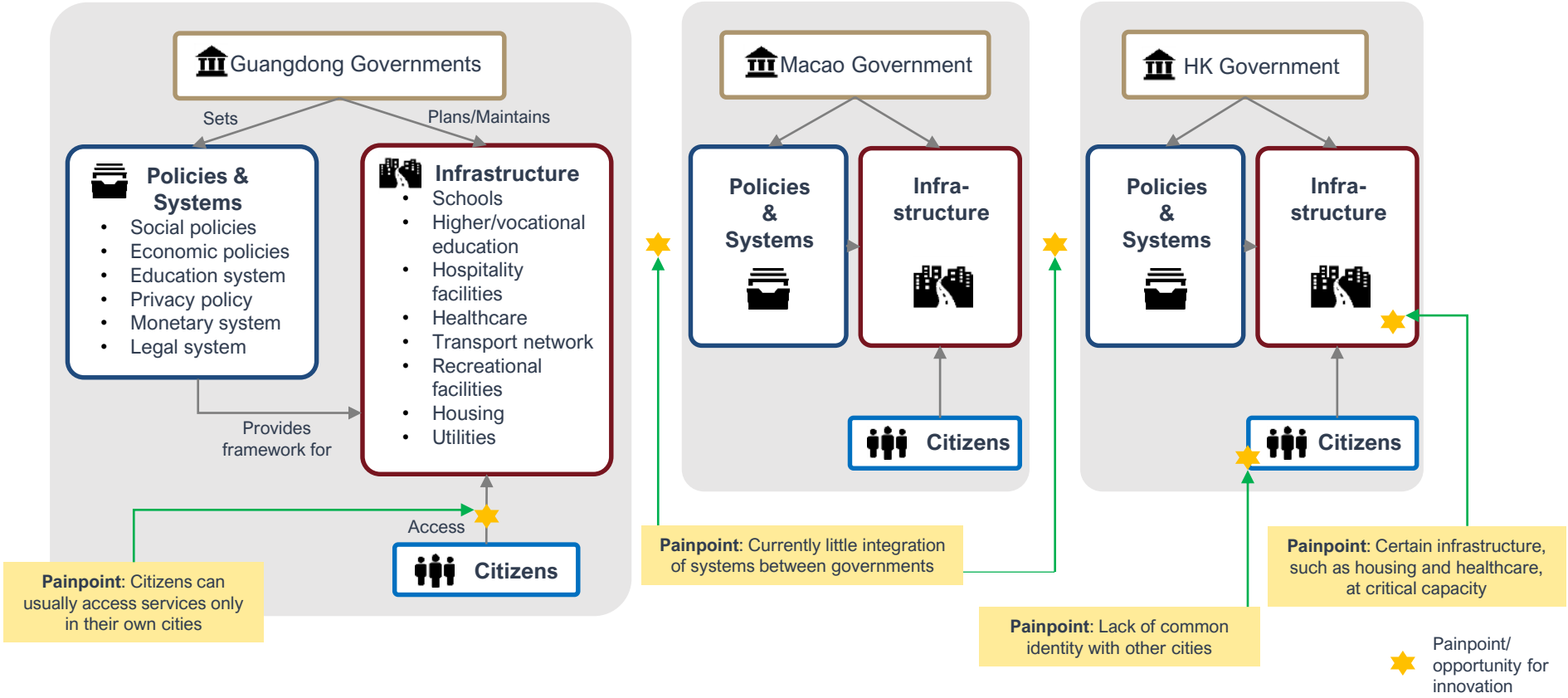
Focus Area: Connectivity

Connectivity Target

Target: Issue a GBA identity card to all residents for easy access to all GBA cities and public services by 2030.

A GBA identity across the eleven cities can foster greater integration and consensus amongst its different populations. By giving residents common access to regional public services, resources can be better shared among the jurisdictions and facilities can be enjoyed by all who live and work in the GBA.

Map of Opportunities



Connectivity between the GBA cities is currently limited to infrastructure such as bridges, railroads and ports. The various governments in the GBA set and maintain their own policies, systems and infrastructure, but these could be further integrated to allow greater convenience and resource-sharing.

Innovation Idea

Technological Innovation

GBA Identity Card

A GBA identity card can provide access to public and private services across the region's cities, and thus help build a common identity amongst its residents. This can facilitate a common approach to socio-economic and sustainable development.

Data analysis can lead to better service upgrades, efficiency and provision. AI and facial recognition can also be integrated to allow for faster service provision. Strong privacy protections will be put in place to protect citizen data.

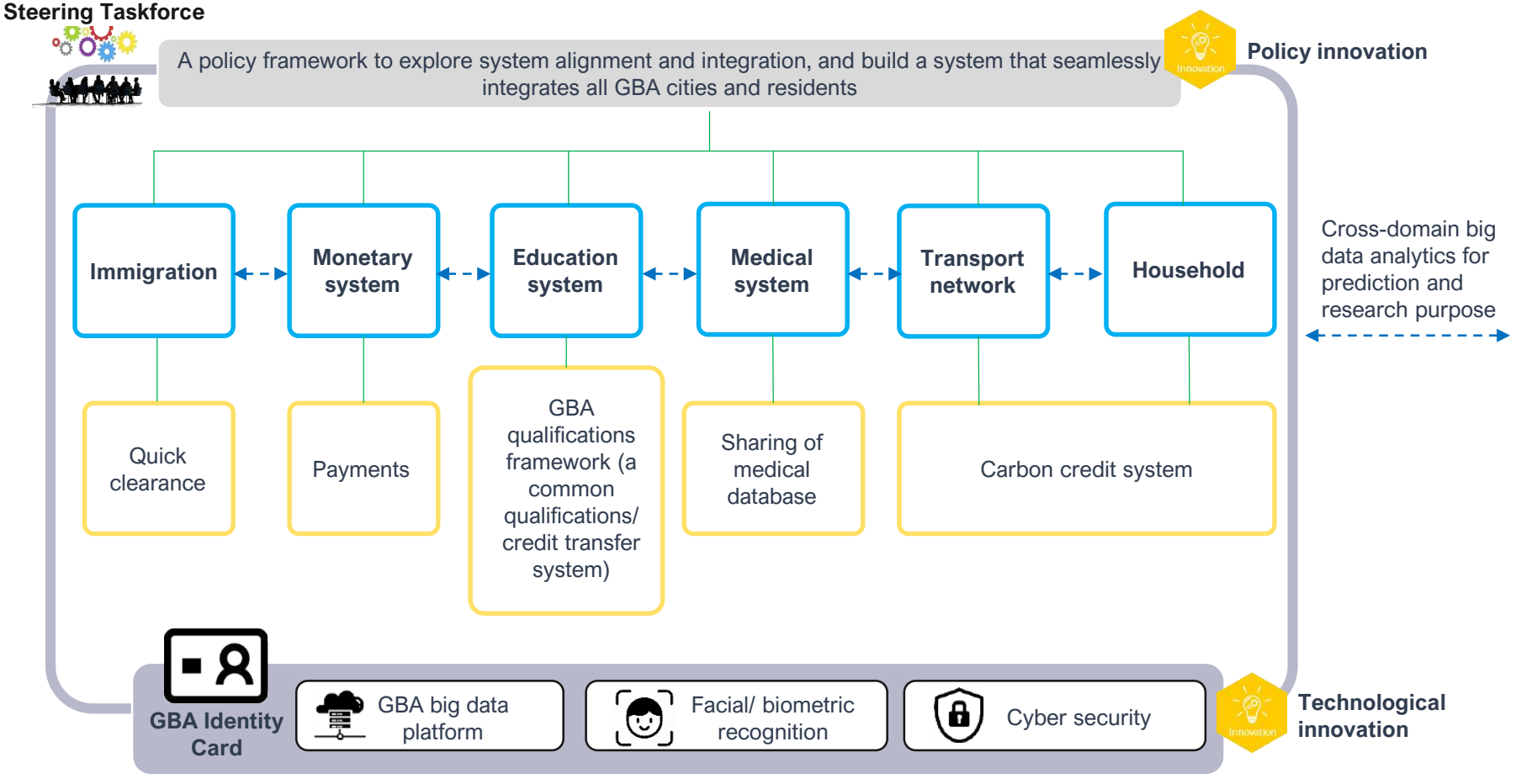
Policy Innovation

A **steering taskforce** of key government, business and civil society stakeholders from all cities in the GBA should be established to guide policy and systems integration. Integration should start with easier objectives, such as payment systems and travel, before moving on to more complex questions, such as education and medical data, that will require greater stakeholder engagement.

