

# **3rd Market and Technological Study (2017/18)**

## **Executive Summary**

**(HKPC Project Ref.: 10006395)**

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## *Background and Objectives*

1. Hong Kong Productivity Council (HKPC), has been engaged by the HKSAR Government as the Secretariat of the Recycling Fund, conducts studies on recycling markets and technologies under the Recycling Fund. The 3rd Market and Technological Study commenced in December 2017, aims to review Hong Kong's recycling industry and to identify the key factors that determine the success of the Recycling Fund continuously. The study covers latest recycling technologies for waste paper and waste plastics, paper and plastics manufacturing industry formerly existed in Hong Kong, current situation of the recycling industry in Hong Kong, the markets and potential buyers of recyclables etc.
2. In order to gain a more in-depth understanding of the recycling industry in light of the findings from the 1st and 2nd Market and Technological Studies, the following scope of works have been designed for the 3rd Study. The key objective is to obtain latest market and technological information related to the recycling industry so as to facilitate the implementation of the Recycling Fund and to enrich the industry's knowledge on latest market and technological developments.
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 and used cooking oil (UCO). To identify possible supportings that the Recycling Fund can provide, this Study also reviews Hong Kong's paper and plastic manufacturing industries that formerly existed, as well as the latest recycling technologies for handling waste paper and waste plastics in other regions.
4. This Study includes four sections as follows:
  - (i) To review the recycling technologies and manufacturing processes for major types of waste plastics and waste paper, and the relevant production lines that are feasible to be adopted in Hong Kong.
  - (ii) To review the manufacturing industries of waste paper and plastics formerly existed in Hong Kong, including product types, technology and reasons for the closure of manufacturing plants.
  - (iii) To continuously review and update how waste and recyclable materials emerge in Hong Kong currently. A desktop research has been conducted to review how Hong Kong enterprises collect, process and export recyclable materials. Also, surveys have been conducted with stakeholders of the recycling chain to reveal the situation of the industry. There are also suggestions for the Recycling Fund in terms of supporting measures.
  - (iv) To study thoroughly on previous, current and potential markets/ outlets for various types of recyclables. Import and export policy and control, export price trends and useful platforms for approaching potential buyers in Southeast Asia region were explored.

## *Key Findings of Section I – REVIEW ON MANUFACTURING TECHNOLOGIES AND PROCESSES OF WASTE PAPER & PLASTIC RECYCLING*

5. Hong Kong generates a substantial amount of waste plastics, however, only a small amount of it has been sorted or collected properly and recycled commercially. These include polyethylene terephthalate (PET) bottles, polypropylene (PP) bottles, high density polyethylene (HDPE) and low density polyethylene (LDPE) wrapping films.

6. Considering the popularity, maturity of the technology, technical and professional requirements, upstream and downstream supports, and commercial value of the products, three plastic manufacturing technologies are recommended:
  - (i) PET Plastics Washing and Granulating Line
  - (ii) Recycled Plastic Bag Production Line
  - (iii) Wood Plastic Composite (WPC) Production Line
7. PET Plastics Washing and Granulating Line can handle and recycle post-consumer plastic bottles made of different materials (e.g. PET, PP, PE, PVC etc.) with different colours (e.g. transparent, blue, green, yellow etc.). PET bottles can be recycled into PET pellets through a range of manufacturing technologies, including the process of sorting, washing, crushing and granulating. The estimated equipment cost of a recommended PET plastics washing and granulating plant with a daily capacity of 48 tonnes (assuming to operate 16 hours per day) to recycle waste PET plastic bottles to PET pellets is about HKD 24 millions. The spatial requirement is around 5,500 m<sup>2</sup> with a minimum height of 9 m and the minimum manpower requirement is 39 for each of two 8-hour-shifts per day. The timeframe for building a new plant is at least 21 months.
8. Recycled Plastic Bag Production Line can handle and recycle source-separated clean and dry post-consumer plastic PE films and bags (i.e. waste plastic films and bags) or washed PE waste/recyclables to produce recycled PE pellets for the production of recycled PE plastic bags. The main manufacturing technologies include crushing, pelletizing, extrusion, printing, cutting and sealing. The estimated equipment cost of a recommended plastic bag production line with a monthly production capacity of 1,000 tonnes (operate 16 hours per day) is about HKD 29 millions. The spatial requirement is about 6,400 m<sup>2</sup> and the minimum manpower requirement is 24 for each of two 8-hour-shifts per day. The timeframe for building a new line is at least 21 months.
9. WPC Production Line can handle and recycle waste plastics and waste wood by crushing them into fine fibers and powders and then mix together with additives for producing WPC that can substitute traditional wood products. The main manufacturing procedures involve crushing, defibrating, mixing, molding and cutting. The estimated equipment cost of a recommended WPC Production Line with a daily capacity of 4 tonnes (operate 20 hours per day) is about HKD 2.2 millions. The spatial requirement is about 10,000 m<sup>2</sup> with a minimum height of 10 m and the minimum manpower requirement is 15 for each of two 10-hour-shifts per day. The timeframe for building a new line is at least 15 months.
10. This study reviewed the recycling and manufacturing technologies for 3 types of waste paper, namely office paper, paperboard and newspaper; and the relevant production lines could be adopted in Hong Kong. The recycled paper products depend on the quality and texture of the above waste paper, which are examined detailedly in this study.
11. This study covers the main manufacturing technologies for recycling different types of waste paper to major recycled paper products, including sorting, repulping, screening, refining, paper making and paper packaging.
12. Comparison on these types of waste paper was conducted in terms of market value, local market size, investment on capital cost, profit making as well as payback period. It was found that manufacturing technologies of recycled office paper and tissue paper were feasible to be adopted in Hong Kong. Hence, the production line of these two recycling paper products are proposed as follows:
  - (i) Recycled Office Paper Production Line

