



Recycling Fund Study Mission 2018 Thailand




6-9 May 2018

Background

Study Mission

-  Visit to Thai Government, Plastic Institute of Thailand, 4 paper, plastics recycling and manufacturing operations

Purpose

-  To explore the possibility of exporting recyclables to Thailand for recycling;
-  To understand the market situation in Thailand;
-  To learn the recycling technologies deployed in Thailand

Participants

RFAC Members

(3 members - Jimmy Kwok, Raymond Leung, Edward Chan)

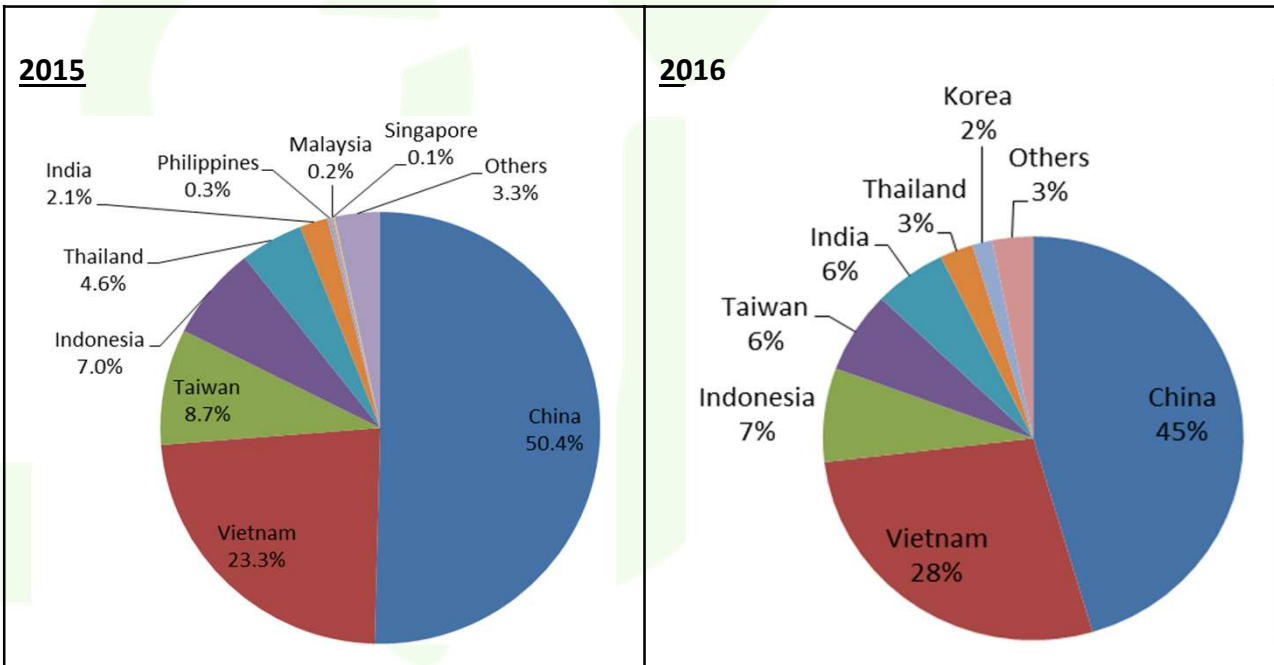
Recycling industry trade (14 members)

EPD & HKPC (5 members)

Background

Overview of Thailand

- Not a major export market for recyclables of Hong Kong
- About 4.6% (93,000 tonnes) and 3% (53,000 tonnes) of the total exported recyclable of Hong Kong were exported to Thailand in 2015 and 2016 respectively.
- Many sizable recycling and manufacturing companies in Thailand who are sourcing recycled materials from the world



