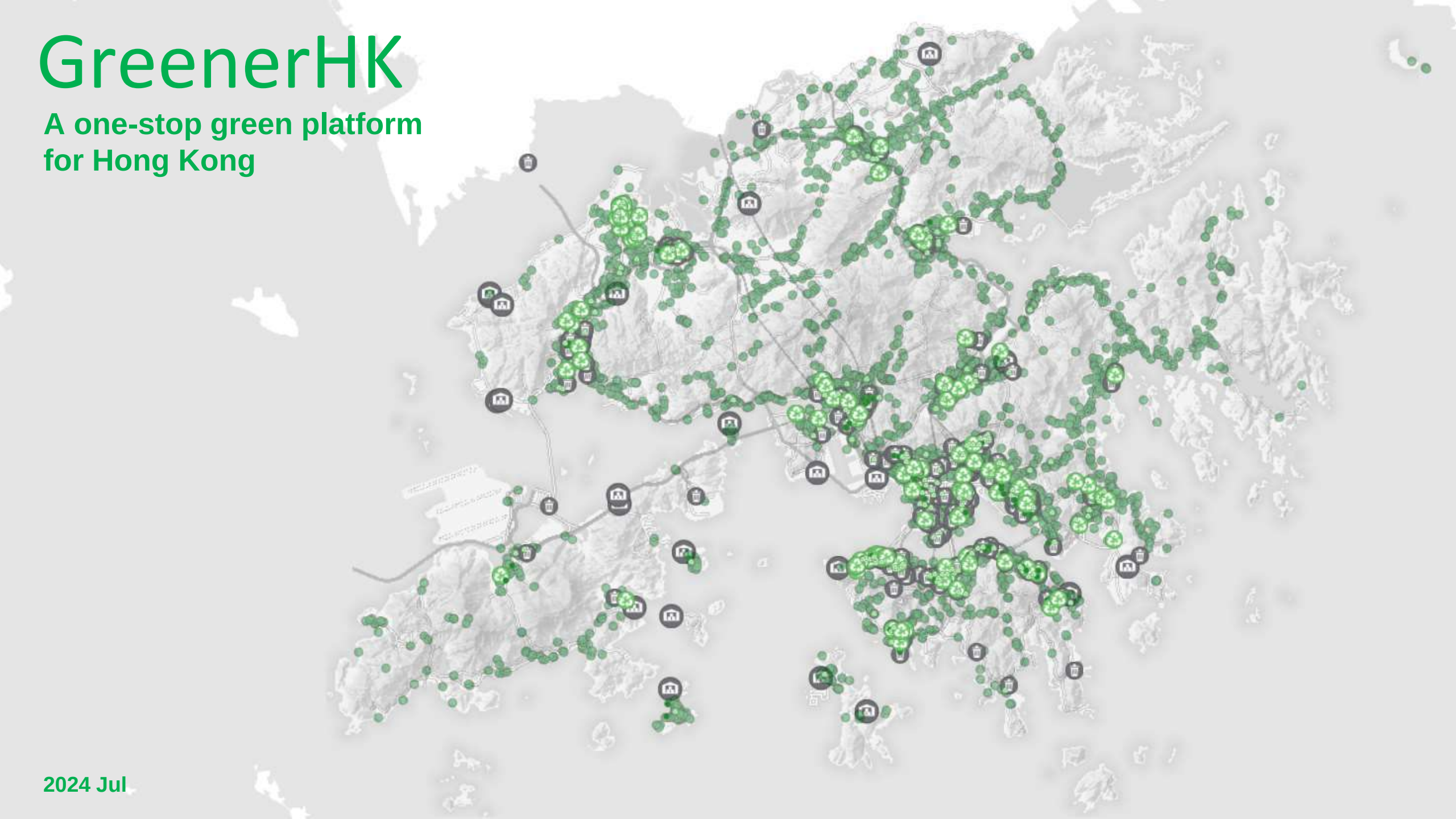
GreenerHK

A one-stop green platform for Hong Kong



2024 Jul

Background and Introduction

Spatial Data Analysis

Data source from CSDI portal as follows and other government websites

Department	Available spatial data at CSDI Portal	How the data be used?
Census and Statistics Department	2021 Population Census Statistics (By Small Subunit Group)	**Provide population and area of district for more accurate density analysis**
	Dataset on population and household statistics analysed by District Council district	
Lands Department	Building	**Provide information of existing infrastructure for analysis**
	Road Centreline	
Buildings Department	Building information and age records	**Enrich data for type of use of buildings (residential, commercial, G/IC, etc.)**
	Completed new buildings for which occupation permits have been issued	
Planning Department	Boundaries of New Towns (for 2021 Population Census)	**Provide base polygon for analysis by district area**
Environmental Protection Department	Waste Less - Recyclable Collection Points Data	**Major dataset used to analyze the sufficiency of existing facilities, identify coverage based on walking distance and capacity, find the best routing based on time and type of waste to be recycled/ disposed**
	Waste Management Facilities	
	Open Space Database of Recycling Station	
	Reverse Vending Machine Pilot Scheme	
	Location of Centres of ECF Surplus Food Recovery Projects	
Food and Environmental Hygiene Department	FEHD facility and service locations	**Identify existing location of catering premises for analysis**
