



惜物減廢： 回收業何去何從 Recycling Industry: Charting the Path Ahead

The Government has outlined a compelling vision in the Waste Blueprint for Hong Kong 2035, encapsulated by the goal “Waste Reduction • Resources Circulation • Zero Landfill”, with the objective to reduce waste at source and boost the recovery rate through the implementation of various policies and regulations. One of the policies is the Municipal Solid Waste (“MSW”) charging, which is projected to have a widespread impact and is expected to be implemented from 1 April 2024. Alongside with education efforts and community promotion, the Government wishes to alleviate the strain on landfills and reduce waste management costs.

In a climate where concepts such as carbon reduction and Environmental, Social and Governance (ESG) is garnering increasing attention, few would contest the importance of environmental protection. However, opinions are widely divided on whether the recycling industry should receive more support. Some argue that recycling is just a business where market forces will exercise their invisible hand and only the fittest will survive.

Nevertheless, in this issue of *Hong Kong Industrialist*, three local recycling operators unanimously believe that the Government, the business sector and the public can do more to support the circular economy. These interviewees handle various recyclables including lead-acid batteries, plastics, food and yard waste. They all face challenges such as low recovery rate and idle production capacity, indicating that the industry might need more support. Looking at the experiences in neighbouring economies may provide valuable insights for Hong Kong to chart its own path.

The dilemma lies in the perceived dichotomy between environmental protection and economic considerations that they are in separate bills. How should we calculate the account of the recycling industry? Who should bear the cost? How can the recycling industry be developed to become a self-sustaining circular economy and unleash its enormous potential to benefit individuals, businesses, and the planet?

政府在《香港資源循環藍圖2035》中描繪出「全民減廢·資源循環·零廢堆填」的美好願景，當局期望透過落實各項政策，包括將於明年4月1日實施、影響範圍最廣的「都市固體廢物收費」（簡稱「垃圾收費」），以及教育及社區推廣，達致源頭減廢及提高回收率，以減輕堆填區負荷及垃圾處理成本。

在減碳及「環境、社會和企業管治」（ESG）等理念備受重視的今日，很少人會反對環保。但回收業應否得到更多幫助，卻眾說紛紜。有意見認為回收也只是一盤生意，市場自會運用無形之手，汰弱留強，能夠生存的企業自然會發展起來。

不過，今期《香港工業家》專訪三位本地回收業經營者，卻一致認為政府、商界及公眾，應該對回收業界提供更多援手。這些受訪企業處理的回收物，包括有鉛酸電池、塑膠、廚餘及園林廢物等，但他們都不約而同地面對回收率不足及產能閒置的難題，似乎說明業界真的需要人扶一把。環顧鄰近經濟體的回收業發展歷程，或可給香港借鑑。

問題是，環保與經濟至今看起來仍像兩本帳簿，顧此好像總是難免失彼。回收業這筆帳，到底怎算好？誰人付帳好？回收業要如何發展，才能發展為自給自足的循環經濟，發揮其巨大的潛力令個人、商界以至整個地球都受惠？

From Cleaning to Recycling: Baguio Green Group Limited

從清潔到回收：碧瑤綠色集團有限公司

Baguio Green Group is a well-known large-scale cleaning and environmental service company in Hong Kong. Since its establishment in 1980, the company has mainly focused on cleaning services. With the increased societal concern for environmental protection in the recent decade, as well as the opportunities from various Government waste recycling pilot schemes, Baguio has actively expanded its business and revenue channels into categories of recycling and waste management. This includes participating in the Government's contract on 3-colour recycling bins since 2014, collaborating with the Government on glass container recycling 6 years ago and providing smart recycling machines and big data analysis platforms earlier this year. "We hope to operate local recycling and be the recycler for Hong Kong people." CEO of Baguio Green Group, Phyllis Ng expressed sincerely.

Currently, there are 500 employees in Baguio handling recycling matters. As of the first half of 2023, Baguio has recycled more than 17,000 tonnes of recyclables. However, taking plastic recycling as an example, the Group has recycled approximately 1,500 tonnes of plastic waste during the same period. Considering the highest handling capacity could be 3,600 tonnes in the Waste Plastic Sorting Centre located at Yuen Long, the Centre still has sufficient capacity to handle more plastic waste. Recognising the issue of underutilised capacity, Phyllis is pleased to see the Government introducing Municipal Solid Waste (MSW) charging. She believes that this policy will help increase the recovery rate: "After the introduction of similar strategies in Singapore in 1996, the recovery rate has increased from 20% to 60%. Since many of Baguio's recyclables come from households, I believe that the new policy could help facilitate clean recycling."