7 May 2018

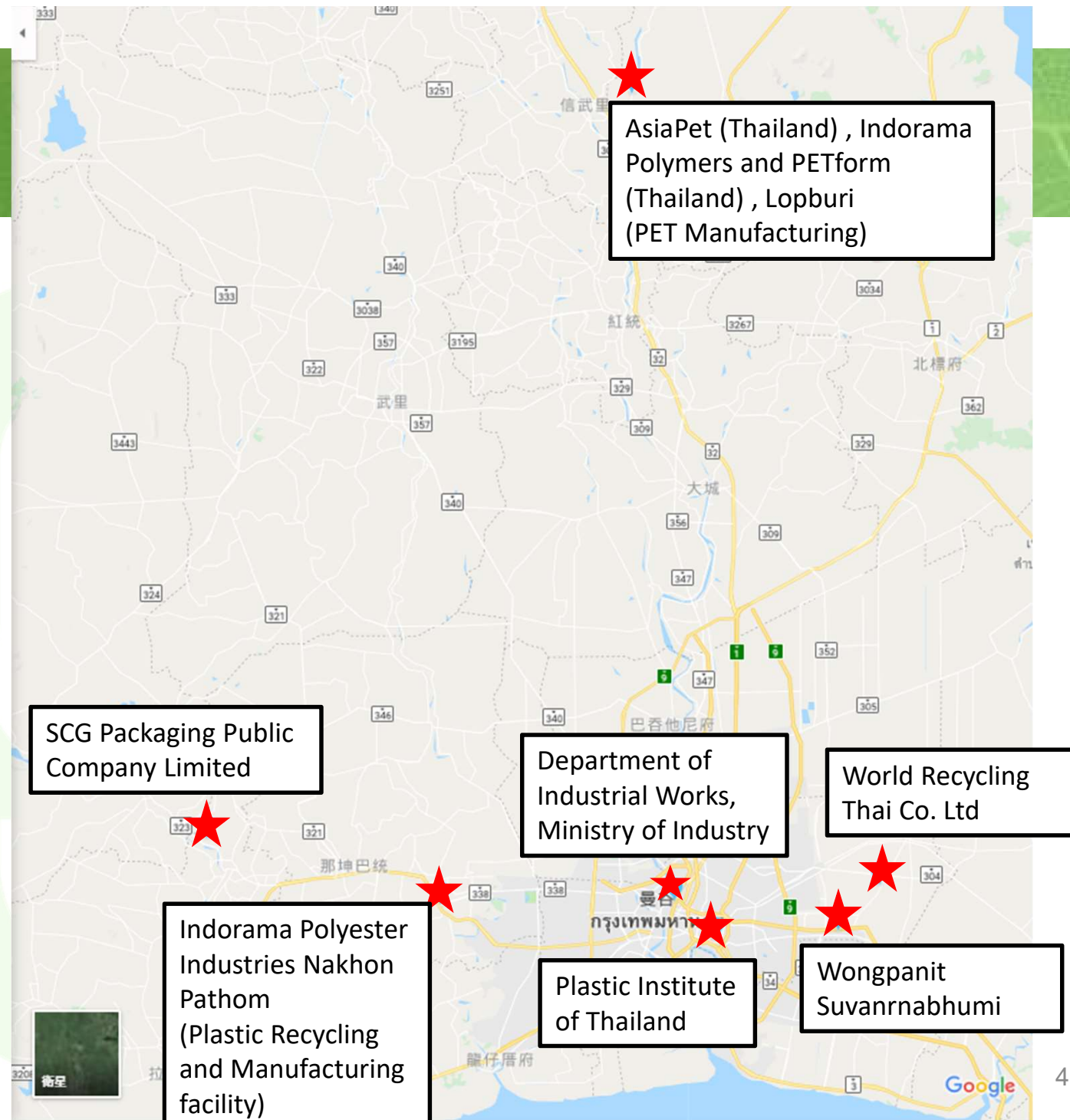
- Plastic Institute of Thailand
- Department of Industrial Works, Ministry of Industry
- Indorama Polyester Industries Nakhon Pathom (Plastic Recycling and Manufacturing facility)

8 May 2018

- SCG Packaging Public Company (Paper Recycling and Manufacturing facility)
- AsiaPet (Thailand) , Indorama Polymers and PETform (Thailand) , Lopburi (PET Manufacturing)

9 May 2018

- Wongpanit Suvannabhumi / World Recycling Thai Co. Ltd. (Recycling Facility)



Department of Industrial Works, Ministry of Industry

- ❧ They **welcome Hong Kong's recycling industry to invest** in Thailand, or to look for opportunities to import the recyclables from Hong Kong.
 - ❧ For waste paper, the impurities can be confined to 2% (Mainland China's new requirement is 0.5%).
 - ❧ Regarding waste plastics, they will accept cleaned flakes or even clean PET bottles
- ❧ For potential Thailand recyclables importers, they recommended us **to liaise with The Federation of Thai Industries (FTI)**.
- ❧ Through the established communication channel meeting, we can obtain further information regarding to import regulations and tax for recyclables.



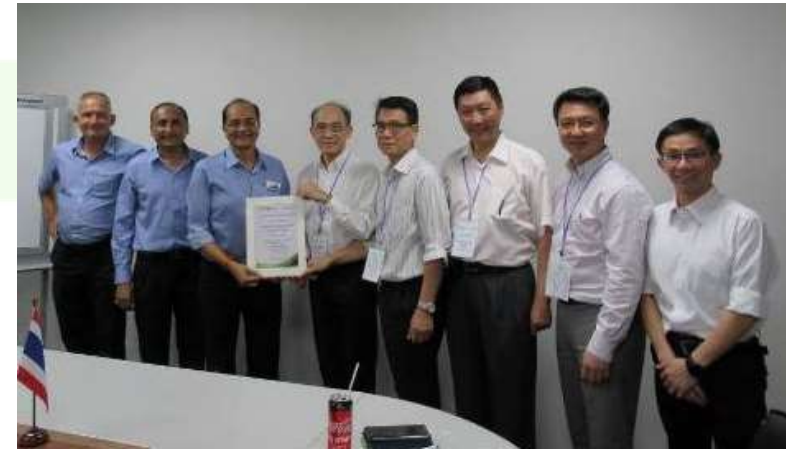
Plastics Institute of Thailand (PITH)