Addresses the following painpoints:

- **Painpoint**: Citizens can usually access services only in their own cities
- **Painpoint**: Currently little integration of systems between governments
- **Painpoint**: Lack of common identity with other cities
- **Painpoint**: Certain infrastructure, such as housing and healthcare, at critical capacity

GBA Identity Card



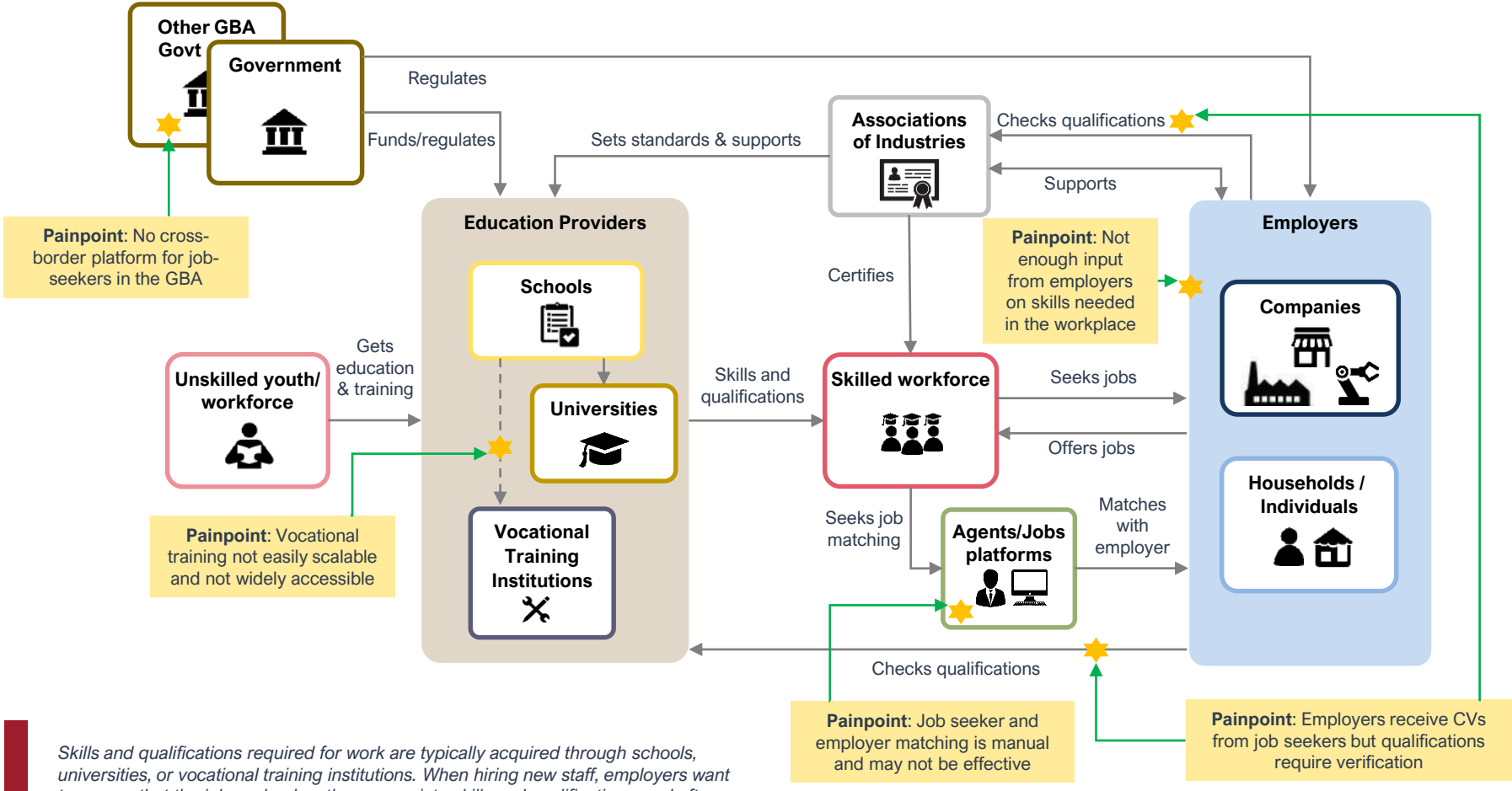
Focus Area: Talent & Livelihoods

Talent & Livelihoods Target

Target: All active members of the workforce to have access to vocational and professional education and training leading to certification and professional recognition by 2030.

As the GBA evolves into a multi-faceted and diverse economy, its workforce should be given opportunities to undergo vocational and professional training to strengthen the overall quality of regional services and industries.

Map of Opportunities



Skills and qualifications required for work are typically acquired through schools, universities, or vocational training institutions. When hiring new staff, employers want to ensure that the job-seeker has the appropriate skills and qualifications, and often depend on education providers to teach the skillsets required on the job.

Innovation Idea (1/2)

Digital Talent Platform

The labour market presents many informational asymmetries. Companies need to conduct background checks to verify qualifications. Job-seekers may not provide all the information an employer wants to know in their CVs. In addition, a lack of information and experience means that job-seekers may try several different careers in order to discover their interests.

A **digital CV and job-matching platform** can make it easier for employer and potential employee to discover this information, including verification of qualifications and insights into employer-employee compatibility. The platform could also provide mentor and apprentice matching and placements for internships.

The platform would provide validated and verified information, such as academic qualifications, industry certifications, work experience and skillsets. This will greatly reduce the time and resources employers will need to cross-check information. Finally, artificial intelligence and data analytics can help determine which positions would be most suitable to job-seekers.

Data from the platform, on the macro level, can also provide a broader understanding of current labour market conditions.

The platform can also partner with other platforms such as Zhaopin.com and LinkedIn.com, to match job-seekers with jobs, and also be incorporated with the GBA Identity Card described earlier.