碧瑤綠色集團是香港著名大型清潔及環境服務公司，自1980年成立後，業務主要集中在清潔服務方面。隨著近十年社會愈來愈注重環保議題，加上預期政府推出的各種廢物回收先導計劃在未來有發展空間，碧瑤亦積極拓展業務及收入渠道至回收重用及廢物處理範疇，包括由2014年起參加政府的三色回收桶合約、6年前開始與政府合作回收玻璃容器，以及於年初參與提供智能回收機及數據分析平台。「我們希望經營本地回收，做香港人的回收商。」碧瑤綠色集團行政總裁吳玉群 (Phyllis) 真誠地表示。

碧瑤目前負責處理回收再造業務的員工，也增至約500名。截至今年上半年，碧瑤已回收逾17,000噸各類回收物（見圖表）。儘管如此，以塑膠回收為例，集團上半年的回收量約1,500噸，而碧瑤位於元朗的廢塑膠分揀中心的最高產能達3,600噸，仍有產能處理更多塑膠。面對產能閒置問題，Phyllis 樂見政府推出垃圾收費，認為將會有助提升回收率：「以新加坡為例，當地在1996年推出類似措施後，回收率由20%增至60%。碧瑤的回收物當中，有不少是家庭用戶產生，我相信新政策對我們進行乾淨回收是有幫助的。」



Operation of the Waste Plastic Sorting Centre
廢塑膠分揀中心運作



Phyllis Ng, CEO of Baguio Green Group Limited
碧瑤綠色集團有限公司行政總裁吳玉群

碧瑤綠色集團各類回收物料 Various recyclables of Baguio Green Group

Recyclables 回收物料	Description 簡介	Quantity of recyclables in the first half of 2023 2023年上半年回收量	Highest handling capacity (in half a year) 最高產能 (以半年計)
Glasses 玻璃	<p>Locating at Lung Kwu Tan in Tuen Mun, the Waste Glass Bottle Recycling Plant will sort waste glass bottles for further processes such as removal of non-glass materials, crushing and grinding. The plant is adopting advanced technology to break down glass bottles into fragments of glass sand in required sizes for further recycling process.</p> <p>位於屯門龍鼓灘的廢玻璃樽回收廠會將廢玻璃樽分揀以進行清除非玻璃物質、破碎及研磨等工序。廠房採用先進的技術將玻璃樽破碎至特定大小的玻璃砂原料，以便進一步循環再造。</p>	8,000 tonnes 8,000噸	Around 18,000 tonnes (as the maximum crushing of the plant) 約18,000噸 (以廠房最高玻璃樽破碎量計)
Plastics 塑膠	<p>Locating at Yuen Long, the Waste Plastic Sorting Centre adopts the Near-Infrared (NIR) sorting technology to sort out PET such as clear beverage bottles and HDPE such as personal care bottles. After baling the materials, the sorted plastic will recycle into high quality rPET and rHDPE.</p> <p>位於元朗的廢塑膠分揀中心利用近紅外線技術分揀出PET塑料例如飲品膠樽，以及HDPE塑料例如個人護理產品塑膠容器。經壓縮打包後，就會循環再造成高質的rPET薄片以及rHDPE膠粒。</p>	1,500 tonnes 1,500噸	Around 3,600 tonnes 約3,600噸
Food wastes 廚餘	<p>Baguio is the designated food waste collection services provider for New Territories West and Kowloon under the "Pilot Scheme on Food Waste Recycling". The collected food wastes will be delivered to O·PARK1 or other approved facilities by the Environmental Protection Department to transform waste into valuable materials.</p> <p>碧瑤是「廚餘回收先導計劃」的指定廚餘收集服務承辦商，負責新界西及九龍區的廚餘收集，再運往O·PARK1或環保署認可的其他設施，轉廢為材。</p>	1,500 tonnes 1,500噸	/
Animal wastes 動物廢料	<p>After collecting animal wastes from local livestock farms of chicken and pigs, Baguio will deliver the chicken waste to the Black Soldier Fly Hatch which started operation in the late 2022 by the Group. Through biotechnology—black soldier fly will transform the chicken waste to aquafeed with high protein, and the waste of black soldier fly will transformed into organic fertiliser. The Government's Animal Waste Composting Plant operated by Baguio will also process waste produced in the horse stable and transfer them into organic soil conditioner (BG soil).</p> <p>碧瑤負責收集來自本地豬隻及雞隻農場的廢料。當中，部份雞糞會送交集團於2022年年底開始營運的「虻舍」，透過生物科技——黑水虻將雞糞轉化成含高蛋白質的水產飼料及利用黑水虻糞製成有機肥料；碧瑤負責營運政府的動物廢料堆肥廠亦會處理由馬廐產生的動物廢料，製成有機土壤改良劑（綠機土）。</p>	6,300 tonnes 6,300噸	9,000 tonnes 9,000噸
Yard wastes 園林廢物	<p>Baguio will collect and deliver the yard wastes to the Baguio's nursery, the Government's Animal Waste Composting Plant and Y-PARK for processes such as natural degradation, composting and production of organic mulch or wood furniture.</p> <p>碧瑤會收集園林廢物至旗下的園藝苗圃、政府的動物廢料堆肥廠及Y·Park進行處理，例如自然降解、堆肥、製成有機土壤覆蓋物或不製傢俬。</p>	150 tonnes 150噸	/
Others 其他	<p>Apart from the above recyclables, Baguio will also recycle many materials such as paper and scrap metals.</p> <p>除了以上回收物外，碧瑤亦會回收及循環再用多種物料，包括紙張及廢鐵等。</p>	450 tonnes 450噸	/
		Around 17,900 tonnes in total 總數約17,900噸	