- Established in 2010, the 8th industry specific institute under the supervision of Industrial Development Foundation;
- To collaborate with the government, academic and private sector to support Thai plastics industry;
- To strengthen and drive Thai plastics industry toward sustainable development;
- 82% of plastic manufacturers are engaged in packaging manufacturing;
- plastic industry contributes to 7.51% of Thailand's gross domestic product (GDP)



Indorama Polyester Industries Nakhon Pathom a subsidiary of Indorama Ventures Public Company Ltd.

- Indorama Ventures is a global chemicals company with 77 production sites in 27 countries including 2 sites in Kaiping (開平) of Guangdong Province;
- They are willing to explore importing recycled plastics from overseas, so our recycling industry could further explore with them for exporting Hong Kong's recycled plastics to them in the future.



Capacity	29,000 tonnes per annum
Products	Bottle flakes, PET resins, recycled fibers

YouTube: <https://youtu.be/fxmrL2kANGM>

Indorama Polyester Industries Nakhon Pathom a subsidiary of Indorama Ventures Public Company Ltd.



AsiaPet (Thailand) , Indorama Polymers and PETform (Thailand) , Lopburi (PET Manufacturing)

- Another manufacturing site of Indorama Ventures Public Company Ltd.;
- This plant mainly produces PET Resin, preforms, PET bottles and HDPE closures for carbonated soft drinks, water and other applications;
- Annual capacity is now up to 178,000 tonnes,
- i.e. 905 million preforms, 420 million bottles and 3,600 million closures



Capacity	182,000 tonnes per annum – PET resin
Products/ application	PET polymers, preforms for PET bottles, sheets, films and straps



AsiaPet (Thailand) , Indorama Polymers and PETform (Thailand) , Lopburi (PET Manufacturing)





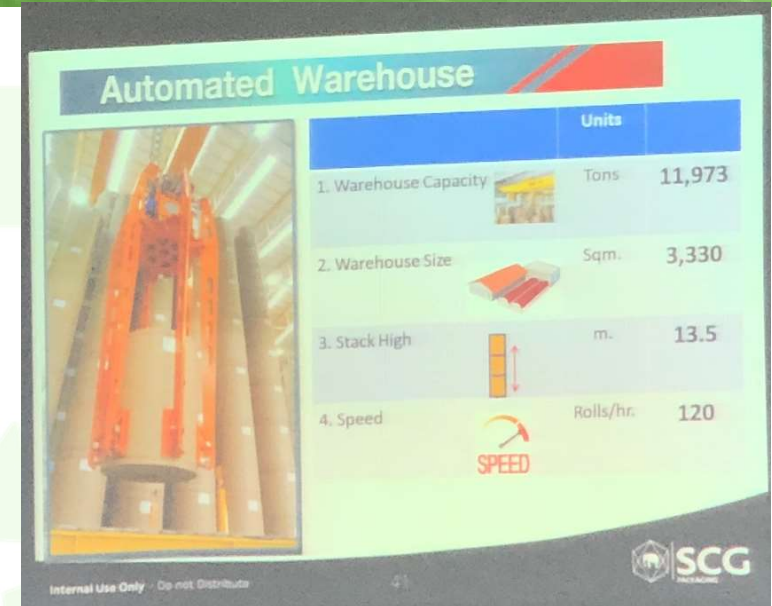
SCG Packaging Public Company Limited

- SCG packaging's products includes packaging paper, duplex board, paper bag, etc.
- Annual production capacity is about 3 million tonnes. They source mainly from domestic market and only imported very few amount from HK before.
- The impurity requirement is **2%** following international standard. They have plants in Thailand, Philippines and Vietnam.

Capacity	3 million tonnes per annum
Products	Paper Pulp, Paper, Containerboard, Packaging



SCG Packaging Public Company Limited



Wongpanit Suvannabhummi / World Recycling Thai Co. Ltd (WRT)

- Capacity is more than 500 tonnes per day for treatment on waste plastic, paper, metal, glass bottles, office equipment, electronics, industrial waste and many others from households, business and government sectors.
- Wongpanit purchases wide range of recyclable waste from household, community, retail shop, distributor, industrial factory, school and government sector.