## (ii) Recycled Tissue Paper Production Line

13. Recycled Office Paper Production Line can handle and recycle sorted waste paper through the process of repulping, screening, refining and manufacturing office paper products. The main manufacturing technologies of recycled office paper mainly include repulping, screening and refining processes to produce the raw material (i.e. jumbo roll of office paper). The jumbo roll of office paper is then cut, packaged and produced to various types of recycled papers, such as A4 or A3 office paper. The estimated equipment cost of a recycled office paper production plant to produce A4 office paper with a daily capacity of 65 tonnes (operate 16 hours per day) is about HKD 26 millions. The spatial requirement is about 13,000m<sup>2</sup> and the minimum manpower requirement is 40 for each of two 8-hour-shifts per day. The timeframe for building a new line is at least 21 months.
14. Recycled Tissue Paper Production Line can handle and recycle sorted waste paper through the process of repulping, screening, refining and manufacturing tissue paper products. The main manufacturing technologies of recycled tissue paper mainly include repulping, screening and refining processes to recycle the raw material ( i.e. jumbo roll of tissue paper). The jumbo roll of tissue paper is then rewound, cut and packaged to tissue paper rolls. The estimated equipment cost of a recycled tissue paper production plant to produce tissue paper rolls with a daily capacity of 16 tonnes (operate 16 hours per day) is about HKD 4.5 millions. The spatial requirement is about 10,000m<sup>2</sup> and the minimum manpower requirement is 40 for each of two 8-hour-shifts per day. The timeframe for building a new line is at least 21 months.
15. This study reviewed environmental legislative requirements related to the aspects of water pollution control, waste disposal, air pollution control, noise control, environmental impact assessment and hazardous chemicals control for operating paper and plastic recycling plants in Hong Kong, which involve Air Pollution Control Ordinance (Cap. 311), Waste Disposal Ordinance (Cap. 354), Water Pollution Control Ordinance (Cap. 358), Noise Control Ordinance (Cap. 400), Environmental Impact Assessment Ordinance (Cap. 499) and Hazardous Chemicals Control Ordinance (Cap. 595).

