

**5th Market Study
for Recycling Fund**

Executive Summary

(HKPC Project Ref.: 10009764)

Green Living and Innovation Division

Hong Kong Productivity Council



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Background and Objectives

1. Hong Kong Productivity Council (HKPC), which has been engaged by the HKSAR Government as the Secretariat of the Recycling Fund, conducts studies on recycling markets under the Recycling Fund. The 5th Market Study was commenced in Feb 2020, with an aim to continuously review the profile and operation of Hong Kong's recycling industry and to identify the key factors that determine the success of the Recycling Fund. The study covers current situation of the recycling industry in Hong Kong, the markets/ outlets of recyclables, policies and requirements for imported recyclables in major markets, etc.
2. The key objective of the 5th Market Study is to obtain the latest market information related to the recycling industry so as to facilitate the implementation of the Recycling Fund and to enrich the industry's knowledge on the latest market trends.
3. This Study covers various key recyclable materials in Hong Kong, including waste paper, waste plastics, waste ferrous-metals, waste non-ferrous metals, waste electrical and electronic equipment (WEEE), used clothes /textiles, waste wood, waste glass, waste rubber tyres, food waste, yard waste, used cooking oil (UCO) and tetra pak.
4. This Study includes two sections as follows:
 - (i) To continuously review the current situation, changes and trends of local recycling industry including the industrial size and composition, as well as the operations of the industry and the key issues and constraints faced by the industry, through desktop research and surveys with stakeholders; and
 - (ii) To review of current markets/ outlets for 13 types of key recyclable materials, including their prices and values, updates in import/ export control, as well as policies and requirements of the key exporting jurisdictions.

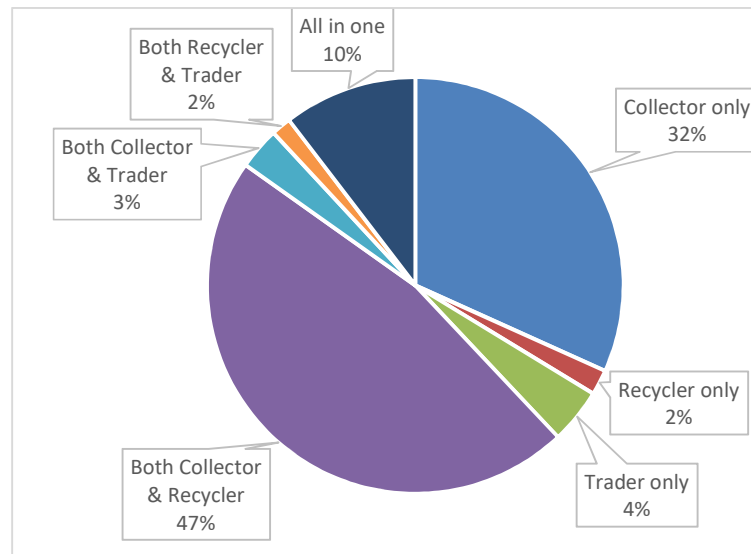
Key Findings of Section I – REVIEW ON THE STATE OF LOCAL RECYCLING INDUSTRY

5. This Study is referred from five databases, which include annual applicant lists of Recycling Fund, Hong Kong Collector/ Recycler Directory available at Hong Kong Waste Reduction Website, Census and Statistics Department's (C&SD) database, HKPC's in-house database, and a list of waste collectors/ recyclers, charity organizations and recycling programme operators from internet search. Key findings in the change in the industry size after 2018 were shown as below.
 - (i) 1,876 companies were identified in the 5th Market Study, which was slightly more than the total number of 1,810 companies identified in 2018;
 - (ii) 694 companies were found to be ceased after 2018;
 - (iii) 760 companies were newly identified, of which 561 companies were identified via Recycling Fund such as Enterprise Support Programme (ESP), Industry Support Programme (ISP), One-off Rental Support Scheme (ORSS) and One-off Recycling Industry Anti-epidemic Scheme (ORIAS)
6. 974 out of 1,876 companies identified in the 5th Market Study were recorded in the applicant lists of ORSS/ ORIAS. The grantees of ORSS and ORIAS collect/ recycle local recyclable materials by performing sorting, baling, dismantling, shredding, pelletising or the alike process(es) in Hong Kong.