Addresses the following painpoints:

- **Painpoint**: No cross-border platform for job-seekers in the GBA
- **Painpoint**: Job seeker and employer matching is manual and may not be effective
- **Painpoint**: Employers receive CVs from job seekers but qualifications require verification
- **Painpoint**: Not enough input from employers on skills needed in the workplace

Innovation Idea (2/2)

Digital vocational and professional education and training platform

A digital platform offering **vocational and professional training programmes** can help equip the workforce with skills suited to the GBA's evolving economy,

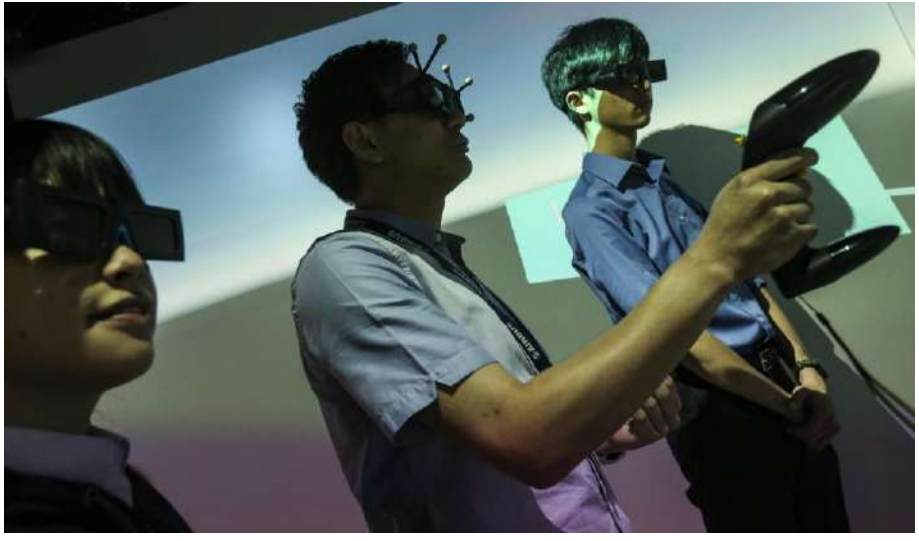
The platform can offer Massive Open Online Courses (MOOCs), with wide functionality including "hands-on" learning on industrial operations through virtual reality.

Data generated through the use of the platform will be used to offer personalised recommendations to users on vocational and professional education and training. It can be further linked to the GBA Identity Card for even more accurate insights.

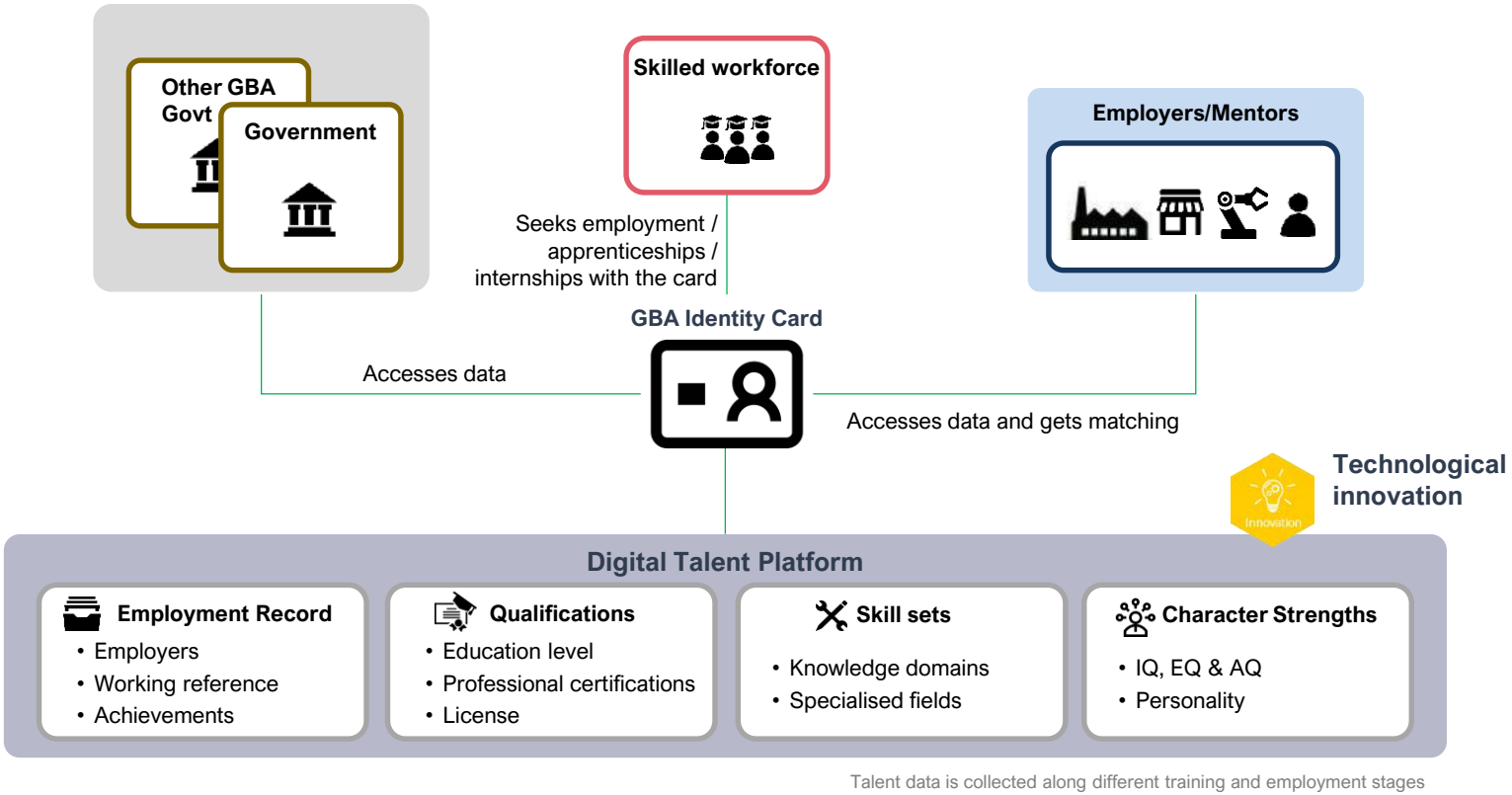
The tools will be open to residents in the GBA, implemented in phases by each city.

Addresses the following painpoint:

Painpoint: Vocational training not easily scalable and not widely accessible



Digital Talent Platform



Talent data is collected along different training and employment stages

GBA residents seeking jobs or apprenticeships will have all their qualifications and skills recorded on the GBA Identity Card, and potential employers and mentors will be able to access this information for more accurate matching.