	Restaurant licences	
	Food licences (except restaurant licences)	
Department of Health	Private healthcare facilities with valid licence / letter of exemption under Cap. 633	**Identify existing location of healthcare facilities for analysis**
Social Welfare Department	Basic Information and Service Quality Information of Residential Care Homes for the Elderly	

We are here

the 20-minute-walking coverage of GREEN@COMMUNITY in Mong, Wong Tai Sin, Kwun Tong, Eatern district, etc.

10 most nearby recycling facilities from the 14 selected premises has more FEHD facilities

Challenges and Opportunities

Massive but scattered and cumbersome information

Various green groups and the Environmental Protection Department

Possible to int … the functions and information … ngle platform?

Proposed Solution

GIS

Geographic Information System

- Easy to use
- Map-centric interface to visualize vector and raster data
- User-oriented functions
- Backbone of the app

Engagement

- **Encourage everyone to participate as a Greener**

GIR

Green Identity Recognition System

- A point system to quantify waste reduction actions
- Carbon-emission-based
- Soul of the app

Sustainability

- **Build up a ecosystem**
- **Encourage everyone to co-create a Greener community**

CDE

Common Data Environment

- A container accommodating different type of data
- Single source of information
- Database of the app

Unity

- **Unify the resources**
- **Encourage everyone to strive for a Greener Hong Kong**

