MINISTRY OF FOREIGN AFFAIRS
OF DENMARK
Innovation Centre Denmark

REPORT BY
INNOVATION CENTRE DENMARK

PLASTIC WASTE

IN THE FOOD DELIVERY INDUSTRY IN CHINA

Introduction

In China, the food delivery industry is immense and the user group is exceptionally large. For every single meal order generated, a large amount of plastic products is used.

To control plastic use in all aspects, and especially with regard to food delivery, the Chinese Ministry of Ecology and Environment and the National Development and Reform Commission released new plastic regulations and plastic bans in January 2020.

As one of the exemplary cities, Shanghai launched citywide garbage sorting in 2018, which has pushed e-commerce/food delivery industry giants to work on sustainable food packaging solutions.

In this report, we will first look at the current state of plastic waste in the food delivery industry of China. Thereafter, the relevant government regulations/policies will be introduced together with cases. Finally, ICDK Shanghai will present an assessment of potential collaborative opportunities, which this may hold for Danish start-ups.

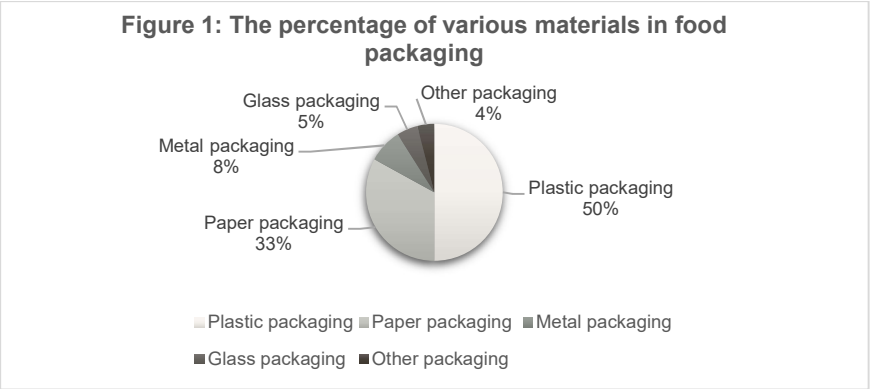
1. The Immense Chinese Food Delivery Industry

By March 2020, the number of online takeout users in China reached 398 million, accounting for 44% of all internet users in China.[i] According to public data from two major online food delivery platforms, Eleme[ii] and Meituan[iii], the daily volume of online orders in China is approximately 20 million.[iv]

The food delivery industry relies heavily on the use of plastic products. A normal lunch order easily includes two to three plastic food boxes, one or two plastic bags, and disposable chopsticks, plastic spoons, soup cups, straws, etc. The plastic does usually not enter the recycling system after being discarded.

Researchers estimate that the total volume of packaging waste from food delivery in China surged from 0.2 million tons in 2015 to 1.5 million tons in 2017. Food boxes made from polypropylene (PP) and polystyrene (PS) foam account for approximately 75% of the total food delivery packaging waste, followed by wooden chopsticks and plastic bags.[v]

The largest contributor to food packaging materials is plastic packaging materials (see Figure 1 below). The usage of plastics has exceeded 50% of total food packaging material. Most of this cannot be recycled.[vi] Researchers estimate that almost 75% of plastic waste 'ends up in inadequately management landfills or out in the open'.[vii]



2. New Plastic Regulation and Policies

To tackle severe plastic pollution, the Chinese Ministry of Ecology and Environment and the National Development and Reform Commission released a new regulation in January 2020, called *Opinions on Further Strengthening the Control of Plastic Pollution,* where the main objectives are[viii]:

1. Prohibitions on non-degradable plastic bags and disposable plastic tableware.

By the end of 2020, the production and sales of disposable foam plastic tableware and disposable plastic cotton swabs will be prohibited. More specifically, the use of ultra-thin plastic shopping bags with a thickness of less than 0.025 mm and polyethylene agricultural mulch with a thickness of less than 0.01 mm will be banned.

2. The introduction of replicable sustainable models and green management in areas with prominent plastic pollution issues, such as e-commerce and food delivery.

The government plans to set up green management and evaluation standards for enterprises in e-commerce, food delivery, and the catering and hotel industry. These plastic control regulations will be incorporated into various rating systems to promote the application of alternative products, non-plastic products such as environmentally friendly cloth bags, paper bags, and degradable shopping bags.

3. Increases in the supply of green products.

Green materials, degradable alternative materials, and recyclable plastics that meet quality control standards are encouraged in different sectors.

In general, this new regulation sets the goals for nationwide control of plastic pollution within a period of five years. The impact on catering, e-commerce, and food delivery industries will be significant.

3. Corporate Cases

3.1 Eleme Relab

In November of 2017, a sustainable laboratory, Relab, was established by Eleme to explore circular economy solutions along the whole value chain.

饿了么 | relab

replace
recycle
rethink revolution
responsibility reform
reuse relationship
regulation reduce
redesign
resilient

The logo and slogan of Relab

3.1.1 The "Cut the Cutlery" Challenge

Eleme introduced a new feature in their app which allows users to opt out of single-use cutlery. By clicking on the small leaf button (see below) when placing an order, users will be rewarded with points which they can exchange for eco-friendly gifts or claim a tree in a desert planted by the company.