Wide Range of Recyclables

Paper

- Cardboard (OCC)
- Show box/ Color Paper
- Newspaper
- Shredded paper
- Magazine
- Cement bag
- Black/white
- Notebook
- Juice/milk Cartons

Plastic

- Clear/color/brown PET bottle
- HDPE bottle
- Mixed color plastic
- Plastic caps
- CD / DVD
- PP Corrugated (Future board)
- S-Lon PVC pipes
- PVC Window / Door

frame

- Electrical wire
- PVC shoes/ boots
- Black PE pipe
- Water hose
- Clear PS
- Fertilizer bag
- PVC carpet
- Plastic bag
- Black (garbage)

Metal

- Aluminium can
- Aluminium engine, cylinder head, gear room, etc.
- Mixed aluminium
- Brass, copper
- Brass radiator
- Stainless steel
- Lead
- Batteries

Others

- Candle
- Candle wax
- Coconut shell
- Shredded coconut
- Used cooking oil

Wongpanit Suvannabhum / World Recycling Thai Co. Ltd (WRT)

- Through franchise system, Wongpanit can bargain with large manufacturers (such as SCG) for better price as well as ensure the quality, on the other hand, franchisees can earn more through the system.
- Free** franchise fee
- Opportunities: Their subsidiaries WRT are very interested to explore **importing plastics** or **paper** from overseas for recycling



Franchisee's requirements

Qualification

- Must be moral person
- No debts
- No record of bankruptcy
- No records of convicting any thefts especially buying stolen items
- Never done any illegal occupations

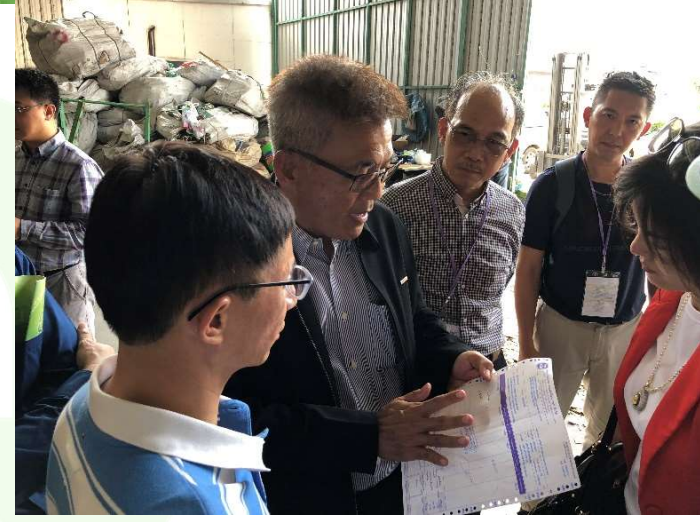
Process and conditions of becoming a franchisee

- Prepare a capital money, workers, location of shop
- Attend training provided by Wongpanit (2 weeks)
- Do the SWOT analysis
- Prepare a marketing plan
- Train employees and workers at all level and practice buying and selling recyclables
- Inspect the building/shop before opening

Location

- Should be by main street to attract customers
- Should not be located near to school, hotel, restaurant, government building, park and hospital area

Wongpanit Suvanrnabhumi / World Recycling Thai Co. Ltd (WRT)



All presentation materials are owned by the Secretariat of Recycling Fund.
All rights reserved.

“Any opinions, findings, conclusions or recommendations expressed in this material/
event (or by members of the RFAC) do not reflect the views of the Government of
HKSAR or the Advisory Committee on Recycling Fund”

"This presentation prepared by HKPC is intended for [brief introduction / general
information] regarding the subject matter only and should not be construed as any
kind of advice or guidance. The content and materials herein are solely for
reference purpose and should not be used for any other purposes. HKPC does not
accept any liability or claim for any loss or damage caused by relying on or in
connection with the use of any information provided herein."



REPORT ON STUDY MISSION TO THAILAND
Recycling Fund Study Mission 2018
(6 May – 9 May 2018)

1 EXECUTIVE SUMMARY

1.1 Background

The Ministry of Environmental Protection (MEP) of the China Government had announced the new import requirements on waste paper and plastic for recycling. The Recycling Fund team has closely liaised with local recyclers and has implemented a series of new measures to support the recycling trade for enhancing and upgrading their operation. As one of the improvement measures, the Recycling Fund has organized a study mission to Thailand from 6-9 May 2018 (please refer to Appendix 1 for the detailed itinerary) in order to explore the possibility of exporting recyclables to Thailand for recycling, to understand the market situation in Thailand and to learn the recycling technologies deployed in Thailand.

A total of 22 participants joined the study mission, included the Chairman and members of Recycling Fund Advisory Committee, companies from recycling industry in Hong Kong, representatives from Environmental Protection Department and Hong Kong Productivity Council (HKPC). During this trip, we met the Department of Industrial Works, Ministry of Industry and Plastic Institute of Thailand to understand the current import market situation of Thailand, and then we visited to four paper and plastics recycling and manufacturing operations to explore future business opportunities.