3 Components

Component 1 – Common Data Environment

Current available information

CSDI portal

空間數據共享平台
Common Spatial Data Infrastructure

IoT sensors

Public accessible raster information

Future

Waste management information of buildings

HKGBC BEAM Plus 綠建環評

Green campaigns and events

Food Wise Eateries 咪啲嘢食店

Information provided by users through in-app interactive functions

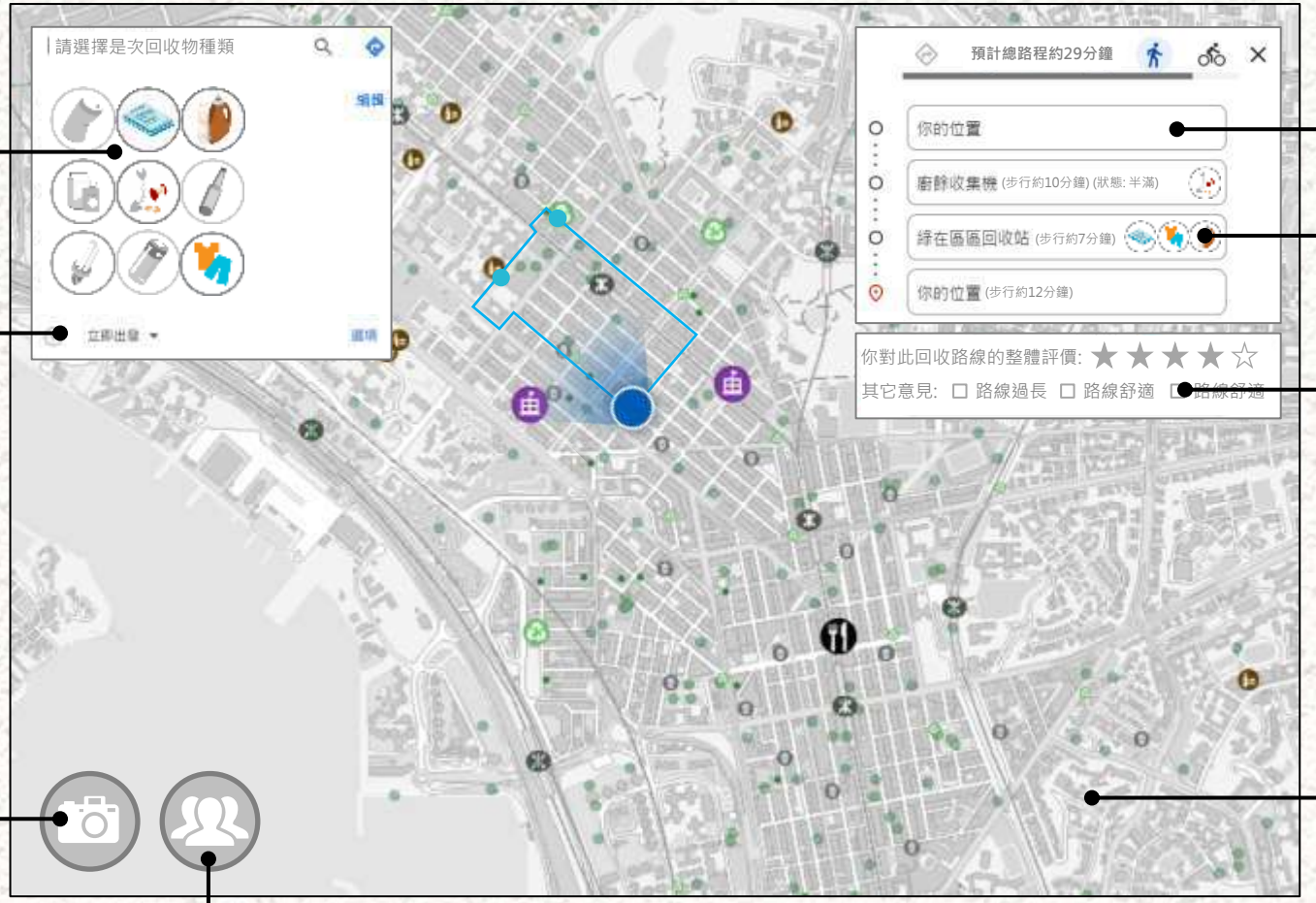
GreenerHK

Component 2 – Geographic Information System

Select the corresponding graphics for the desired **type of recycling waste** for this journey

Allow scheduling the target departure or arrival time so that the system could analyze with the opening hours (if any) of the recycling facilities to generate the ideal travelling route for the user

Switch to camera mode for users to report any on-site abnormal conditions (e.g. large construction waste disposal on street, unknown odor from trash bin or waste on street, etc.) to facilitate timely follow-up by the government (e.g. trigger the AI camera of nearby smart lampposts)



Switch to the personal profile interface to check the carbon emission dashboard, recycling records and redeem rewards

Based on the input by the user, the system will find the required destination(s) and generate the routing with estimated travelling time (either by foot or bike).

Small icons showing what type of recycling waste could be treated in this facility

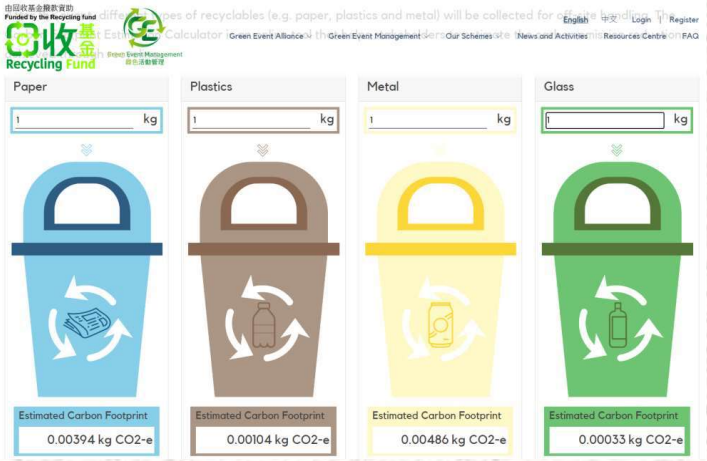
After each journey, the system would ask the user for comments and feedback (e.g. damaged, full, soiled, etc.) of the facilities for further manual replacement or inspection