Instruction to Join the "Cut the Cutlery" Challenge

The first delivery plastic waste recycling pilot project was launched in 2018. In two months, Eleme collected over 1,000 takeout packaging items, amounting to 421 kg of plastic boxes. After a series of processing steps, 350 kg of recycled plastic particles were obtained.[ix]

Box: Shanghai City's Promotion on Environmental-friendly Food Box

In 2018, the Shanghai government and the Shanghai Association of Food Contact Materials, together with online food delivery platforms Eleme, Meituan, and local large-scale paper packaging manufacturers formulated the ***Shanghai Online Catering Delivery Packaging Group Standard***. The Standard aims to reduce the food delivery industry's dependence on petroleum-based products by using paper-based materials as a transitional solution.

According to statistics, on average, 1.65 million orders for take-out meals are placed every day in Shanghai, and more than 1.2 billion plastic food boxes are discarded in one year, which amount to about 45,000 tons. At present, the commonly used food delivery plastic boxes weigh an average of 37.5 grams. After the implementation of the Standard, the alternative coated paper bowls can reduce plastic use by more than 75%.

There are, however, two reasons why these environmentally friendly lunch boxes are difficult to implement:

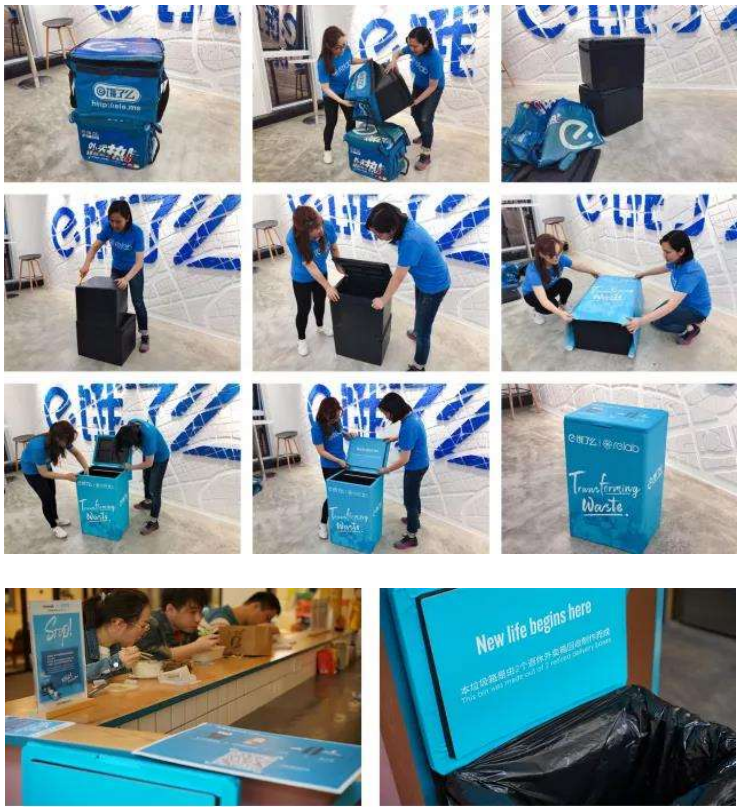
A. Paper bags leak easily

Paper bag packaging is usually only suitable for Western-style fast food, and are not practical for Chinese food which includes plenty of soup and high temperatures.

B. The cost is comparatively too high

At present, there are mainly four categories of food boxes in the market, include polystyrene plastic (PS) food boxes, polypropylene plastic (PP) food boxes, paper food boxes, and degradable food boxes. The most widely used plastic products, such as PP and PS boxes, are not degradable under natural conditions. See the table below.

Category	Property	Cost CNY/ per.	Pic
Polystyrene Plastic (PS) food boxes	Non-recyclable	0.1-0.3	
Polypropylene Plastic (PP) food boxes	Recyclable	0.2-0.4	
Coated Paper bowls	Recyclable	0.3-1	
Degradable food box made of raw pulp paper, natural straw pulp, corn starch and other raw materials	Degradable	1.5-2	



Making recycling garbage box to collect plastic waste

2. Eleme Compost[x]

Another action taken by Eleme is to package food and drinks using paper bowls and cups covered with BASF-certified compostable ecovio® PS1606 thin coating.

In the future, these bowls and cups can be composted in industrial composting devices together with the collected food waste.