7. During the surveys to stakeholders of local recycling industry, we also asked for the reasons behind some stakeholders not apply for ORSS/ ORIAS for review and the key reasons are summarized as below.
 - (i) Not meeting eligibility criteria of the schemes, for example involving only trading activities of recyclable materials, conducting recycling activities in Mainland China only, etc.;
 - (ii) Unable to provide sufficient supporting documents for the application;
 - (iii) Unwilling to disclose their business information to Secretariat of Recycling Fund; and
 - (iv) Not interested in or not heard about the schemes.
8. Local recycling industry was susceptible to market fluctuation. Although the overall size of local recycling industry increased by nearly 4% after 2018, almost 40% of the 1,810 companies identified in 2018 ceased recycling business operation after 2018. Meanwhile, for the 1876 companies identified after 2018, slightly more than 40% of them were newly identified.
9. Among the companies with known employment information, similar to the findings in 2018, almost 90% were small-sized companies with 1 to 9 employees, while about 6% and 4% were medium-sized companies with 10 - 19 and 20 - 49 employees respectively. On the other hand, less than 2% of the companies had 50 employees or more. This showed that the recycling industry was still dominated by small and medium-sized enterprises. The 974 grantees of ORSS/ ORIAS shared similar employment size distribution, with about 90% of the companies being small-sized companies with 1 to 9 employees, while about 7% and 3% being medium-sized companies with 10 - 19 and 20 - 49 employees respectively; plus, around 1% of the companies having 50 employees or more.
10. Among those companies that had ceased and were newly identified, around 90% of them were small-sized companies with 1 to 9 employees. In particular, over 70% of both ceased and newly identified companies had less than 5 employees. It revealed that small-sized companies might be more fragile to market fluctuation.
11. Among the companies with known information of business nature and target recyclable materials, it was observed that the percentage change of companies providing single recycling service (i.e. providing only either collecting, recycling or trading service related to recyclable materials) decreased, which was particularly noticeable for the percentage of companies which involved trading service only (-63%/ -73 companies). Meanwhile, the percentage change of companies providing more than one recycling service increased, which was particularly prominent for companies which were “both recycler & trader” (+335%/ +17 companies), followed by “all-in-one” companies¹ (+98%/ +83 companies) and companies which were “both collector and trader” (+29%/ +16 companies). It implied that the local recycling industry, especially for companies which provided trading service only, was transforming to provide more than one recycling service.
12. For ceased companies, the percentage of companies providing single recycling service (47%) was comparable to that providing more than one recycling services (53%). For newly identified companies, the number of companies providing more than one recycling services (70%) was obviously higher than that providing single recycling service (30%). It also implied that companies providing single recycling service might be less capable to maintain their business and companies newly joining the recycling industry might be aware of the business risk of providing only single recycling service.

¹ “All in one” companies refer to companies involving in collecting, recycling and trading activities related to recyclable materials.

13. Based on the available information from the consolidated database, the distribution of the business nature in the local recycling industry after 2018 was shown in below chart:



14. For companies identified after 2018 as “collector only”, around 40% of them were mobile recyclers which conducted collection activities from sources other than one single company and delivered the collected recyclables to downstream recycle(s) by collection truck(s).
15. Most companies targeted recyclables with higher demand, including waste metals (around 1,318 companies), waste paper (around 784 companies), waste plastics (around 550 companies), WEEE (including computers and electrical appliances) (around 287 companies) and waste textiles (around 94 companies). There were fewer collectors/ recyclers (less than 50 companies for each) to handle other recyclable materials with limited and uncertain demand like waste glass, wood waste, waste rubber tyres, food waste and tetra pak. The 974 grantees of ORSS/ ORIAS had similar trend of their target recyclables, with waste metals (either waste ferrous metals or waste non-ferrous metals) being the most popular among the companies (734 companies involved), followed by waste paper (415 companies involved), waste plastics (284 companies involved), WEEE (including waste computer products and electrical appliances) (62 companies involved) and waste textiles (30 companies involved); other recyclables with uncertain market outlets like waste glass, wood waste, waste rubber tyre and food waste were handled by less collectors / recyclers (around 10-20 companies for each).
16. In general, there was a decrease in the percentage of companies handling various types of recyclable materials, except waste metals. The percentage of companies handling waste computer products, waste electrical appliances and waste textiles showed more significant decrease when comparing the data before and after 2018. A possible reason could be the roll-out of Producer Responsibility Scheme on Waste Electrical and Electronic Equipment (WPRS) covering the regulated electrical equipment (REE) and the increase in awareness of the hygiene issue of waste textiles under the pandemic of COVID-19. For the 974 grantees of ORSS/ ORIAS, there were less companies joining the recycling industry after 2018 to handle waste electrical appliances and food waste.
17. Over one third of the 1,876 companies engaged in recycling business in Hong Kong after 2018 were located on non-ground floor of multi-storey buildings for office support and temporary storages of recyclables (36%). Besides, 29% of the companies were located on open land sites, of which over 90% were located in Yuen Long district, North district and Tuen Mun district. Open land sites had less space constraints to conduct multiple recycling activities and more storage area.

More companies were located in open land sites after 2018. Additionally, 19% of the companies were located on ground floors (e.g. recycling shops on road sides), which is slightly less than that of 2018. There were some companies with no fixed operation address as mobile recyclers (9%) and registered in residential buildings (7%). For the 974 grantees of ORSS/ ORIAS, the majority of them were located in open land sites (41%), followed by street corner shops (22%), non-ground floor of multi-storey building (17%) and residential buildings (3%); meanwhile, 16% of the companies were mobile recyclers. Of the 41% of ORSS/ ORIAS grantees located in open land sites, almost 95% of them were located in Yuen Long district, North district and Tuen Mun district as well.

18. According to the surveyed recycling companies, the main collection channels of recyclables were: local waste producers (95%), import (3%) and local upstream recycling chain (2%). Among recyclables obtained from local upstream of recycling chain, the major way to obtain recyclables was from local collectors (62% of recyclables weight), followed by local processors (20% of recyclables weight) and importers (18% of recyclables weight).
19. There were six main sources for local collectors and recyclers to collect recyclables: individual commercial and industrial (C&I) producers contributing 29% of the recyclables, followed by scavengers (28%), individual domestic waste producers (21%), construction site (10%), domestic and C&I waste from property management companies (PMC) (8%), and government contracts (1%).
20. Two major collection channels of the recycling industry were delivered by waste producers (56%), and collection at source by the companies (31%). Direct recyclables collection sources mainly include scavengers and PMC of housing estates and C&I premises, while some were from construction sites, cleansing companies, individual commercial companies (including restaurants, hotels, publishers and supermarkets), schools. Other collection channels include collecting through third party (9%), e.g. traders, re-processors/ recyclers, government waste management contractors, non-governmental organizations, single block buildings, etc.; also, purchasing from mobile recyclers (2%).
21. According to the report of Census and Statistics Department regarding export figures of recyclables in 2019, 41% of recyclables by weight were exported to Mainland China, followed by other Southeast Asian jurisdictions such as Vietnam (27%), Taiwan (10%) and Indonesia (10%). The proportion of recyclables being exported to Mainland China dropped from 68% in 2013 to 41% in 2019. This decline was due to the tightened policy of recyclables importing into Mainland China, and thus local industry had shifted its export destinations to Southeast Asian jurisdictions gradually such as Vietnam, Indonesia, India etc. While the proportion of export recyclables to these jurisdictions increased from 2016 to 2019.
22. Among the 150 interviewed recyclers, 55% and 41% of the respondents respectively considered that high land cost with inadequate land for recycling industry and high labour cost were the major unfavourable factors for local recycling industry. Among different types of operation costs, 37% was found to be labour cost, followed by rental/ land cost (34%) and logistic cost (18%).
23. Most respondents would like to receive support from the Recycling Fund to lessen the burden born from consumable cost (eg. water and electricity fee) (30%), followed by increase in number of staff (27%) and increase in recycling facilities (26%), which was different from the findings in 2018 with the increase in number of staff being the key issue (48%), followed by increase in recycling facilities (38%) and enhancement in logistic and collection process (27%). It may imply that the industry, composed mainly by small and medium sized-companies, had started to adapt to work in small company size assisted with machineries, which would facilitate the industrial transformation to provide more than one recycling service.