Visualize the routing with checkpoints of this journey. User can also explore other information in the map of his own interest

Component 3 – Green Identity Recognition

Concept

1. To quantify the eco-friendly actions in daily lives based on carbon footprint



2. To consolidate and showcase the information with a dashboard
3. To recognize ones effort with different classes
4. To offer discounts and incentives to encourage sustainable participation

Reference interface

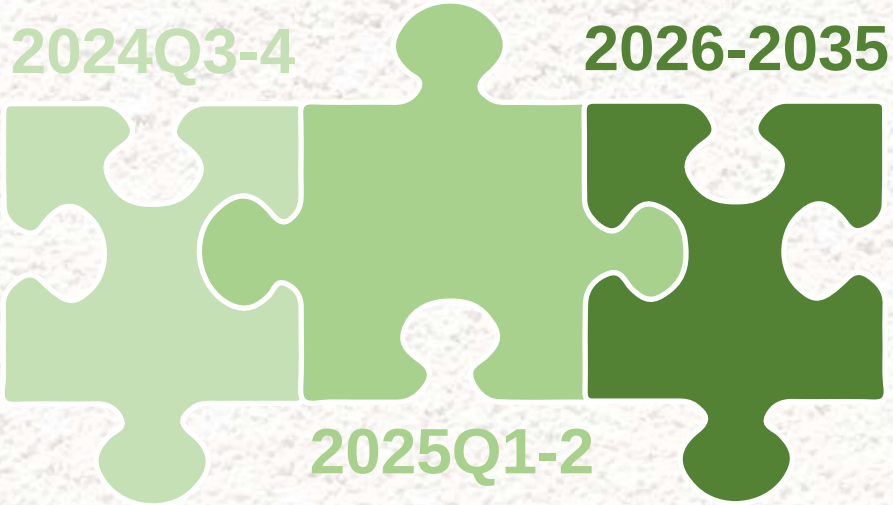
Implementation and Beneficiaries

Stage 1

- Funding application
- Trial with open source information and functions

Stage 3

- Strive to be self-financing
- Support the government in achieving policies as set in “Waste Blueprint for Hong Kong 2035”



Stage 2

- Integrate real time data from IoT and additional information from other source
- Collaborate with other organizations for cooperation and discount offers

Synergy

Individuals

- Personalized recycling routes based on accessibility and type of recycling waste
- Understand in a spatial and graphical approach of the urgency and importance of waste reduction
- Encouraged to participate in the recycling action to reduce waste generation

Organization

- Increase exposure in promoting green events and campaigns to the general public
- Facilitate collective impact among organizations in striving for a greener Hong Kong
- Contribute the social responsibility and be recognized in a unified manner