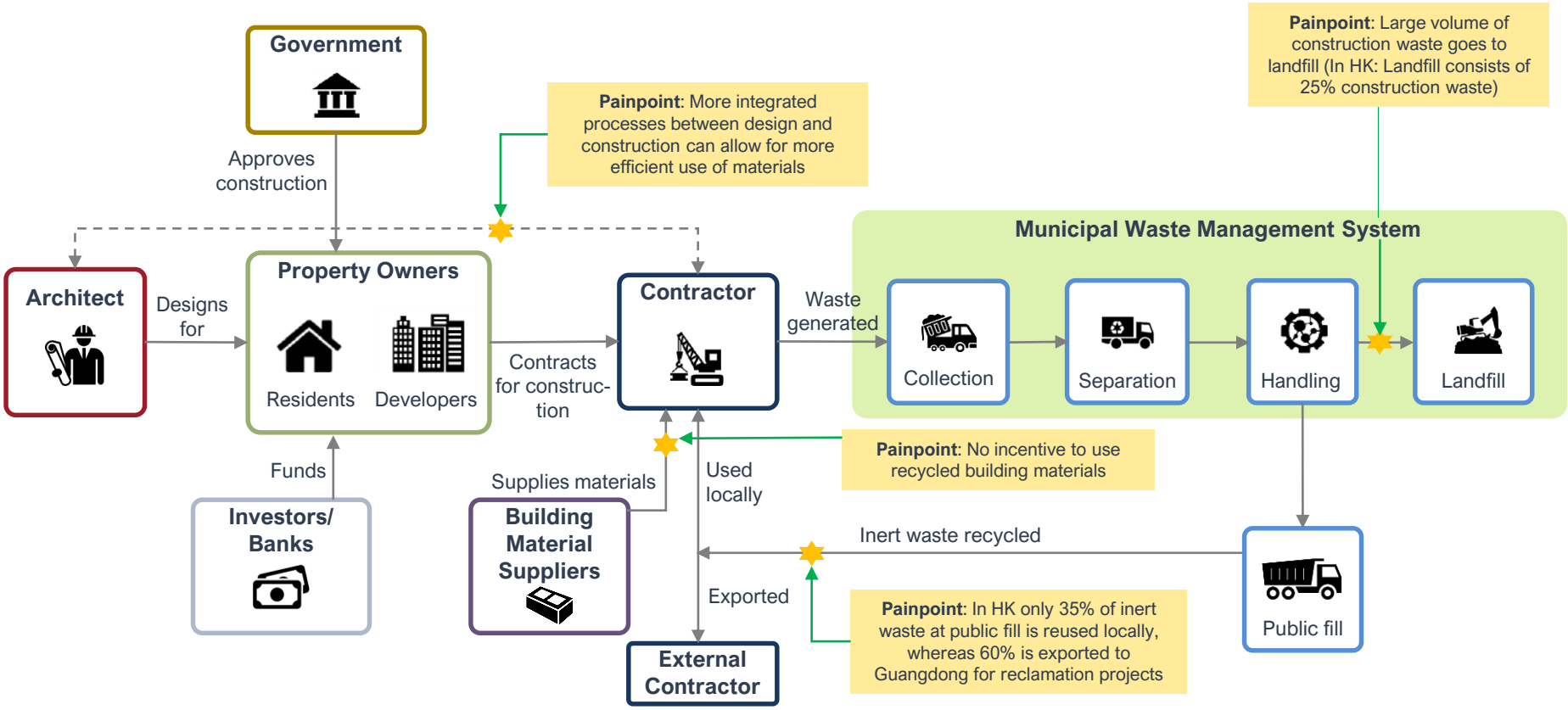
Focus Area: Built Environment

Built Environment Target

Target: To recycle 80% of all construction & demolition waste by 2030.

The expansion and renewal of cities in the GBA will inevitably involve the demolition of old buildings and the construction of new buildings. Traditional demolition and construction methods generate large amounts of waste that is inadequately recycled or repurposed. Green building standards that optimise the use of materials and minimise waste sent to landfill should be implemented across the GBA.

Map of Opportunities



Conventional construction methods generate significant quantities of waste that is often disposed at landfills. There is potential for construction waste to be further reduced, or inert waste made into new materials for construction.

Innovation Idea (1/2)

Social, Technological & Policy Innovation

Create a "Waste Footprint" Monitoring System

Construction waste typically stems from unexpected design changes, poor procurement and planning, leftover material and design/detailing errors.

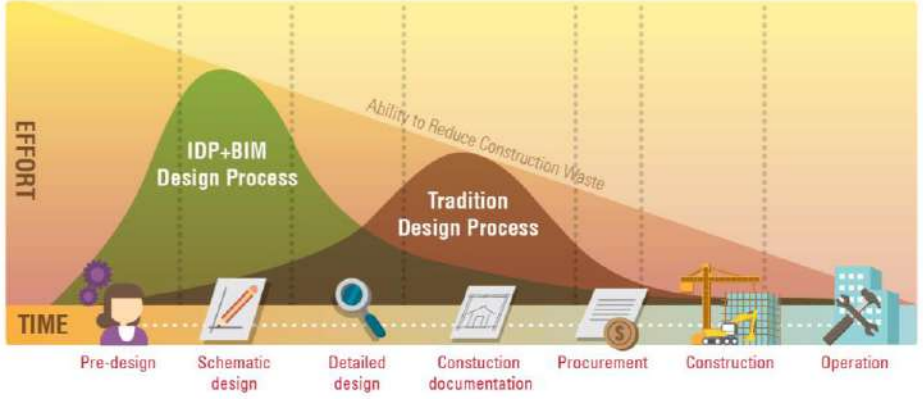
Integrated Design Process (IDP) and Building Information Modelling (BIM) are modern systems that can better manage information from planning to design, construction and operations. It can significantly reduce errors and construction redundancies and thus construction waste is minimised.

It is proposed that a "**Waste Footprint Scheme**" be implemented whereby all construction sites in the GBA are monitored for their waste footprint, and rewards contractors who achieve excellent standards. This can be benchmarked against projects that have previously employed IDP and BIM.

Public works and infrastructure projects should take the lead in this scheme and reward contracts to contractors that can significantly reduce their waste footprint. These projects should be documented in detail and promoted as a best-practice reference for private sector projects.

Addresses the following painpoint:

Painpoint: More integrated processes between design and construction can allow for more efficient use of materials



Source: Hong Kong Green Building Council

Innovation Idea (2/2)

Promote Prefabrication & Modular Design

Modular building designs and **prefabrication** are ways the construction industry can significantly reduce waste.

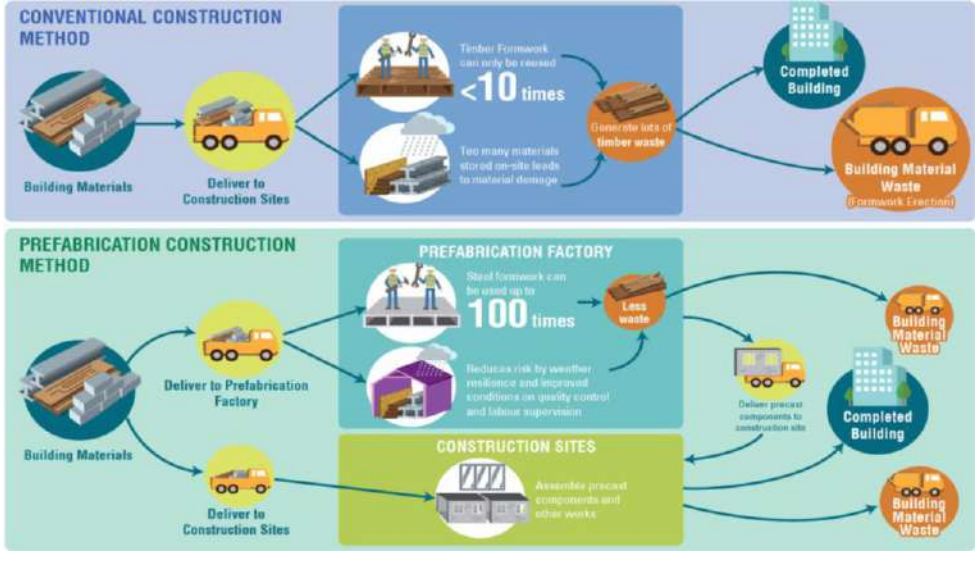
Modular design for facades, staircases, kitchens and floor slabs can reduce waste by pre-casting components off-site and installing them quickly on-site.

Prefabrication can reduce waste and save time by removing the requirement for on-site storage and labour.

The Governments in the GBA should take the lead in adopting these designs for public constructions and infrastructure.