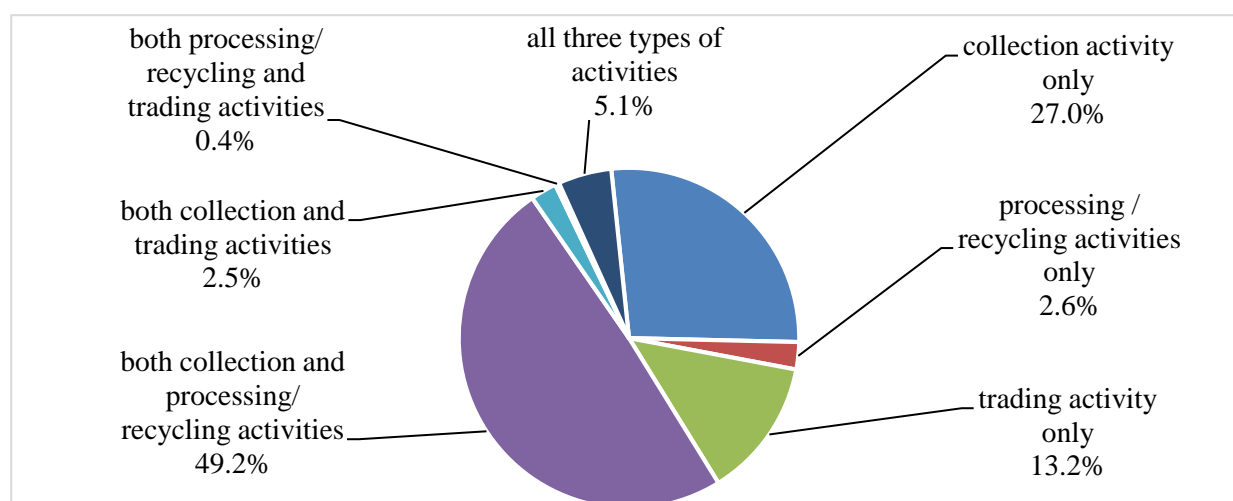
### *Key Findings of Section II – REVIEW OF PREVIOUSLY EXISTING PAPER AND PLASTIC MANUFACTURING IN HONG KONG*

16. Due to the lack of manufacturing industry in Hong Kong, waste paper are mainly exported to other regions for further processing and recycling. In the past decade, over 90% of waste paper was exported to Mainland China. There were two major recycled paper manufacturers named South China Paper Limited (南華造紙廠) and Future's Safe Company Limited (宏安紙廠) once in Hong Kong, but both had ceased operation in 2006 due to high operation cost and keen competition from Mainland China. The predecessor of Concordia Paper Limited (捷眾造紙) was South China Paper Limited, which operated between 1999 - 2006.
17. During the recycled paper manufacturing process, a large amount of diesel oil is consumed to generate steam for drying paper. Such high operation cost of using diesel oil was one of the major difficulties faced by both South China Paper Limited and Future's Safe Company Limited. In addition, the major market of recycled paper products has shifted to Mainland China, which means the manufacturers had to face keen competition from nearby factories with lower operational cost. Therefore, these two major paper manufacturers ceased their business operation in Hong Kong in 2006.
18. Currently, there are still a few plastic manufacturers in Hong Kong. The existing plastic manufacturers in Hong Kong mainly purchase raw materials for production in compliance with safety and quality requirements of the products. Some specific types of products required stringent safety requirements including food containers, kitchenware and products for medical use. One of

the major players is Star Industrial Limited, which established in 1949 and located at San Po Kong, manufactures the famous local brand of “Red A” plastic products in Hong Kong. They have no intention to use recycled plastic materials at this moment due to stringent hygienic and safety requirement.

### *Key Findings of Section III - Profile of the Local Recycling Industry*

19. This Study has used four databases, which include 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. 281 companies were found ceasing their operation after 2016 while another 207 businesses were found to have newly opened in the same period. The number of waste collection, trading and recycling companies in 2017 was 1,846 which is less than that identified in 2016 (i.e. 1,920 companies).
20. Among the companies with known employment information, about 89% were small-sized companies with 1 to 9 employees, while about 6% and 3% were medium-sized companies with 10 - 19 and 20 - 49 employees respectively. On the other hand, less than 2% of the companies had more than 50 employees. This shows that the recycling industry is dominated by small and medium sized enterprises.
21. Among those companies that had closed and newly opened, around 97% of them were small-sized companies with 1 to 9 employees. In particular, nearly 90% employed less than 5 staff. It reveals that small-sized companies might be more susceptible to market fluctuation. The majority of enterprises ceased operations after 2016 were companies involved in collection activity only (37.7%) while those newly opened companies were mainly involved in both collection and processing / recycling activities (73.0%), collecting mostly waste metal, waste paper, and waste plastic.
22. Based on the available information from the consolidated database, the distribution of the business nature in the recycling industry in 2017 was shown in the below chart:



23. Most companies process recyclables with higher demand, including waste metal (around 1,200 companies), waste paper (around 950 companies), waste plastic (around 800 companies), WEEE (including computers and electrical appliances) (around 600 companies) and waste textiles (around 350 companies). There were fewer collectors/ recyclers (around 100 companies) to handle other recyclable materials with limited and uncertain demand like glass, wood, rubber tyres and food waste.
24. Nearly half of the roughly 1,800 companies engaged in recycling business in Hong Kong in 2017

were registered to non-ground floor multi-storey buildings and it was observed that most of these were used as office premises of trading companies, and some were used as temporary storages of recyclables. 28% registered themselves on ground floors (e.g. recycling shops on road sides), which is slightly less than that of 2016. 17% of the companies were registered on uncovered sites. There were some recyclable collectors/ recyclers (nearly 5%) registered to residential buildings while most of them were small-sized companies with less than 10 employees.