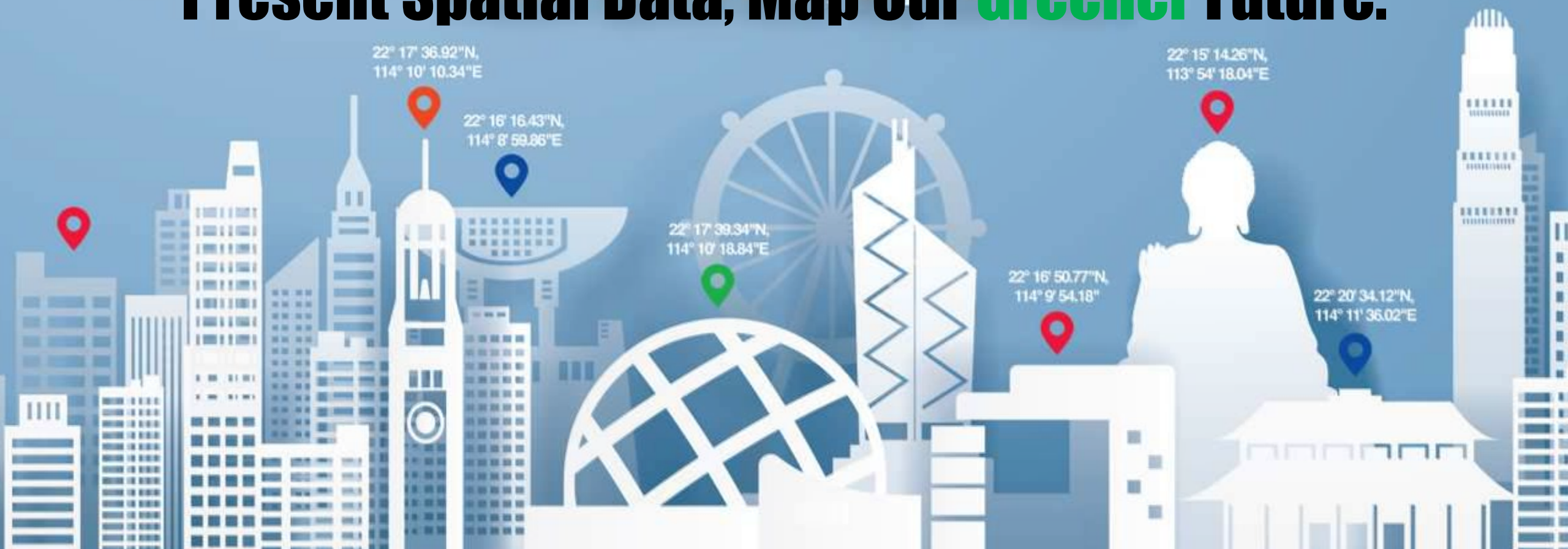
Government

- Make future decisions based on the present data collected
- Promote cooperation with NGOs
- Integrate and make good use of social resources

空間數據共享平台大獎2024
CSDI Awards 2024

空間數據．開拓未來

“Present Spatial Data, Map Our Greener Future.”



Appendix 1 – Demo of Prototype

Scenario

1. Input preference and requirement

Time: Now

Destination: Back to start point

Recyclables: Food waste, glass bottles

Green$: Yes

2. Process and analyze

- Check availability of recycling bins
- Enquire accessibility

3. Output ideal route(s)

4. Feedback and reporting

- Rate the experience
- Report abnormal condition

5. Follow-up

- Connect with nearby smart lampposts
- In-app update of recycling record

Appendix 2 – Analysis on waste disposal by district

District	居住人口/ Recycling facilities	工作人口/ Recycling facilities	人均 domestic waste	人均 commercial waste	機構平均 commercial waste	Coverage of 綠在區區
中西區	420	614	1.3	0.7	5.6	43%
灣仔區	447	602	1.1	0.1	1	50%
東區	1314	474	0.9	0.6	4.8	51%
南區	836	194	0.8	0.8	5.6	8%
油尖旺區	1060	965	1.7	0.9	4.6	99%
深水埗區	1246	517	0.9	0.5	3.2	50%
九龍城區	1128	594	0.7	0.4	4.3	90%
黃大仙區	2298	393	0.7	1	5	38%
觀塘區	2137	1006	0.7	0.5	3.6	55%
葵青區	1991	618	0.7	3.5	22.3	26%
荃灣區	1071	379	0.8	2.1	11	6%
屯門區	1255	185	1	3.8	20.3	13%
元朗區	1178	160	1.2	7.6	40.3	7%
北區	755	123	1.2	13.7	81.9	7%
大埔區	741	121	1.1	3.6	25.1	5%
沙田區	1503	304	0.7	3.6	22.9	12%
西貢區	980	135	0.8	0.8	6.2	6%
離島區	655	355	1	1.1	24.3	3%

Appendix 3 – Examples of cumbersome data

Plate 2.6 Arisings of solid waste disposed of at landfills in 2022 - By district and main waste category