According to the findings of the market studies prepared by HKPC before, it is noted that the Thailand was not a major export market for recyclables of Hong Kong in the

previous years. In 2015 and 2016, the top four jurisdictions for Hong Kong's recyclables export by weights were Mainland, Vietnam, Indonesia and Taiwan. About 4.6% (93,000 tonnes) and 3% (53,000 tonnes) of the total exported recyclable of Hong Kong were exported to Thailand in 2015 and 2016 respectively. Nevertheless, there are many sizable recycling and manufacturing companies in Thailand who are sourcing recycled materials from the world. It would be possible to explore export opportunities as well as to understand the recycling technologies through this study mission.

1.2 Collected Information and Opportunities

During the trip, we have obtained some important information about Thailand's recyclables market and operation. Also there are good opportunities for Hong Kong's recycling industry to cooperate with them. The information is summarized below:

1.2.1 Department of Industrial Works, Ministry of Industry

- They in-principle welcomed Hong Kong's recycling industry to invest in Thailand, or to look for opportunities to import the recyclables from Hong Kong.
- As for import of waste paper and plastics, the import restriction is still not as high as Mainland China. For waste paper, the impurities can be confined to 2% (Mainland China's new requirement is 0.5%). Regarding waste plastics, they will accept cleaned flakes or even clean PET bottles (Mainland China only accepts plastic pellets as raw materials).
- As per our request for referring potential Thailand recyclables importers to us, they recommended us to liaise with The Federation of Thai Industries (FTI). We may also check from the websites for related trade associations.

- Through the established communication channel after the meeting, we can obtain further information regarding to importation regulations and tax for recyclables.

1.2.2 Plastic Institute of Thailand

- We have established contact with the association and learned more information about the potential import of plastics recyclables. We may contact them later for potential collaboration or referral of waste plastics importers.

1.2.3 Indorama Polyester Industries Nakhon Pathom a subsidiary of Indorama Ventures Public Company Limited

- This is the largest plastics recycler and manufacturer in Thailand, and 3rd largest in ASEAN. They have operation in 27 countries and a total of 77 sites, including 2 in Kaiping (開平) of Guangdong Province. They are willing to explore importing recycled plastics from overseas, so our recycling industry could further explore with them for exporting Hong Kong's recycled plastics to them in the future.
- We were briefed of the sorting and treatment process of recycled plastics in this factory, so our recycling industry could make reference and consider to improve their own operation in Hong Kong.

1.2.4 Asia Pet (Thailand) , Indorama Polymers and PET form (Thailand) , Lopburi (PET Manufacturing) a subsidiary of Indorama Ventures Public Company Limited

- Asia Pet (Thailand) is the largest PET bottle plant in Thailand. They manufacture 55 tons of PET bottles per day. Because Thailand does not

allow to manufacture plastic bottles for human consumption from recycled PET (rPET) bottles, their plant could only process virgin plastic materials. The same requirement on virgin PET material applies to Mainland China, Taiwan, etc., but USA and Hong Kong do not have such requirement.

- The recycled plastics from their other plants in Thailand are mainly used to manufacture fibers for textiles.
- Riding on the knowledge gained from the visits regarding to production process of PET preforms and other products, the participants could explore the opportunities of setting on their manufacturing facilities in Thailand or Hong Kong, in order to develop sustainable business in the future.

1.2.5 SCG Packaging Public Company Limited

- They are a big paper manufacturer in Thailand with annual production capacity of about 3 million tons. They source mainly from domestic market and only imported very few amount from HK before. Their impurity requirement is 2% following international standard. They have plants in Thailand, Philippines and Vietnam. They are open to explore the import of waste paper from Hong Kong.
- By knowing their import requirement for the source of recycled paper after the meeting, our recycling industry could further explore with them for exporting Hong Kong's recycled paper to Thailand in the future.

1.2.6 Wongpanit Suvannabhumi / World Recycling Thai Co. Ltd

- They are collecting 9 main types of recyclables from Thailand and overseas. They are very interested to explore importing recycled plastics from overseas. Hence our recycling industry could further explore with them for exporting

Hong Kong's recyclables to them in the future. In particular waste paper may be one of the most likely ones, as there may not be import tax for the waste paper to enter Thailand. Nevertheless they said they would still need to check for the quality of the recyclables so as to confirm with local authority.

- They also operate a franchise system in Thailand to encourage other local but smaller recyclables collectors to join their group and use their brand. In such they can ensure supply of recyclables to big manufacturers (such as SCG) and get a higher price.
- Relying on the knowledge gained from the meeting regarding the running of franchise system in Thailand, participants could make reference to improve their operation in Hong Kong.