25. The main collection channels of recyclables were: (i) imports, (ii) local waste producers and (iii) local upstream recycling chain. According to the surveyed recycling companies, the order of the above channels is: local waste producers (76%), import (17%) and local upstream recycling chain (7%). Among recyclables obtained from local upstream of recycling chain, the major way to obtain recyclables was from local collectors (76% of recyclables weight), followed by local pre-processors (20% of recyclables weight) and importers (4% of recyclables weight).
26. There were six main sources for local collectors and recyclers to collect recyclables. Over half of the companies collected recyclables from individual commercial and industrial (C&I) producers (34%), followed by scavengers (27%), individual domestic waste producers (19%), construction site (13%), domestic and C&I waste from property management companies (PMC) (6%), and through government contracts (1%).
27. Two major collection channels of the recycling industry were delivery by waste producers (51%), and pick up by the companies (39%). 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, supermarkets), schools, or even via online platforms. Other collection channels include collecting through third party (8%), e.g. traders, re-processors/ recyclers, government waste management contractors, non-governmental organizations and single block buildings etc, and purchasing from mobile collection vehicles (2%).
28. According to the report of Census and Statistics Department regarding export figures of recyclables in 2017, around half of recyclables by weight were exported to Mainland China, followed by other Southeast Asian jurisdictions such as Vietnam and Indonesia. The proportion of recyclables being exported to Mainland China dropped from 45.8% in 2016 to 42.4% in 2017. This decline was due to the tightened policy of importing recyclables to Mainland China, and thus Hong Kong has shifted its export destination to Southeast Asian jurisdictions gradually such as Vietnam, Indonesia, India etc. While the proportion of export recyclables to these jurisdictions had increased from 2016 to 2017.
29. Among the 150 local recyclers, 51% and 48% of the respondents considered that high labour cost and high land cost with inadequate land for recycling industry were the major unfavourable factors for local recycling industry.
30. Hence, most respondents would like to receive support from the Recycling Fund to lessen the burden of operation cost (mainly labour cost). Over one third (37%) of the overall cost was found to be labour cost. Another one third of overall cost was rental and land cost, followed by logistic cost. In general, insufficient human and land resources for the recycling industry still influenced the business decision on the type of recyclables to be collected / recycled.
31. Regarding Mainland China's tightening policies on import of recyclables, 93% of the recyclers have heard of these policies, and 85% of them expressed that their business had been affected by such policies. 56% of companies expressed that both the price of recyclable materials sold to Mainland China and their business profit were reduced after the policies had enacted. Another 34% of companies needed to recruit more labour to ensure the quality of recycled semi-products/products (e.g. pellets, flakes) meet Mainland China's import requirement. There were also 21% of recycling companies needed to export their recyclables to other jurisdictions (e.g.

South East Asia, South Asia) instead of Mainland China since certain types of recyclables was prohibited by Mainland China.

32. Via desktop research and interview with stakeholders, several bottlenecks and limitations of the local recycling industry have been revealed, which include the quality of semi-products, low value-added products, manpower shortage, high land cost and inadequate land for recycling operations, improper sorting of recyclables in the “recycling chain” and unstable market situation.