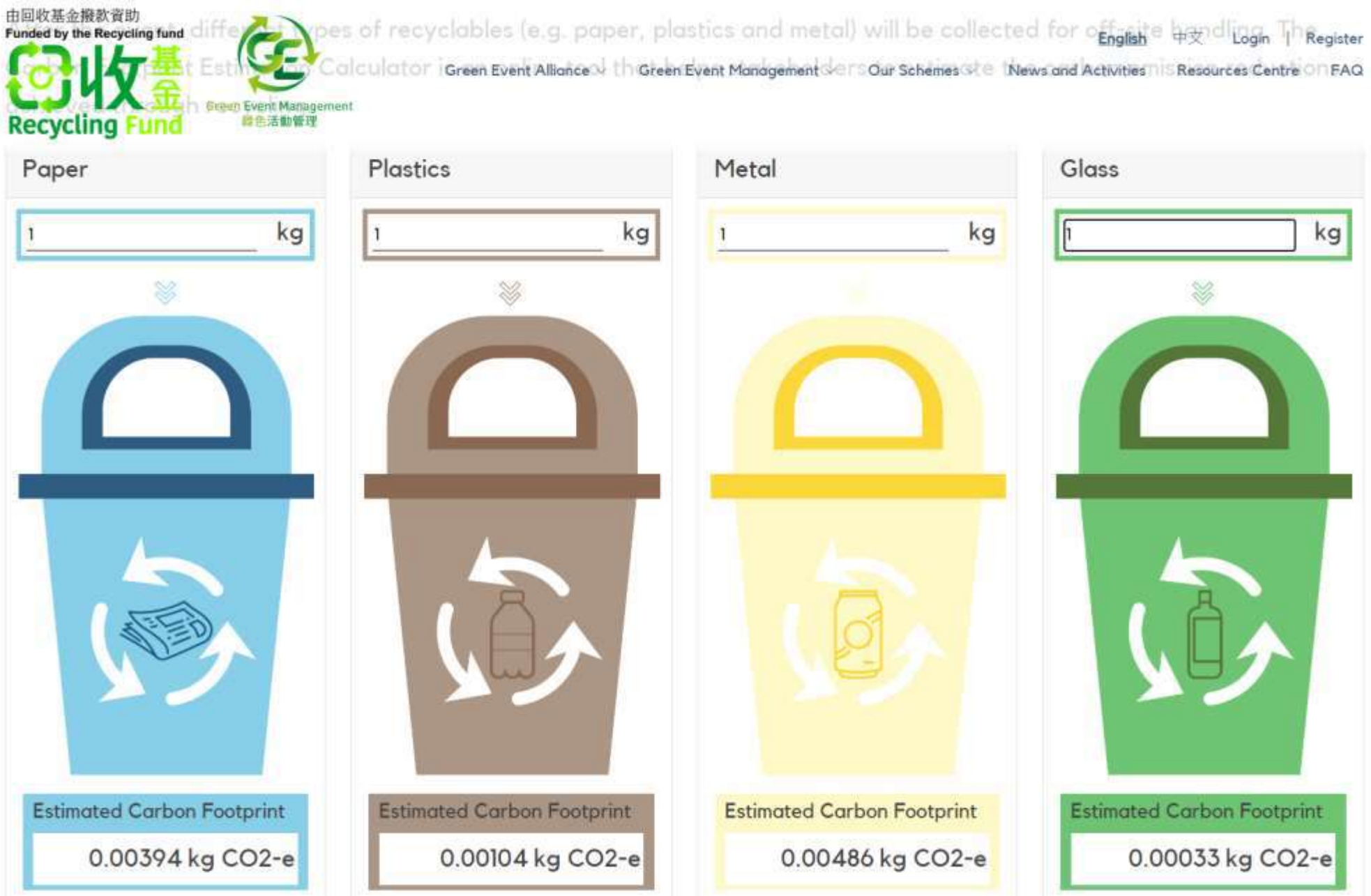
District	Average daily quantity (tpd): Domestic waste (a)	Commercial & industrial waste (b)	Municipal solid waste (c) = (a) + (b)	Overall construction waste (d)
Central & Western	305	232	537	73
Eastern	483	108	591	68
Southern	209	47	256	90
Wan Chai	188	29	217	80
Hong Kong Island	**1,185**	**416**	**1,601**	**312**
Kowloon City	284	76	360	289
Kwun Tong	479	154	633	240
Sham Shui Po	403	81	484	86
Wong Tai Sin	281	68	349	50
Yau Tsim Mong	526	252	777	147
Kowloon	**1,973**	**630**	**2,603**	**812**
Kwai Tsing	345	531	876	225
North	359	691	1,051	225
Sai Kung	373	52	425	1,155
Shatin	500	505	1,005	370
Tai Po	339	189	528	169
Tsuen Wan	250	238	487	51
Tuen Mun	516	281	797	507
Yuen Long	770	693	1,462	171
NT – Except Outlying Islands	**3,452**	**3,180**	**6,632**	**2,674**
Cheung Chau	28	0	28	-
Hei Ling Chau	2	0	2	-
Lamma Island	9	0	9	-
Ma Wan	17	0	17	-
Mui Wo	23	0	23	-
Lantau	102	106	208	-
Peng Chau	6	0	6	-
NT – Outlying Islands	**187**	**106**	**293**	**331**
All districts	**6,797**	**4,332**	**11,128**	**4,128**