24. Highly similar to the findings in 2018, majority of the respondents expressed unwillingness to expand their business in the future (88%). For companies considering business expansion, their expansion strategy included recruiting more staff (63%), targeting more types of recyclables (42%), expansion of workplace (32%) and increasing recycling facilities (26%). The major challenges faced by these companies to expand their business were unstable market situation (38%), lack of capital for installing recycling facilities (34%) and inadequate cleaned recyclables due to weak source separation (30%).
25. Regarding the new enhancement measures launched by Recycling Fund, most of the respondents heard of them (75%) mainly from trade associations (40%), followed by publicity/ promotion of HKPC (19%) and mass media (i.e. newspaper, media or radio) (16%). Besides, 68% companies gave a positive response to measures of ORSS, but less than 10% of the respondents believed that improving ESP by increasing the funding cap, increasing the number of application and extension of project duration, would be potentially helpful for their business operation
26. Via desktop research and interview with stakeholders, several bottlenecks and limitations of the local recycling industry were revealed, which included the quality of semi-products, low value-added products, manpower shortage, high land cost and poor source separation of wastes. In the waves of COVID-19, some respondents also expressed concern over the reduction in the amount of recyclable materials, as well as suspension or closure of downstream recycling companies in Mainland China.

Key Findings of Section II – MARKET STUDY ON MAJOR TYPES OF RECYCLABLES

27. This study reviewed the past, current and potential (export) markets/ outlets for 13 types of recyclables, including waste paper, waste plastics, waste ferrous-metals, waste non-ferrous metals, WEEE, used clothes/ waste textiles, wood waste, waste glass, waste rubber tyres, food waste, yard waste, UCO and tetra pak. In 2019, waste paper, waste plastics, waste ferrous metals and waste non-ferrous metals accounted for over 95% of the exported recyclables. Most of Hong Kong's recyclables were exported within Southeast Asian jurisdictions. The top five export destinations for Hong Kong's recyclables in terms of weight were: Mainland China, Vietnam, Taiwan, Indonesia and India.
28. In 2019, Mainland China was the major market for waste paper (95%), waste non-ferrous metals (63%) and food waste (including those flours and pellets made of meat or offal which were unfit for human consumption, and greaves) (100%). Vietnam was the major market for waste ferrous metals, accounting for nearly half of the waste ferrous metals exported from Hong Kong (49%); also, overtook Thailand to be the major market for waste plastics (82%). For WEEE, spent batteries and electrical parts of machinery or apparatus were mainly exported to Korea (99%). Majority of local used clothes/ waste textiles were exported to Philippines (97%). For exported waste glass, Malaysia was the only market. Macau was the only export market for waste rubber tyres. For UCO, it was exported to Spain (43%), Netherlands (32%) and Malaysia (18%) as in 2018. The markets/ outlets for wood waste and yard waste were limited. In view of that, it is suggested to explore local market for processing wood waste and yard waste. For tetra pak, it was pre-processed in Hong Kong and was exported as waste paper.
29. The trading value of the 13 types of key recyclable materials in Mainland China were reviewed according to "Hong Kong Merchandise Trade Statistics Domestic Exports and Re-exports" issued by C&SD, HKSAR. For the top three exported recyclable materials (i.e. waste paper, waste metals and waste plastics), in general, the price of waste paper, waste metals (waste ferrous and non-ferrous metals) decreased from 2018 to 2020; while that of waste plastics slightly increased. The average trading price of waste paper fluctuated within HKD2,000 to HKD2,400 per tonne between July 2019 and June 2020. The average trading price of waste ferrous metal dropped from

HKD3,400 to HKD 2,200 per tonne between June 2019 to May 2020. For waste non-ferrous metals, between June 2019 and June 2020, the unit trading price of zinc, copper and aluminium decreased by 19%, 11% and 6% respectively; while that of nickel slightly increased by 4%. For the trading value of the six plastic scraps, the fluctuation was within 10%.