Smart recycling bin by Baguio
碧瑤的智能回收箱

Phyllis emphasises that in addition to the MSW charging, the Government could also support the recycling industry by expanding successful pilot schemes or utilising land resources especially through strategic planning in the Northern Metropolis: "I think that the application of technologies is crucial, for example, setting up smart recycling facilities in housing estate for collecting and analysing data of residents' disposal behaviour would enable the development of recycling strategies and long-term environmental protection planning tailored to the population structure and strategic considerations."

除了垃圾收費外，Phyllis認為當局可以透過善用土地資源，例如是在北部都會區做好配套規劃以及將有成果的先導計劃擴展等方法，支援回收業界的發展：「我認為科技應用也是重要一環，例如在屋苑內放置智能回收設施，收集並加以分析市民棄置廢物的數據，就能更精準地因應每一個地區的人口結構及規劃定位，推行回收措施及作出長遠環保規劃。」



Phyllis stated that Hong Kong has a close relationship with the Mainland as a member of the Greater Bay Area. Baguio also has various exchanges with the Mainland, such as participating in activities organised by the Mainland industry, visiting environmental protection exhibitions, and conducting recycling technology exchanges with Mainland factories. When processing chicken waste, the Group is adopting the black soldier fly biotransformation technology and system from the Mainland to transform chicken waste to aquafeed with high protein and black soldier fly manure to organic fertilisers: "At present, our main focus is on processing chicken waste. We are actively exploring the further application of such technology to various organic waste, such as pig waste and food waste."

Looking ahead, Phyllis believes that for the recycling industry to thrive, it must receive market support and achieve local circularity. Therefore, the Government should consider implementing "Green Procurement", a concept that aligns with FHKI advocacy.

Phyllis指香港作為大灣區的一員，與內地關係密切。碧瑤也有與內地進行不同的交流，如參與內地業界舉辦的活動、參觀環保展覽及與內地廠房進行回收技術交流等。集團處理雞糞時，正使用了由內地引入的黑水虻生物轉化的技術及系統，將雞糞轉化為含蛋白質的水產飼料及利用黑水虻蟲糞製成有機肥料：「現時集團處理雞糞為主，我們正積極研究，將『黑水虻』技術進一步應用到不同的有機廢物，如豬糞及廚餘的處理上。」

展望未來，Phyllis認為回收產業要發展下去，在經濟上必須得到市場支持，做到本地循環，所以當局應考慮進行「綠色採購」，想法與工總的倡議不謀而合。

(Photos provided by Baguio Green Group)
(圖片由碧瑤綠色集團提供)