2 THE STUDY MISSION

2.1 Background

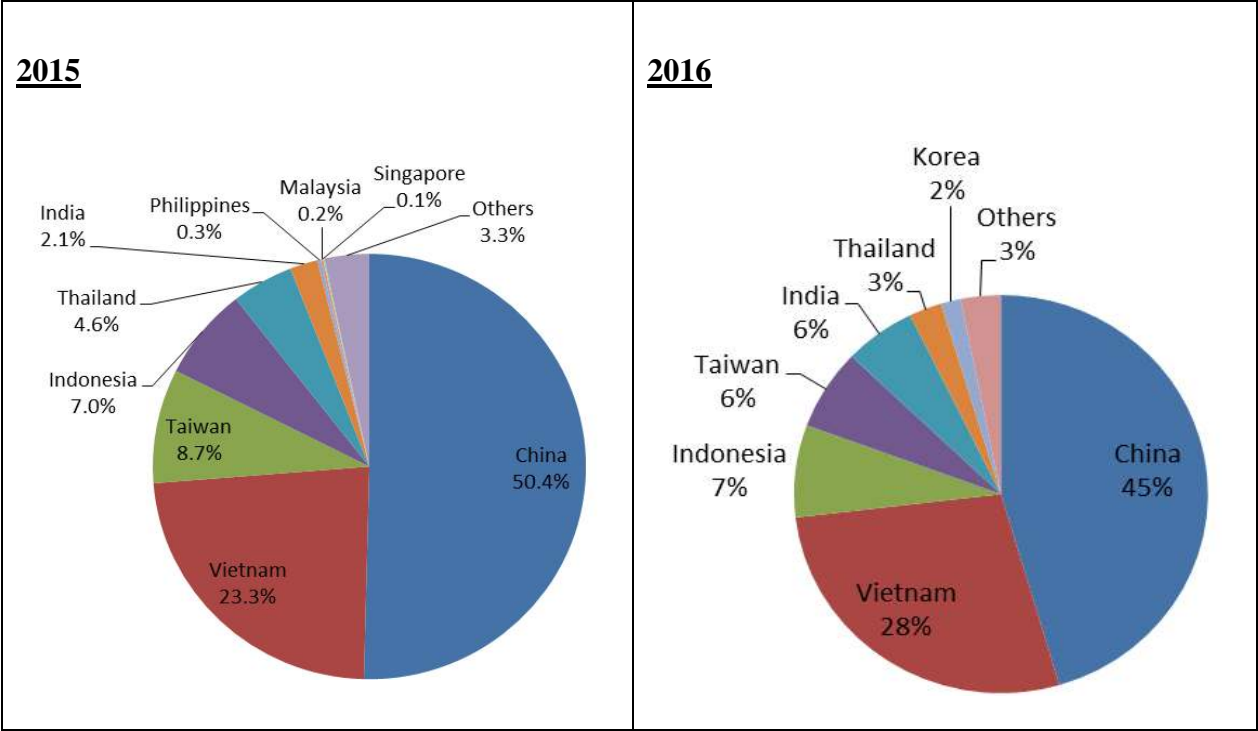
The Ministry of Environmental Protection (MEP) of the China Government had announced the new import requirements on waste paper and plastic for recycling. The Recycling Fund team has closely liaised with local recyclers and has implemented a series of new measures to support the recycling trade for enhancing and upgrading their operation. As one of the improvement measures, the Recycling Fund has organized a study mission to Thailand from 6-9 May 2018 (please refer to Appendix 1 for the detailed itinerary) in order to explore the possibility of exporting recyclables to Thailand for recycling, to understand the market situation in Thailand and to learn the recycling technologies deployed in Thailand.

A total of 22 participants joined the study mission (please refer to Appendix 2 for the participant list), included the Chairman and members of Recycling Fund Advisory Committee, companies from recycling industry in Hong Kong, representatives from Environmental Protection Department and Hong Kong Productivity Council (HKPC). During this trip, we met the Department of Industrial Works, Ministry of Industry and Plastic Institute of Thailand to understand the current import market situation of Thailand, and then we visited to four paper and plastics recycling and manufacturing operations to explore future business opportunities.

According to the findings of the market studies prepared by HKPC before, it is noted that the Thailand was not a major export market for recyclables of Hong Kong in the previous years. In 2015 and 2016, the top four jurisdictions for Hong Kong's recyclables export by weights were Mainland, Vietnam, Indonesia and Taiwan (as shown in figure 1). About 4.6% (93,000 tonnes) and 3% (53,000 tonnes) of the total

exported recyclable of Hong Kong were exported to Thailand in 2015 and 2016 respectively. Nevertheless, there are many sizable recycling and manufacturing companies in Thailand who are sourcing recycled materials from the world. It would be possible to explore export opportunities as well as to understand the recycling technologies through this study mission.

