

COVID-19 impact on household food and plastic waste generation in Bangkok

Chen LIU^{1*} and Bunditsakulchai PONGSUN²

1: Sustainable Consumption and Production Area, Institute for Global Environmental Strategies,
2108-11 Kamiyamaguchi, Hayama, Kanagawa, 240-0115, Japan

2: Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University,
Chulalongkorn University, 254 Phayathai Road, Bangkok 10330, Thailand

*corresponding author: c-liu@iges.or.jp

Keywords: food waste, plastic waste, household, COVID-19, Bangkok

INTRODUCTION

The COVID-19 outbreak has posed significant challenges for waste management, waste recycling and the circular economy around the world. This waste is not only medical and infectious waste but also general waste such as food waste and plastic waste (UNEP, 2020). Challenges include changes in lifestyle, consumption habits, blocked supply chains, changes in material flow and waste sorting/recycling logistics, a decline in the demand for recycled waste and so on. Before this global crisis, many countries had issued a ban on some plastic products, hoping to reduce serious environmental pollution. For example, the Thai government released a "Plastic Waste Management Road Map," to phase out the use of plastic by 2030 and placed a ban on single-use plastics in January 2020. But since the pandemic began, people have been isolated in their homes and have avoided eating out at restaurants. This has resulted in a temporary surge in delivery demand and an increase in the use of plastic boxes/bags and take-out packaging plastic. According to the Thailand Environment Institute (TEI), the average amount of plastic waste went from 2,120 tons per day in 2019 to approximately 3,440 tons per day between January and April 2020, a nearly 62% increase. Furthermore, the source and stream amounts of food waste have changed due to eating habits shifting from eat-out to eat-in. In this study, Bangkok was selected as a case study to quantitatively examine the impact of the COVID-19 outbreak on household food and plastic generation by examining the changes of consumers' lifestyle and consumption behaviour.

MATERIALS AND METHODS

A wide-ranging questionnaire survey that captured respondents' lifestyle changes during COVID-19 was conducted between 16 and 19 June 2020 (just before the first curfew was lifted) through on-street random sampling method, targeting residents in Bangkok City. The questionnaire included working days, eating habits, purchasing routes for foods / ingredients before and after the COVID-19 outbreak. Responses were expected to reflect the ways in which food and plastic waste has been generated by consumers. Statistical tests (t-test, Kruskal-Wallis test and Dunn's multiple comparisons test) were implemented to detect the difference.

RESULTS AND DISCUSSION

Attributes of the respondents

In total, we collected primary data from 238 individuals, 50% male and 50% female. The samples showed various employment conditions, with the majority of the sample working as company employees (41%),

followed by students (22%), self-employed (16%), government officers (12%), and the rest being full-time housewives (5%), unemployed (3%) and others. Regarding the monthly household income, 31% of the respondents earn 50,001-100,000 THB, 29% earn > 100,000 THB, 17% earn 15,001-30,000 THB, 17% earn 30,001-50,000 THB and 6% earn lower than 15,000 THB. Regarding the household type, 51% of respondents surveyed were living with other adults only, 17% were living in a family with elderly members, 15% were living alone, 17% were living in a family with children.

Main results

The following points make up the initial stage of our main findings based on the survey.

- (1) Changes in office days: Before COVID-19, almost half of respondents (49.58 %) had to commute to their workplace/school five days/week while 44 respondents (18.49 %) had an uncertain schedule and 44 respondents (18.49 %) had to travel to their workplace/school less than five days/week. After COVID-19, the top three responses were full-time teleworking (33%), at least five days/week (21%) and three days/week (19%) respectively.
- (2) Changes in eating style: Before COVID-19, the respondents ate out on average 6.31 times/week. However, eating out has decreased to an average of 2.42 meals/week after the outbreak while other eating styles increased (ready-made meals increased from 5.14 meals/week to 5.80 meals/week, food delivery service increased from 2.42 meals/week to 3.90 meals/week, and eating in increased from 6.12 meals/week to 8.26 meals/week). Accordingly, food consumption amount at home also changed.
- (3) Most respondents wanted to use food delivery services because they could stay at home/office, avoid a long queue, and make use of discount coupons/promotions. Online applications (Grab Food, Foodpanda and Lineman) had discounts, reasonable delivery costs, and were user-friendly.
- (4) Changes in waste generation: 76% of the respondents responded that they felt waste generation had “increased”. Respondents considered that plastic bags, hot-cold food bags and food waste are the top three types of waste from online food delivery services and felt that they are the main cause of environment problems. The main reasons for food waste were due to the excessive amount of food, products that had passed their “expiration date”, and the fact that food became rotten/had a bad odor

CONCLUSION

The upheavals caused by the COVID-19 crisis have created not only a major challenge, but also an opportunity for reshaping existing policy frameworks and identifying the underlying drivers of food waste and their links with plastic packaging. It could also be a chance to engage with relevant stakeholders including consumers to tackle the dual challenge of food waste and plastic waste in a way that ensures a good life for all within planetary boundaries, which is a topic for further work.

ACKNOWLEDGEMENT

This research was supported by S-16-3 and IGES SRF 2020.

REFERENCES

UNEP (2020) COVID-19 Waste management Factsheets.