Addresses the following painpoint:

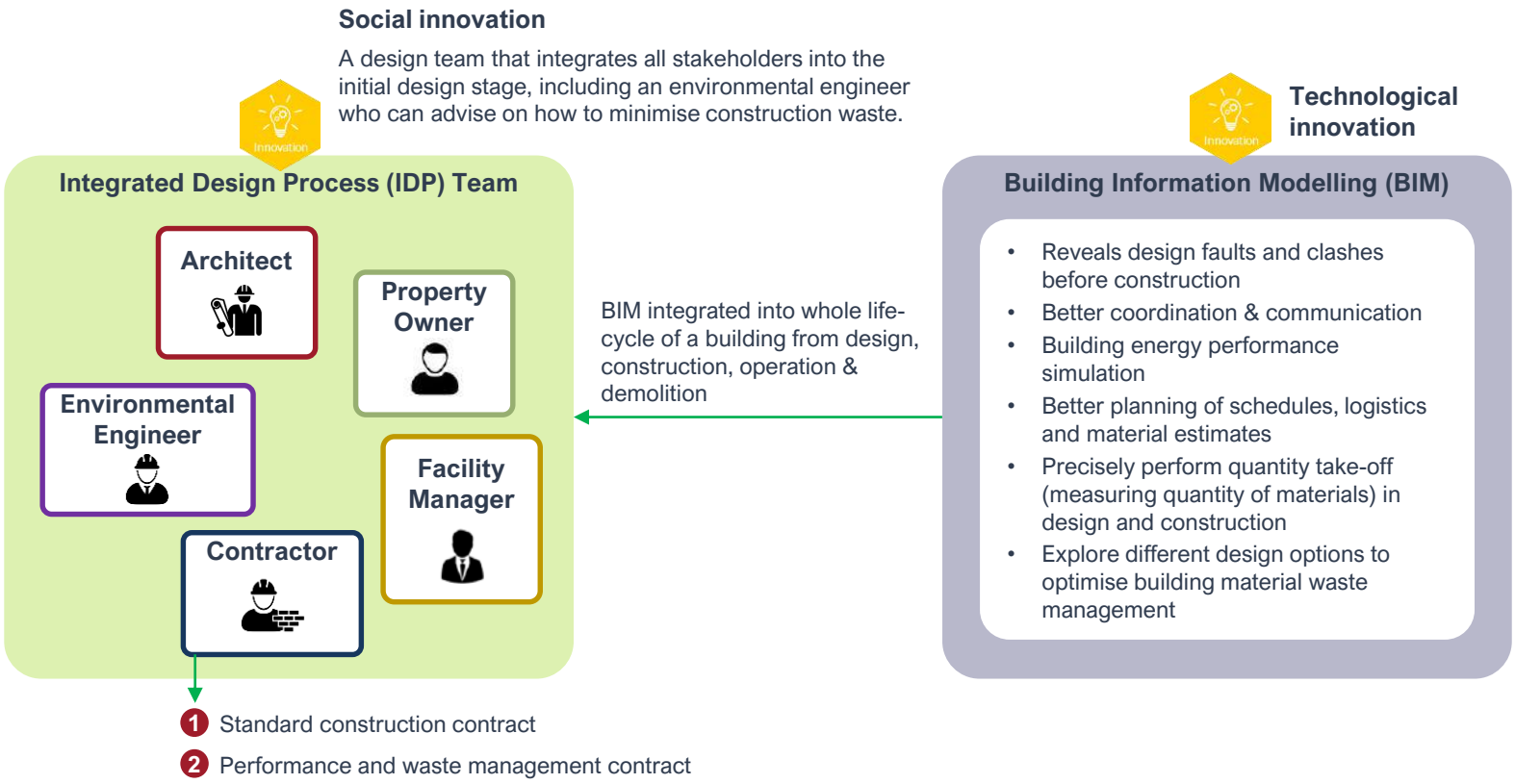
Painpoint: Large volume of construction waste goes to landfill (In HK: Landfill consists of 25% construction waste)



Source: Hong Kong Green Building Council

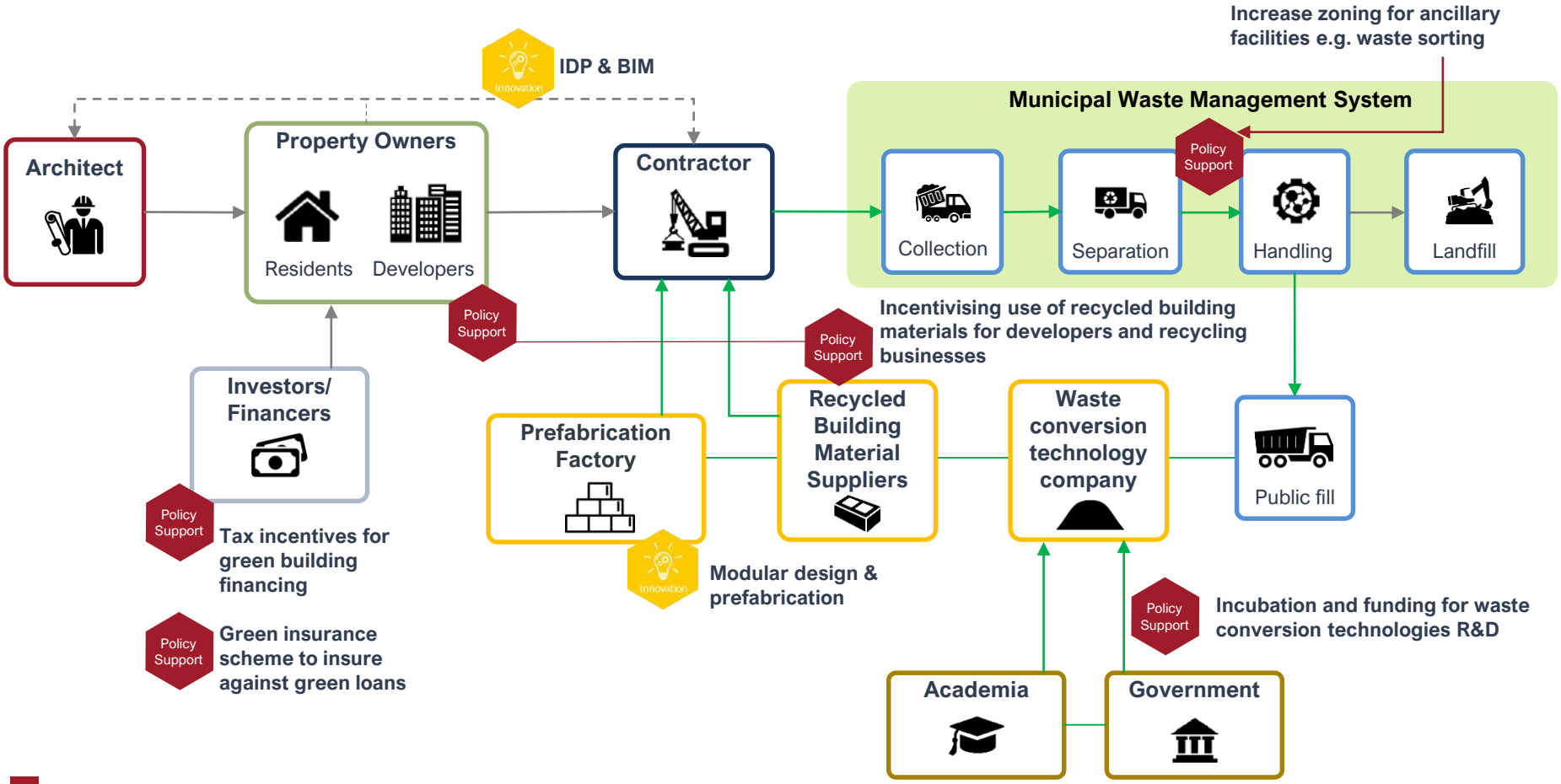
"Skyscraper" at Changsha, China – 57-storey building built in 19 days using prefabrication

IDP & BIM



This illustrates how BIM and IDP can be integrated into every building design to reduce redundancies, waste, and conflicts, and facilitate better and earlier communication between project stakeholders.

Supporting Policies



This map shows where the preceding innovation ideas sit within the ecosystem map for the selected target, and suggested policies that would support the minimisation of construction waste.