Figure 1: HK’s recyclables export destination by weight in 2015 and 2016



2.2 Ministry of Industry, Department of Industrial Works (DIW)

2.2.1 The Meeting



The Department of Industrial Works (DIW) was established in 1942 and designated as the government agency under the Ministry of Industry, in charge of the monitoring and supervision of factories owned by the government. Their mission is (1) To monitor and supervise industrial enterprises within the framework of local laws and international regulations, the use and handling of hazardous substances, production, safety and the environment.; (2) To be informed and knowledgeable about, industrial machinery, production processes, environmental concerns, safety issues, hazardous substances, energy generation and use, and social responsibility, in order to develop Thailand's industrial capacity and (3) To increase the capabilities of the organization and its staff.

During the meeting, we met the representatives from DIW and Pollution Control Department, Waste and Hazardous Substance Management Bureau to understand waste management and import policy of Thailand. We have briefly discussed about the Overall situation about recycling & manufacturing industries (Plastics & Paper) in Thailand, Government policy and supports on recycling and manufacturing industry (Plastics & Paper) in Thailand, Import tax and regulations for importing recycled **plastics** and **papers** in Thailand and the requirement of custom clearance for importing recycled plastics and paper to Thailand.

2.2.2 Opportunities and Follow Up Action

In general, the DIW supported the development of recycling industry in Thailand. They in-principle welcomed Hong Kong's recycling industry to invest in Thailand, or to look for opportunities to import the recyclables from Hong Kong. As for import of waste paper and plastics, the import restriction is still not as high as Mainland China. For waste paper, the impurities can be confined to 2%

(Mainland China's new requirement is 0.5%). Regarding waste plastics, they will accept cleaned flakes or even clean PET bottles (Mainland China only accepts plastic pellets as raw materials). As per our request for referring potential Thailand recyclables importers to us, they recommended us to liaise with The Federation of Thai Industries (FTI), we may also check from the websites for related trade associations.

2.3 Plastics Institute of Thailand (PITH)

2.3.1 The Meeting



Plastics Institute of Thailand (PITH) is the 8th industry specific institute under the supervision of Industrial Development Foundation, the Ministry of Industry. The organization was established in 2010 along with the vision of (1) Development of technology and management; (2) Increasing marketing competencies; (3) Development of plastics industry database.

PITH, therefore, has a long-term responsibility to collaborate with the government, academic and private sector to support Thai plastics industry. The institute receives government funding for projects management and private sector supports budget

for its internal operations. Its principle and goals are to strengthen and drive Thai plastics industry toward sustainable development. Out of all plastic manufacturers in Thailand, over 82% of them are engaged in packaging manufacturing. Thailand imported about plastics resin in value of 140,000 Million Baht in 2016 which converted to plastics product for exportation. In addition the plastic industry contributes to 7.51% of Thailand's gross domestic product (GDP), which is a major economic contributor.

2.3.2 Opportunities and Follow Up Action

We have established contact with the association and learned after the meeting, participants obtained more information about the potential importation market of plastics recyclables. We may contact them later for potential collaboration or referral of waste plastics importers and therefore the chance for importation to Thailand could be further enhanced.

2.4 Indorama Ventures Public Company Limited, Nakhonpathom (Recycling)

2.4.1 The Visit





Indorama Ventures Public Company Limited is headquartered in Bangkok, Thailand and established in 27 countries in four major regions of the world - Asia Pacific, Europe, North America, South America, and Africa, listed on the Stock Exchange of Thailand. The company's portfolio is comprised of Necessities and High Value-Added (HVA) categories of Polymers, Fibers, and Packaging. Indorama Ventures is a global chemicals company with 77 production sites in 27 countries including 2 in Kaiping (開平) of Guangdong Province. In 2016, there revenue was US\$7.2 billion. Indorama Ventures serve major players in end use markets, including food and beverages, personal and home care, health care, automotive, textile and industrial. They built the first recycling facilities in the Thailand and aimed at reducing greenhouse gas emissions, reusing waste and recycling used PET bottles for the production of polyester fibers and filaments. The recycled products from this site serve the end markets of packaging, fabrics, filling, and non-woven textiles and industrial products.

4.4.2 Opportunities and Follow Up Action

During the visit, we were briefed of the sorting and treatment process of recycled plastics in this factory, so our recycling industry could make reference and consider improving their own operation in Hong Kong. After the meeting, it was also known that they are willing to explore importing recycled plastics from overseas, so our recycling industry could further explore with them for exporting Hong Kong's recycled plastics to them in the future.

<i>Capacity</i>	<i>29,000 tonnes per annum</i>
<i>Products</i>	<i>Bottle flakes, PET resins, recycled fibers</i>

1.1.1 AsiaPet (Thailand) , Indorama Polymers and PETform (Thailand) , Lopburi (PET Manufacturing) a subsidiary of Indorama Ventures Public Company Limited

1.1.2 The Visit



T
h
i

s is another manufacturing site of Indorama Ventures Public Company Limited. The plant began production in 1995. With various expansion projects, the plant's annual capacity is now up to 178,000 tonnes. The plant mainly produces PET Resin, preforms, PET bottles and HDPE closures for carbonated soft drinks, water and other applications. The Lopburi plant has an annual capacity of 905 million preforms, 420 million bottles and 3,600 million closures.