### *Key Findings of Section IV – Market Study on Major Types of Recyclables*

33. This study reviewed the past, current and potential (export) markets for 12 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 and UCO. In 2017, waste paper, waste plastics, waste ferrous metals and waste non-ferrous metals accounted for over 90% of the exported recyclables. Most of Hong Kong's recyclables were exported within Asia. The top five export destinations for Hong Kong's recyclables in terms of weight were: Mainland China, Vietnam, Indonesia, Taiwan and India.
34. In 2017, Mainland China was the major market for waste paper, waste plastics, waste non-ferrous metal, waste textiles / used clothes and wood waste. Vietnam was the major market for waste ferrous metals, which accounted for over 50% of all waste ferrous metals exported from Hong Kong. For non-ferrous metals, Mainland China had the highest market share while Korea came second, each taking about one-third of Hong Kong's waste non-ferrous metals. For WEEE, spent batteries and electrical parts of machinery or apparatus were exported to Korea. For glass, the majority of waste glass was exported to Thailand. Although the export amount had increased significantly compared to 2016, it was still relatively low when comparing with over 100,000 tonnes of waste glass disposed of at landfills. Similarly, the recycling rate for waste tyres was low and local retreaded tyres for export were limited. In view of that, it is suggested to explore local market for processing waste glass and waste tyres. For food waste, including those flours, meals and pellets made of meat offal (unfit for human consumption) and greaves, Taiwan was the major export market in 2017, which accounted for over 70% of the total export of food waste. For UCO, it was exported to Spain, Netherlands and Malaysia. Considering the geographical advantage and selling price of UCO, Malaysia is expected as a potential market for UCO in the coming years.
35. In general, the price of waste paper, waste plastics and waste non-ferrous metals has recorded an increasing trend in 2017. The average price of different kinds of waste paper rose 76% between 2016 and 2017 in Mainland China. Regarding plastic price, the price fluctuation of PVC, PET and HDPE recyclables were steady, which is within 20%. For waste non-ferrous metals, both aluminium and copper scraps slightly dropped in unit trading price, decreased by 5% and 9% respectively.
36. Mainland China used to be a major export market of Hong Kong's recyclables. However, since the implementation of Mainland China's Operation Green Fence (OGF) in 2013, interception of waste export to Mainland China has been stepped up. This has led to a higher operating cost for handling recyclables while some kinds of recyclables have even been prohibited from being imported to Mainland China. Considering such reason, some local recyclers preferred to sell collected recyclables to Southeast Asia jurisdictions with fewer restrictions, such as Vietnam, Indonesia, and Malaysia, as an alternative. It is estimated that factors like processing cost, market supply and demand of nearby jurisdictions and transportation cost are determinants.
37. In order to prohibit the import of hazardous solid waste and solid waste with strong concern from the public, Mainland China announced 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 April 2017. In July 2017, Mainland China further submitted a revision of import waste policy to the World Trade Organization (WTO), which prohibited the import of 24 types of municipal solid waste, including highly polluted solid waste, waste plastics, un-sorted waste paper etc. In April 2018, the Mainland Authority announced the further prohibition of another 32 types of imported waste by 31 December 2018 and 31 December 2019 respectively. Another announcement published by the Ministry will restrict the import of 8 types of waste metals from July 2019, including waste ferrous metals, waste steel and waste copper.

38. In September 2016, Vietnam published the Decree No. 134/2016/ND-CP on tax exemption regulations on specified proportion of scrap in the production of export products. The regulation stated that “surplus imported scrap, waste and raw materials and supplies actually imported under processing contracts are exempted from import duty tax when they are sold for domestic consumption, but must be declared and paid Value Added Tax, excise tax, and environmental protection tax (if any) to the Customs authorities”. Thus, the export price to Vietnam has been increasing recently. Traders need to apply for a Certificate of Eligibility granted by the Natural Resources and Environment Service of the locality where the trader’s production establishment is located, for scraps to be imported into the country.
39. India restricts the import of hazardous wastes and other wastes except waste for recycling, recovery, reuse and utilization including co-processing. Import/export of hazardous and other waste must submit an online application to the Ministry of Environment, Forest and Climate Change, Government of India, for their review. Importers must have an Importer License which is issued by the Regional Authority of Director General of Foreign Trade.
40. Some online platforms were explored for identifying potential buyers (e.g. recycling companies and manufacturing companies) in Thailand and Vietnam and can be used by local recycling companies for exploring alternative markets outside Mainland China. Thailand and Vietnam governments and enterprises provide search engines and indexing websites in English for international traders to identify potential buyers conveniently. Some global platforms established by international organisations also provide company directories of Thailand, Vietnam and Indonesia to encourage and promote trades in Southeast Asia. The followings are the platforms identified:
  - The Federation of Thailand Industries: <https://www.fti.or.th/2016/eng/index.aspx>
  - RecycleNow.Asia: <http://www.recyclenow.asia>
  - Yellowgreenthailand: <https://www.yellowgreenthailand.com>
  - Trade FairDates: <https://www.tradefairdates.com>
  - VietnamAZ.com: <http://www.vietaz.com>
  - Plastic & Rubber Vietnam Hanoi 2019: <http://www.plasticsvietnam.com>
  - Paper Vietnam 2019: <http://www.paper-vietnam.com>
  - Environmental XPRT: <https://www.environmental-expert.com>
  - GlobalTrade.net: <https://www.globaltrade.net>

## Conclusion

41. There is only a limited amount of waste plastic has been separated/collected into homogenous forms and is commercially viable for recycling in Hong Kong. 3 plastic manufacturing technologies are recommended here to facilitate waste plastics recycling in Hong Kong, which are (i) PET Plastics Washing and Granulating Line, (ii) Recycled Plastic Bag Production Line and (iii) WPC Production Line.
42. The daily production capacity of the 3 technologies ranging from 4 tonnes (WPC Production Line) to 48 tonnes (PET Plastics Washing and Granulating Line) ; while the estimated equipment cost



ranging from HKD 2.2 millions (WPC Production Line) to HKD 29 millions (Recycled Plastic Bag Production Line).