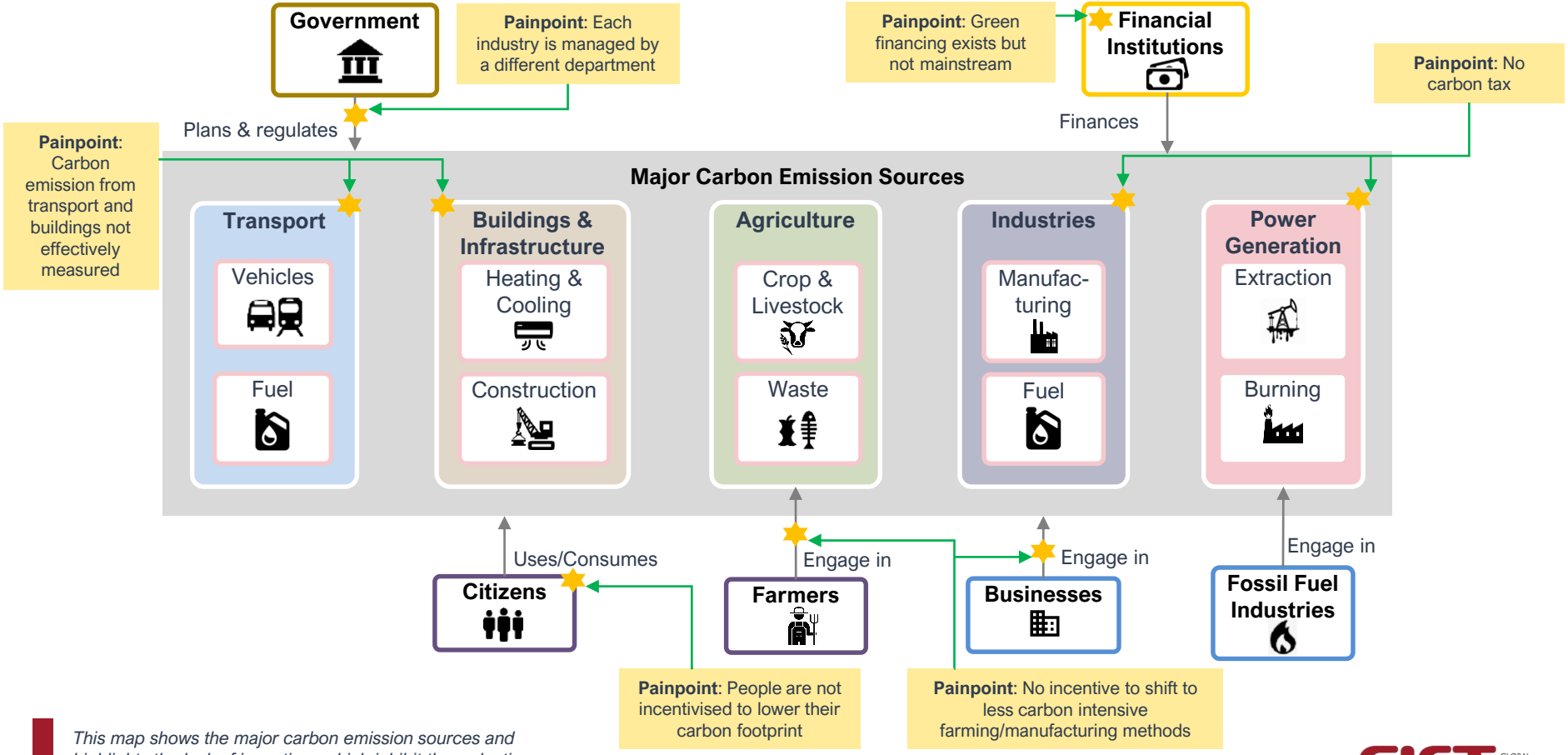
Focus Area: Environment and Resources

Environment & Resources Target

Target: Carbon emission per unit of GDP to be reduced by 50% by 2030 relative to 2015 levels.

Carbon emissions from human activities, mainly in the form of burning fossil fuels, has been the primary driver of climate change. The cities of the GBA should take the lead in low-carbon development as part of the Central Government's aim to slash carbon emission intensity by up to 65% by 2030 over 2005 levels.

Map of Opportunities



This map shows the major carbon emission sources and highlights the lack of incentives which inhibit the reduction of carbon emissions.

Innovation Idea (1/2)

Technological Innovation

Carbon-Smart System

A real-time "**Carbon-Smart System**" for households, buildings, transportation systems and the electrical grid can be established to measure and track emissions over time.

The **Carbon-Smart System** will be based on deploying an Internet of Things (IoT) Operating System that can be easily installed in all buildings, public transport, and industrial equipment.

It will function in a similar way to resource/energy management in buildings, but will instead monitor key carbon emissions data from various sources within each city, to create a unified urban management platform for ecological planning. Notifications can be sent to users when emissions targets are not met.

The system can be designed with the help of civil society organisations and research institutions that can advise industries and the government on how to lower overall emissions.

The system should be used in all the GBA cities so data can be compared and cooperative strategies implemented.

Addresses the following painpoints:

Painpoint: Each industry is managed by a different department

Painpoint: Carbon emission from transport and buildings not effectively measured

Painpoint: People are not incentivised to lower their carbon footprint

Innovation Idea (2/2)

Policy Innovation

Carbon Footprint Measurement Scheme

A **carbon footprint measurement scheme** can encourage citizens to reduce their carbon footprints. The scheme can measure each individual's and business' carbon footprint and credit reductions with points.

Points can be gained whenever individuals or businesses take actions to reduce their carbon footprint, such as utilising public over private transport, shifting to lower carbon-emitting equipment or farming methods, or investing in green bonds.

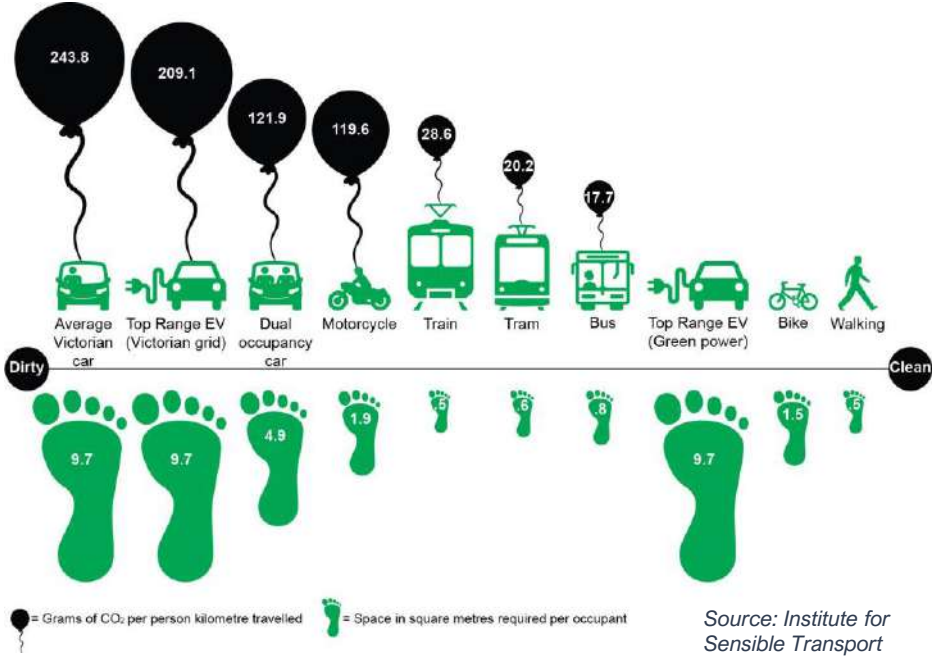
Points can be redeemed for social and public benefits, such as tax reductions or lower interest rates.