30. Mainland China was still the major export market of Hong Kong's recyclables in 2019. Despite this, the percentage of recyclables exported to Mainland China slightly decreased from 43% in 2018 to 41% in 2019 due to the implementation of Mainland China's Operation Green Fence (OGF) since 2013. Some local recyclers preferred to sell collected recyclables to Southeast Asia jurisdictions with fewer restrictions to reduce the operation cost and processing cost in handling the collected recyclables. It is estimated that factors like market supply, demand of nearby jurisdictions and transportation cost are determinants.
31. Further to the "Implementation Plan for Prohibiting the Entry of Foreign Garbage and Advancing the Reform of the Solid Waste Import Administration System (關於禁止洋垃圾入境推進固體廢物進口管理制度改革實施方案)" in 2017, Mainland China further prohibited the imports of total 40 types of waste as of 31 December 2019 respectively. In July 2020, Mainland China's national standard on recyclable copper, brass, aluminium alloy casting raw materials came into effect to ban the imports of these materials which were below the standard.
32. In response to the influence under the ban on imported waste of China, Vietnam has planned to phase out plastic scraps and eventually ban all plastic imports by 2025. In August 2018, Vietnam announced it would stop issuing licenses for new imports of recycled materials including waste paper, waste plastics and metal scraps, unless the importers could meet certain standards regarding to their shipments and their demand and capacity to process the imported recycled materials. Also, under the new Vietnam national standard QCVN 32: 2018/ BTNMT, since October 2019, it has been forbidden to import e-waste plastics such as cases of TVs, computers, office equipment, etc.
33. For Taiwan and Indonesia, there is no update on the import policy for recyclable materials in the study period.
34. In March 2019, the Ministry of Environment, Forest and Climate Change in India amended the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, which prohibits the import of solid plastic waste, allows the import of defective electrical and electronic assemblies and components manufactured in or exported from India within a year of export, etc.

Conclusion

35. This study reviewed the current situation and profile of the recycling industry in Hong Kong on recyclables' collection, processing and export. There was a trend that the local recycling industry was transforming to provide more than one recycling service.
36. Surveys were conducted with key stakeholders to reveal the situation of the recycling industry. It also covered the constraints/ challenges encountered by the recycling industry, and their desired support. Bottlenecks in relation to the cost of land and labour were still key limitations for the recycling industry. Fluctuation of the supply and exports of recyclables under the influence of COVID-19 might increase additional pressure on recycling industry.
37. To provide support for the recycling industry, the Recycling Fund can consider:
 - to subsidize the recurrent operation costs, for rental expenses, manpower expenses and consumable costs, for recycling companies, in face of the instabilities in market under the influence of COVID-19;
 - to support the recycling industry to purchase facilities for processing the collected recyclables

so as to meet policies and requirements of the key exporting jurisdictions;

- to support various pilot projects to enhance waste separation at source. More active outreach programmes and improved collection systems/ machineries such as reverse vending machines can be examined in different pilot projects so as to engage the public/ recycling industry in clean recycling and waste separation;
 - to subsidise recycling operations or NGOs in organising trial outreach programmes in the collection or recycling of recyclables, especially for recyclables with lower market values, so as to create new business trends within the industry, and to motivate the community to separate these recyclables at source;
 - To conduct additional quick on-site checking on collectors and recyclers which have not participated in the previous stakeholders' engagement exercise in the 6th Market Study, for more timely update on the status quo of the profile of the fast-changing recycling industry in Hong Kong; and
 - To conduct a comprehensive survey for the review on local recycling industry to adopt smart recycling technologies and move towards circular economy.
38. In view of the market situation of recyclables in Hong Kong, over 95% of the local recyclables exported are waste paper, waste plastics, waste ferrous metals and waste non-ferrous metals. In 2019, the top five export destinations of Hong Kong's recyclables in terms of weight were: Mainland China (41%), Vietnam (27%), Taiwan (10%), Indonesia (10%) and India (4%). Mainland China was the major market of waste paper and waste non-ferrous metals. While Vietnam was the major market of waste plastics and waste ferrous metals.
39. Mainland China, Vietnam and India had tightened import control for recyclable materials, especially waste metals and waste plastics.

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