「智能回收系統先導計劃」
已設置智能回收箱的位置 (截至2024年7月5日)
Pilot Programme on Smart Recycling Systems
Locations with Smart Recycling Bins Installed (as of 5 July 2024)

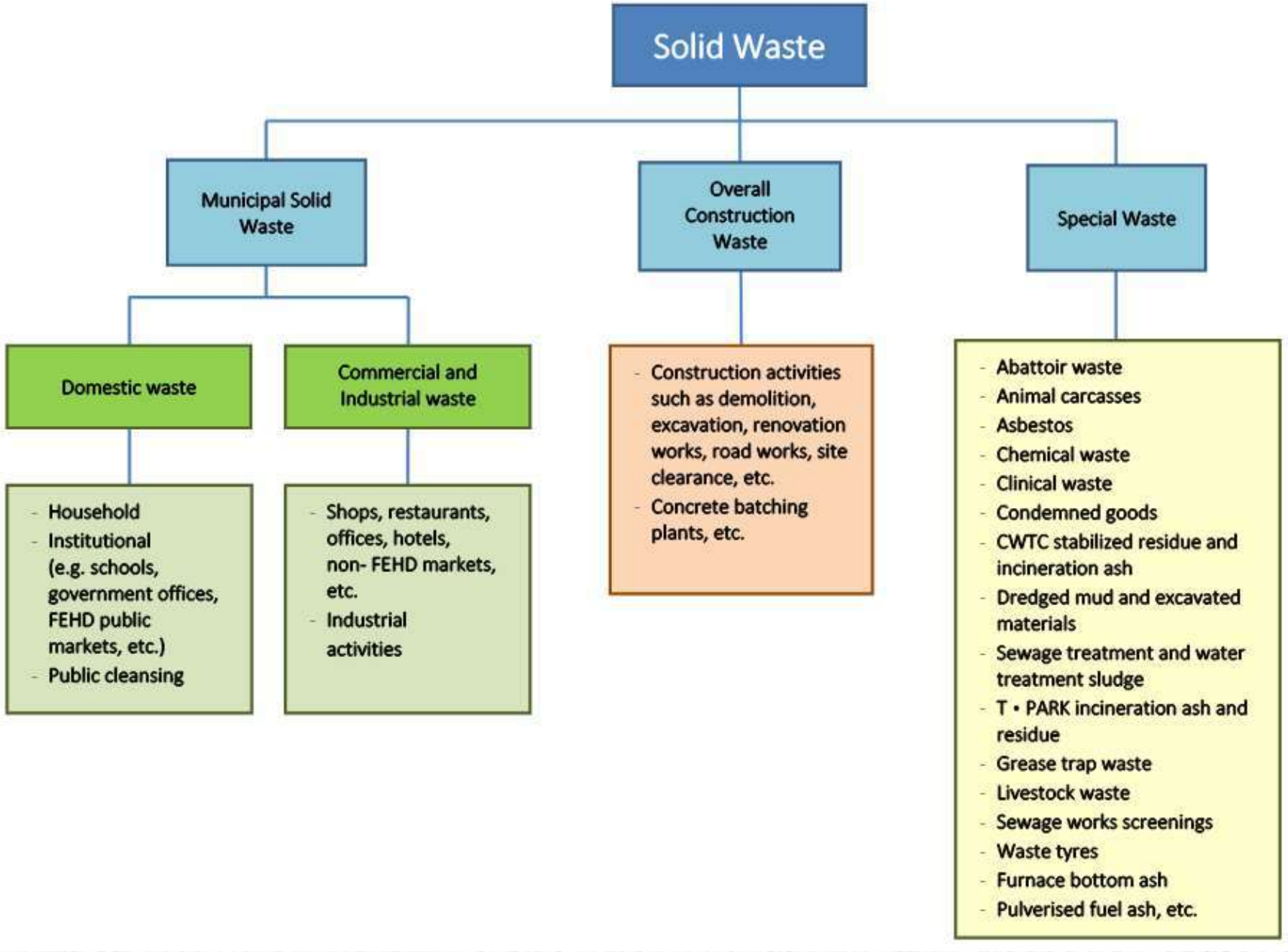
區域 Area	地區 District	地點 Venue (*For residents of the estate/students and teaching staff use only)	詳細位置 Detailed Location	回收物種類 Recyclable Types
港島 HONG KONG	中西區 Central and Western	立法會綜合大樓 Legislative Council Complex	立法會綜合大樓地下大堂(近立法會餐廳) Main Lobby (near the Cafeteria), G/F, Legislative Council Complex	
		西環邨 Sai Wan Estate	西環邨南苑臺5樓 5/F., South Terrace, Sai Wan Estate	
		信德中心 Shun Tak Centre	信德中心招商局大廈地下大堂 G/F Lobby, China Merchants Tower, Shun Tak Centre	
		中環中心 The Center	中環中心UG/F平台(皇后大道中旁) Podium, UG/F, The Center (next to Queen's Road Central)	
		香港大學 - 百週年校園* Centennial Campus, The University of Hong Kong*	香港大學百週年校園平台大學街上層 G/F, Central Podium level, Centennial Campus, HKU	
	灣仔 Wan Chai	希慎廣場 Hysan Place	希慎廣場B4層升降機大堂外 Outside Lift Lobby, Level B4, Hysan Place	
	東區 Eastern	綠在環翠 GREEN@WAN TSUI	柴灣環翠邨美翠樓地下 G/F, Mei Tsui House, Wan Tsui Estate, Chai Wan	
		綠在漁灣 GREEN@YUE WAN	柴灣漁灣邨漁安樓地下 G/F, Yue On House, Yue Wan Estate, Chai Wan	
		小西灣邨 Siu Sai Wan Estate	小西灣邨瑞滿樓 Sui Moon House, Siu Sai Wan Estate	