Addresses the following painpoints:

Painpoint: People are not incentivised to lower their carbon footprint

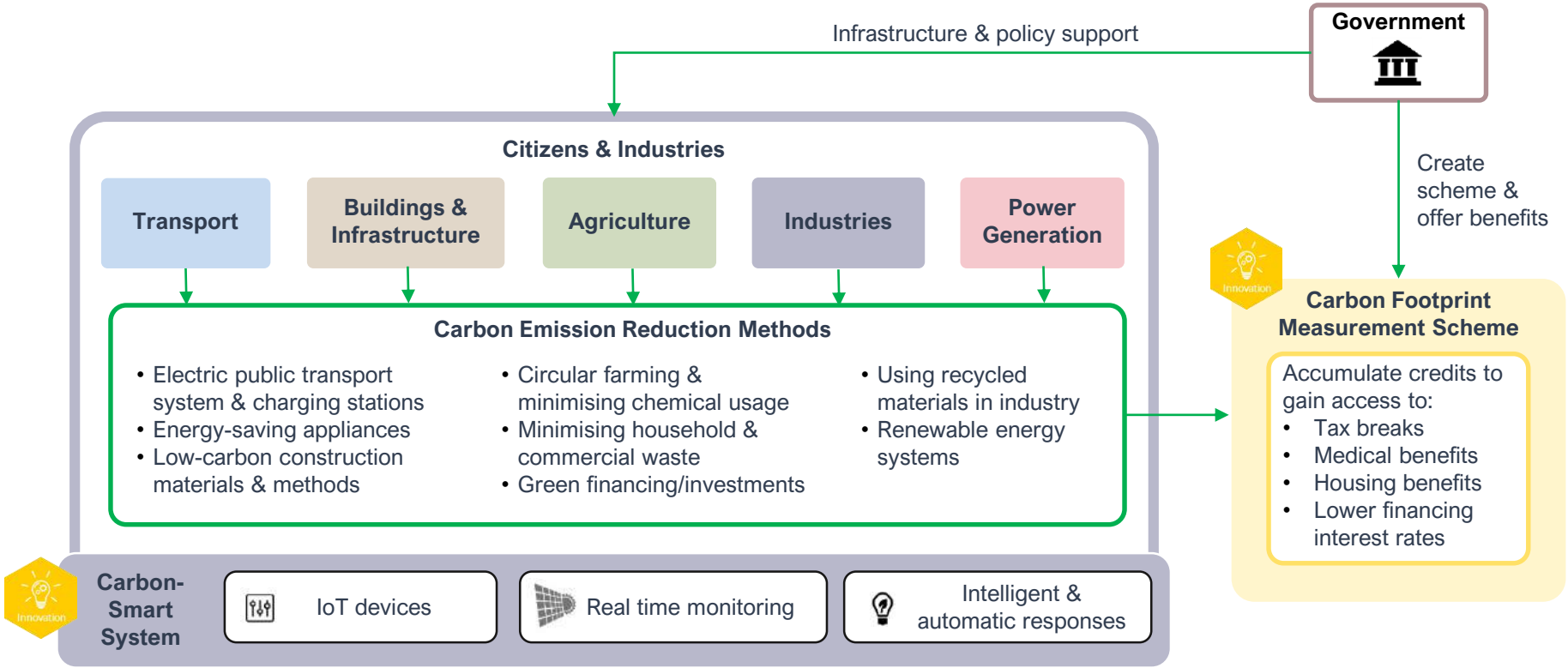
Painpoint: No incentive to shift to less carbon intensive farming/manufacturing methods

Painpoint: Green financing exists but not mainstream



Source: Institute for Sensible Transport

Carbon-Smart System



This system describes the Carbon-Smart System that monitors the carbon footprint of the various industries in the GBA, and which is integrated with the Carbon Footprint Measurement Scheme that rewards carbon emission reductions.

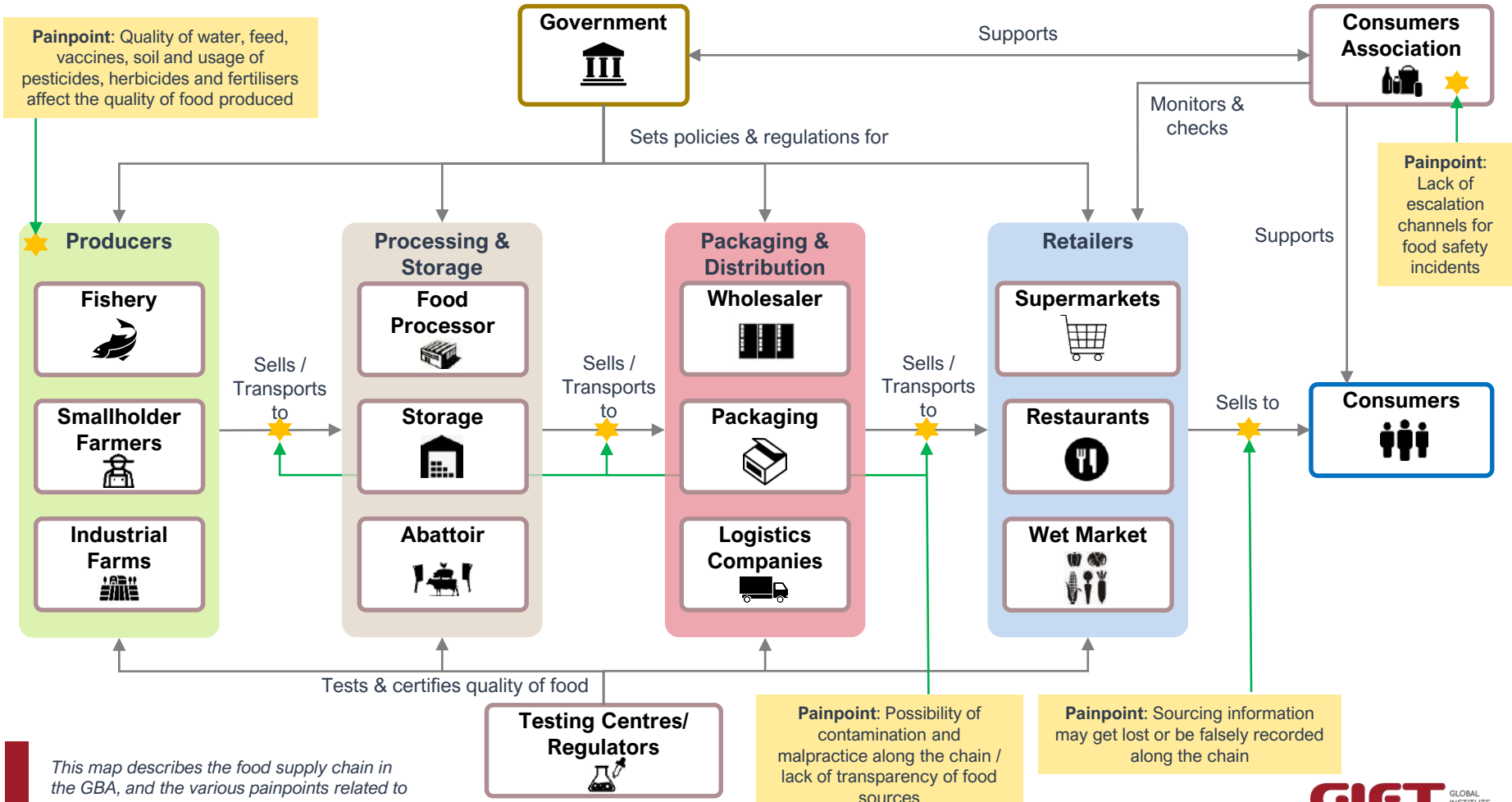
Focus Area: Food and Wellbeing

Food and Wellbeing Target

Target: All restaurants, supermarkets and wet markets in the GBA to provide food origination information and ensure that all food produced in the region meets international safety standards by 2030.