Since Thailand does not allow to manufacture plastic bottles for human consumption from recycled PET (rPET) bottles, their plant could only process virgin plastic materials. The same requirement on virgin PET material applies to Mainland China, Taiwan, etc., but USA and Hong Kong do not have such requirement.

1.1.3 Opportunities and Follow Up Action

While the recycled plastics from their other plants in Thailand are mainly used to manufacture fibers for textiles. Riding on the knowledge gained from the visits regarding to production process of PET preforms and other products, the participants could explore the opportunities of setting on their manufacturing facilities in Thailand or Hong Kong, in order to develop sustainable business in the future.

<i>Capacity</i>	<i>182,000 tonnes per annum –PET resin</i>
<i>Products/ application</i>	<i>PET polymers, preforms for PET bottles, sheets, films and straps</i>

1.2 SCG Packaging Public Company Limited

1.2.1 The Visit



SCG packaging provide a wide range of paper products for the market, includes packaging paper, duplex board, paper bag, etc. SCG Packaging focuses on all operations from upstream to downstream by selecting high quality materials, developing efficient production. Their annual production capacity is about 3 million tons. They source mainly from domestic market and only imported very few amount from HK before. Their impurity requirement is 2% following international standard. They have plants in Thailand, Philippines and Vietnam.

1.2.2 Opportunities and Follow Up Action

After the meeting, it was known that they are open to explore the import of waste paper from Hong Kong. By knowing their import requirement for the source of

recycled paper after the meeting, our recycling industry could further explore discuss with them for exporting Hong Kong's recycled paper to Thailand in the future.

<i>Capacity</i>	<i>3 million tonnes per annum</i>
<i>Products</i>	<i>Paper Pulp, Paper, Containerboard, Packaging</i>

1.3 Wongpanit Suvanrnabhumi / World Recycling Thai Co. Ltd (WRT)

1.3.1 The Visit



The company has been operating recycling work since 1974. Currently, their capacity is more than 500 ton per day for treatment on waste plastic, paper, metal, glass bottles, office equipment, electronics, industrial waste and many others from households, business and government sectors. Wongpanit purchases recyclable

waste from household, community, retail shop, distributor, industrial factory, school and government sector.

Wongpanit has been promoting recycling to all communities, government and private sectors in Thailand in order to set up recycling centers and seek for the appropriate waste solution, their network has been widely expanded with over 1,000 franchise branches across Thailand. They are collecting 9 main types of recyclables from Thailand and overseas. Regarding their franchise system, they encourage other local but smaller recyclables collectors to join their group and use their brand. Wongpanit is responsible to provide a 2-weeks training to franchise branches with fee of 10,000 Thai Baht (about 2,500 HKD). By running the franchise system, Wongpanit can ensure supply of recyclables to big manufacturers (such as SCG) and get a higher price.

1.3.3 Opportunities and Follow Up Action

Their subsidiaries WRT are very interested to explore importing recycled plastics from overseas. Hence our recycling industry could further explore with them for exporting Hong Kong's recyclables to them in the future. In particular, waste paper may be one of the most likely ones, as there may not be import tax for the waste paper to enter Thailand. Nevertheless they said they would still need to check for the quality of the recyclables so as to confirm with local authority. Riding on the knowledge gained from the meeting regarding the running of franchise system in Thailand, participants could make reference to improve their operation in Hong Kong.

- End -

Itinerary**Recycling Fund – Technical Visit to Thailand****Date: 6th - 9th May, 2018****6th May, 2018 (Sun)**

Time	Content
16:00 ~ 17:55	Flight from HK to Bangkok

7th May, 2018 (Monday)

Time	Content
09:00~ 10:00	<u>Plastic Institute of Thailand</u>
11:00~ 12:00	<u>Department of Industrial Works, Ministry of Industry</u>
15:00~ 17:30	<u>Visit to Indorama Ventures Public Company Limited</u> (Plastics Recycling and Manufacturing facility)

8th May, 2018 (Tuesday)

Time	Content
09:00 – 11:00	<u>Visit to SCG Packaging Public Company Limited</u> (Paper Recycling and Manufacturing facility)
14:30~ 17:00	<u>Visit to Indorama Ventures Public Company Limited</u> (Plastics Manufacturing facility)

9th May, 2018 (Wednesday)

Time	Content
09:00~ 11:00	<u>Visit to Wongpanit Suvarnabhumi Recycle Station Co.,Ltd</u> (Recycling Facility)
14:55~ 18:50	Flight from Bangkok to Hong Kong