43. This study found that the manufacturing technologies of recycled office paper and tissue paper were feasible to be adopted in Hong Kong. The proposed technologies for recycling paper include: (i) Recycled Office Paper Production Line and (ii) Recycled Tissue Paper Production Line.
44. The daily production capacity of the 2 paper recycling technologies ranging from 16 tonnes (Recycled Tissue Paper Production Line) to 65 tonnes (Recycled Office Paper Production Line). The estimated equipment cost ranging from HKD 4.5 millions (Recycled Tissue Paper Production Line) to HKD 26 millions (Recycled Office Paper Production Line).
45. Waste paper are mainly exported to other regions for further processing and recycling, predominantly to Mainland China. The paper recycling process consumes a large amount of diesel oil to generate steam for paper drying. Such high operation cost of diesel oil was one of the major difficulties faced by paper recyclers in Hong Kong in the past. In addition, the major market of recycled paper products was shifted to Mainland China, which means the manufacturers had to face keen competition from the factories with lower operational cost from the Mainland. Two major paper manufacturers then ceased their business operation in Hong Kong in 2006.
46. Currently, there are still a few plastic manufacturers in Hong Kong who mainly purchase virgin raw materials for their production.
47. This study reviewed the current situation and profile of the recycling industry in Hong Kong on recyclables' generation, processing and export. Surveys have been 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. Bottleneck in relation to manpower shortage is still the key limitation for the recycling industry. The low value of recycled products and the implementation of Operation Green Fence in China in 2017 constrained Hong Kong's export of recyclables.
48. To provide support for the recycling industry, the Recycling Fund can consider:
  - to support the recycling industry in purchasing compactor trucks for recyclables collection, in order to enhance efficiency;
  - to support various pilot projects to enhance waste separation at source. More active outreach programme and improved collection system/ machinery such as reverse vending machines can be examined in different pilot projects to engage the public/ recycling industry in clean recycling and waste separation;
  - to encourage the collaboration between PMC and recyclers to apply for the Recycling Fund; and
  - to subsidise the recycling operations or NGOs in organising trial outreach programmes in the collection or recycling of recyclables, especially for recyclables with lower market values to create new business trends within the industry, and to motivate the community to separate these recyclables at source for collectors/ recyclers.
49. In view of the market situation of recyclables in Hong Kong, over 90% of the local recyclables exported are waste paper, waste plastics, waste ferrous metals and waste non-ferrous metals. In 2017, the top five export destinations of Hong Kong's recyclables in terms of weight were: Mainland China, Vietnam, Indonesia, Taiwan and India. About half of the recyclables (about 1 million tonnes) generated in Hong Kong were exported to Mainland China. It was followed by Vietnam (33%), Indonesia (7%), Taiwan (6%) and India (6%). Mainland China was still the major

market of waste paper, waste plastics, waste non-ferrous metals, waste textiles, wood waste and yard waste. While Vietnam was the major market of waste ferrous metals, which took more than 50% of all waste ferrous metals. Korea and Mainland China were the major markets of waste non-ferrous metals. Macau was the only export market for retreaded tyres with a very limited amount. Taiwan was the major market of food waste. For UCO, the major market was Spain and the major market for waste glass was Thailand.

50. Owing to the public's strong concern, Mainland China has announced 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 April 2017 to prohibit the import of hazardous solid waste. In July 2017, the Mainland further submitted a revision of import waste policy to the WTO, which prohibited the import of 24 types of municipal solid waste, including highly polluted solid waste, waste plastic, un-sorted waste paper etc. In April 2018, the Mainland Authority announced the further prohibition of 32 types of imported waste by 31 December 2018 and 31 December 2019 respectively. Another announcement published by the Ministry will restrict the import of 8 types of waste metals from July 2019, including waste ferrous metals, waste steel and waste copper.

*- End of Executive Summary -*