Appendix 4 – User interface of mobile apps by EPD

Appendix 5 – Estimation of carbon footprint by recyclables



Appendix 6 – Classification of solid waste in Hong Kong



Appendix 7 – Study on 14 premises of the Demonstration Scheme

Location	地區	性質		負責機構		物業管理	座數	層數	單位	面積	住/食	職員	住戶	商戶	住戶	工作	外來者	廚餘	四電一腦	可回收廢物	不可回收垃圾	醫療廢物
西九龍政府合署	油尖旺	政府大樓		特區政府	2019	特區政府產業署	2	18		115000		2500	-	-				v	v	v	v	
荃灣滿樂大廈安寧樓	荃灣	住宅	公營屋邨	香港房屋協會	1965		1	12	432	235568			432	-				v	v	v	v	
柴灣連翠邨	東區	住宅	公營屋邨	香港房屋委員會	2018	創毅物業服務顧問有限公司	1	36	288	151378	700		288	-				v	v	v	v	
九龍城成龍居	九龍城	住宅	私人屋苑	樂基集團	2002	柏豪物業管理有限公司	1	23	138	316485			138	-				v	v	v	v	
深水埗北河街 15 及 17 號（七層高三無大廈）	深水埗	住宅	三無大廈	-	1958	-	1	7	35				35	-				v	v	v	v	
深水埗長沙灣道 58 號（五層高三無大廈）	深水埗	住宅	三無大廈	-	1966	-	1	5		755755				-				v	v	v	v	
大埔新達廣場	大埔	商場		新鴻基地產	1993								-	100				v	v	v	v	
屯門卓爾廣場	屯門	商場		新鴻基地產	2000								-	55				v	v	v	v	
新生精神康復會屯門長期護理院	屯門	院舍	津助院舍	新生精神康復會							210	90	-	-				v	v	v	v	v
屯門嘉濤耆樂苑	屯門	院舍	私營安老院	嘉濤(香港)控股							180	72	-	-				v	v	v	v	v
旺角鍋晶館	油尖旺	餐飲處所	酒樓								90		-	-				v		v	v	
新蒲崗新光宴會廳	黃大仙	餐飲處所	酒樓								600		-	-				v		v	v	
大家樂（金鐘海富中心分店）	中西區	餐飲處所	快餐店								200		-	-				v		v	v	
大圍漢年茶餐廳	沙田	餐飲處所	快餐店								40		-	-				v		v	v	

Reference

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- MSW Best Practice Guide (Commercial and Industrial Buildings). https://www.mswcharging.gov.hk/wp-content/uploads/2024/04/06_CI_ENG_DIGITAL_240328.pdf
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