Numerous food safety incidents and increasing food consumption (with associated wastage) is affecting the GBA and the health of its residents. Within the GBA, only Hong Kong and Macao are on China's list of top 10 cities for food safety. With the exception of Hong Kong and Macao, potable water standards in the GBA cities have not yet reached international standards, and a large proportion of people are not connected to basic sanitation systems.

Map of Opportunities



This map describes the food supply chain in the GBA, and the various painpoints related to food safety and traceability.

Innovation Idea (1/2)

Food Supply Chain Traceability Platform

The current decentralised food supply chain makes it difficult to accurately trace the origin of a product and the processes it has gone through prior to reaching the end-consumer.

An integrated **food supply chain traceability platform** can use technology such as blockchain to record and document every process and alteration (a trip-ticket system). This will enable consumers and regulators to accurately ascertain the origin and quality of produce.

This platform would require the cooperation of all stakeholders along the supply chain and coordinated leadership from city governments. This will ensure that residents in the GBA have access to high-quality food and regain trust in systems across the region.

Addresses the following painpoints:

Painpoint: Possibility of contamination and malpractice along the chain / lack of transparency of food sources

Painpoint: Sourcing information may get lost or be falsely recorded along the chain

Innovation Idea (2/2)

Smart Agricultural Technology

Farms in the GBA are highly fragmented and consist of smallholder farmers that do not conform to a common standard of production. Overuse of chemicals and fertilisers is common due to lack of knowledge and training, which both negatively affects food safety and farmer health.

The combination of AI and drone technologies can minimise the use of chemicals and fertilisers by administering precise and targeted doses to a given crop.

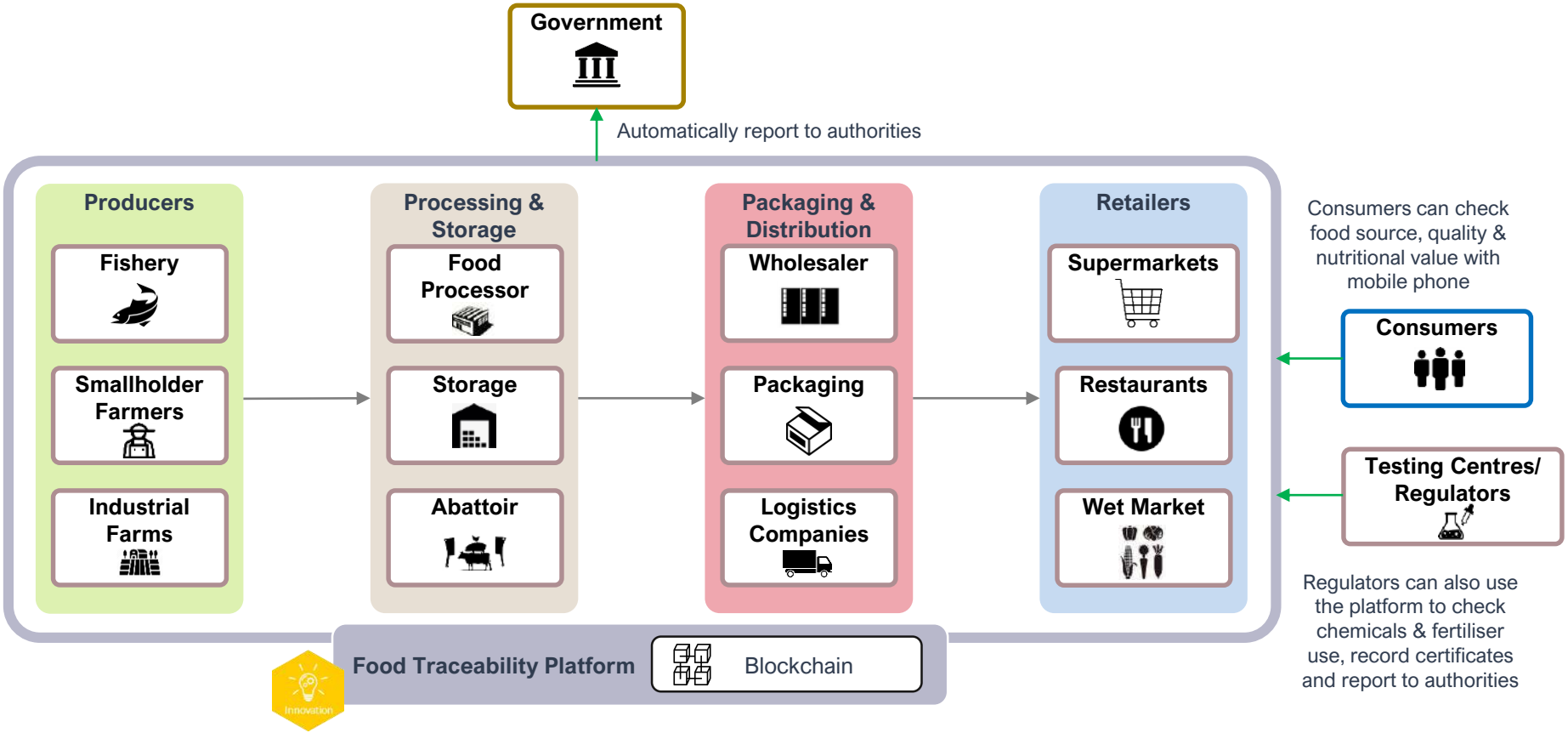
XAG is an example of a Chinese technology company that has been using these technologies to design efficient spraying paths for drones which has led to a reduction of pesticide and water use by 30% and 90% respectively.

The government can first offer subsidies to larger farms to demonstrate the effectiveness of this technology, then encourage and enable the formation of farmers organisations who can deploy this technology at scale.

Addresses the following painpoint:

Painpoint: Quality of water, feed, vaccines, soil and usage of pesticides, herbicides and fertilisers affect the quality of food produced

Food Traceability Platform



Food traceability can be achieved through cooperation between the stakeholders in the supply chain, using blockchain technology.

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Conclusion

Conclusion: A model for the future

The Model of Innovation in this report proposes a fresh approach to understanding the role of innovation and technology as an effective means to address quality-of-life issues.

It starts by establishing a strong vision and proposes guiding principles for future development. These are supported by actionable targets and measurable indicators that would quantify progress towards realising the vision. Proposed targets inspire new social, policy and technological innovations.

For the GBA, establishing an “Ecological Civilisation” – supporting and expanding a high-standard of living while staying within important environmental boundaries and resource constraints – can be a common goal for all 11 cities, and would position it as a model for other urban economies.

This approach offers practical solutions for governments and institutions to formulate strategies for social, environmental, economic and technological development. A strong Ecological Civilisation vision with clear targets ensures that quality of life is prioritised and new ventures are accountable to society. It allows governments to focus on their mandate of representing and guarding the public interest.

Thus, this model will be a valuable resource, not just for the GBA, but also for other economies across China, the Asia-Pacific and beyond.

For more information about the 2019 Greater Bay Area Young Leaders Programme, please contact enquiry@global-inst.com

GIFT GLOBAL INSTITUTE FOR TOMORROW.

Tomorrow Matters.