Paper bowls and cups covered with BASF certified compostable ecovio® PS1606 thin coating

3.2 Meituan Qingshan Partnership Plan[xi]

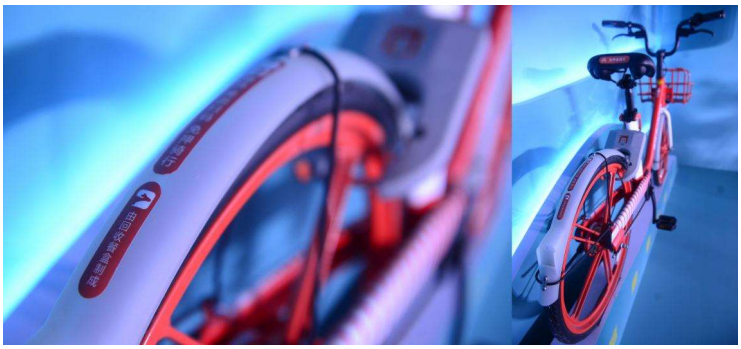
Founded in 2010, Meituan started as 'Groupon'[xii] and subsequently entered into the bike sharing market. It is currently the largest player in China's food delivery industry.[xiii]

In August 2017, Meituan launched the first environment protection action plan in the food delivery industry, the Qingshan Plan (Green Mountain Plan) to promote sustainable solutions.

3.2.1 Recycled products made of food boxes

Together with several professional recycling institutions, Meituan makes a variety of recycled products from food boxes, such as business cards, calendars, mobile phone cases, luggage tags, coasters, handbags, key chains, and even mudguards for Meituan Sharing Bikes. As part of Meituan's business ecosystem, Mobike's bicycle fender will be made of the recycled PP material from plastic food boxes.

Eco shopping bag that contains approximately 1/3 of a recycled cup



Mobike bicycle fender made from food boxes

3.2.2 Qingshan Partnership Plan[xiv]

Meituan plans to work with partners from all walks of life to explore the sustainable development of the food delivery industry from three aspects: waste source reduction, waste recycling, and charity activities.

By the end of 2020, the company hopes to work with more than 100 food packaging partners to find new packaging solutions; cooperate with more than 100 circular economy partners to carry out more than 100 waste recycling pilot projects; and gather more than 100,000 Qingshan businesses to support NGOs and social businesses through the Qingshan Foundation and Meituan public welfare platform.

4. ICDK Assessment

China is the world's largest nation regarding plastic production and consumption. Packaging contributes the most to plastic waste. At present statistics concerning the generation and destination of various types of plastic waste are very general. In the annual *China Renewable Resources Industry Development Report* published by the Chinese Ministry of Commerce, the volume of waste plastic recycling is not distinguished by source: whether it is from a residential source, industrial source or a circulation chain. In this regard, plastic waste is difficult to recycle. Plastic waste in the food industry can be even more difficult to sort; one of the most significant reasons is due to Chinese traditional culinary habits of enjoying hot and oily food.

The high cost is another key factor that inhibits the wide use of eco-packaging materials. Taking the example of the degradable lunch box developed by Meituan and its partners, the price can be 1.8 times higher than ordinary plastic.

Based on the current circumstances and situation, and with the purpose of developing insightful ideas for potential Sino-Danish collaborations, ICDK Shanghai suggests that Danish stakeholders look to China from the following angles:

1. Circular Economy Solutions

In general, there is no clear circular economy model established in the food delivery industry to avoid plastic waste. The trials for green packaging materials are limited. There are also big gaps in garbage sorting.

2. Green Certification and Labelling

The development of green labelling systems in China is still in the early stage. For example, the certificated ratio for agricultural products in Shanghai is lower than 20%.[xv] To foster cleaner and greener food production and consumption, green labelling can bring a positive impact to the food delivery industry.

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[i] http://www.gov.cn/xinwen/2020-04/28/content_5506903.htm, China Internet Network Information Center, 2020-04-28

[ii] Eleme Inc. is a platform that offers online food delivery services, which was founded in 2008 and acquired by the Alibaba Group in 2018. By 2019, Eleme had become one of the largest food delivery platforms in China, with a market share of 32.8%.

[iii] Meituan is another giant player providing online food delivery services, and dominates with a 65.1% share of the market (well ahead of Alibaba's Eleme at 32.8%, while all others combined account for 2.1%, according to a report from the research institute Analysys).

[iv] https://www.sohu.com/a/195023598_772469, public data sorted, 2017

[v] Song, Guanghan, et al. "Packaging waste from food delivery in China's mega cities." Resources Conservation and Recycling (2018): 226–227.

[vi] http://news.rfidworld.com.cn/2018_10/6d9cc37ef944d3ab.html

[vii] https://www.nytimes.com/2019/05/28/technology/china-food-delivery-trash.html

[viii] https://www.ndrc.gov.cn/xxgk/zcfb/tz/202001/t20200119_1219275.html, National Development and Reform Commission, Ministry of Ecological Environment, 2020-01-16

[ix] https://mp.weixin.qq.com/s/erP2l5TBc2bVW9gmTBdNzQ, relab, 2018-07-11

[x] https://www.xianjichina.com/special/detail_418996.html, 2019-09-12

[xi] https://www.iyiou.com/p/80231.html
http://www.cnr.cn/rdzx/cxxhl/zxxx/20200422/t20200422_525063638.shtml

[xii] https://www.groupon.com/

[xiii] https://technode.com/2019/12/17/chinas-food-delivery-growth-slows-to-four-year-low-report/, Analysys, 2019-12-17

[xiv] https://www.iyiou.com/p/80231.html
http://www.cnr.cn/rdzx/cxxhl/zxxx/20200422/t20200422_525063638.shtml

[xv] http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw2404/nw43792/nw43794/u26aw56432.html