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*Editorial*

# University Students' Perception Towards Plastic Consumption in Phnom Penh

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A three-day United Nations Environment Assembly (UNEA-5.2) organized in Nairobi between 28 February and 2 March 2022, endorsed a historic resolution titled "End Plastic Pollution: Towards an internationally legally binding instrument". The meeting was attended by 1,500 participants online from UN Member States and 3,400 in person[1]. Moreover, moreover, the organization of World Environment Day, the fiftieth iteration of the annual celebration of the planet, held on 05 June every year, has focused on the plastic pollution crisis. According to Llorenç Milà i Canals, Head of the United Nations Environment Programme's (UNEP's) Life Cycle Initiative, "Many people aren't aware that a material that is embedded in our daily life can have significant impacts not just on wildlife, but on the climate and on human health,".[2]

The Plastic Waste Worldwide - Statistics & Facts published on 10 January 2024 has recognized the biggest challenges of plastic consumption in the planet with its negative impacts with an effect on human health, destroying ecosystems, and harming wildlife and marine species (Statista, 2024). In addition, data was recorded by the International Union for Conservation of Nature (IUCN) in May 2024. Over 460 million metric tons of plastic are annually produced and approximately 20 million metric tons of plastic litter have annually dumped in the environment. The estimation is likely to significantly increase by 2024 (IUCN, 2024).

Over the past eight decades, plastic consumption has been skyrocketed and demand is gradually increasing (Geyer *et al.*, 2017). A rapid increase in plastic consumption has been well recognized with negative impacts on the environment. The increase in plastic consumption has been both beneficial to people's daily live and activities and pressing on social

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and environmental related issues (Soares et al., 2020). Plastic usage has been commonly used and the highest production (approximately 36.0%) was in the form of packaging (Ritchie, 2018). Many countries have currently opted to reduce plastic by charging fees on plastic consumption (Nielsen et al., 2019) and sorting and recycling waste (Jang et al., 2020). However, recycling has been one of the outstanding options, the activities remain small scale; much of plastic wastes are dumped in landfills as the result of economic infeasibility or recycling contamination (Geyer et al., 2017).

The existing studies show that the vast majority of plastic waste is littered in the natural environment or dumped in landfills (Geyer et al., 2017). The current practice has clearly shown negative impacts on human health and the natural environment (Barnes et al., 2009) and marine environment (Lavers and Bond, 2017). In 2014, Phnom Penh city generated 476,981 Mg of environmental load due to high employee numbers. The Textiles and Apparel sector was the highest contributor, emitting 436,016 Mg of pollution. Dangkao and Meanchey districts were the most polluting. Reducing industrial pollution can be achieved by focusing on polluting sectors and adopting waste minimization strategies. This will reduce pollution costs, increase manufacturing efficiency, and reduce pollution load in the long run (San et al., 2018). For anthropogenic researchers, they have been associated with the deliberate or accidental release of large amounts of pollutants into environmental compartments, which may have long-term effects on the environment and human health (Oliveira et al., 2019). Moreover, environmental knowledge has been very useful and applicable to encourage students and educators to reduce plastic consumption because it helps to provide a basic prerequisite in establishing individual responsible behavior in relation to the environment (Liu et al., 2020). Plastic pollution is a growing issue that threatens both ecosystems on land and underwater (Borrelle et al., 2020). Establishing effective policies and treaties at various scales to limit plastic pollution requires more effort. The UN Environmental Assembly (UNEA) approved a resolution to work toward a legally binding treaty to end plastic pollution (Silva Filho & Velis, 2022), the EU passed the Single-use Plastics Ban (Elliott et al., 2020), and Amsterdam, the Netherlands, pledged to become plastic-free by 2030. Detailed plastic pollution monitoring can reduce uncertainty and enhance motivation to address the issue (González-Fernández et al., 2023). Quantifying plastic contamination requires baseline evaluations (Lau et al., 2020). These findings help decision-makers prioritize and optimize plastic prevention and reduction pathways (van Emmerik et al., 2022).

Accordingly, the investigation of the negative impacts form plastic waste and consumption has been a center of research studies of researchers and scholars from the Royal University of Phnom Penh (RUPP). As the oldest public university and leading higher education institution in Cambodia, the RUPP promotes high-quality teaching and research practices to serve the community of Cambodia. The vision of RUPP is to be the flagship university in Cambodia, with a regional standing in teaching and learning, research and innovation, and social engagement. RUPP is currently working towards meeting the Sustainable Development Goals (SDGs), making contributions at the national, regional and global levels. RUPP wishes to promote high-quality research and innovation that actively engages society. This editorial is a part of research conducted among 200 students including 91 males and 109 females from different universities across the countries. This paper covers (1) the use of plastic containers for food and drinks, (2) single-use plastic waste composition and (3) the contributors to reducing the usage of plastic in your daily life. Some preliminarily key results and findings from this survey are described as follows:

The university students were asked to share their views and opinions regarding the use of plastic containers for food and drinks (Figure 1). While they rated a very high degree of awareness reading, their avoidance use of plastic with hot drinks or foods should be avoided (WAI = 0.84) and students also had a high degree of willingness to pay more money to buy alternative materials to plastic (WAI = 0.81). At the same time, the students rated a high degree of awareness of chemicals in plastic containers, which can be transferred to the foods and drinks you eat (WAI = 0.71). The students also learned well about the impacts and consequences and they should avoid using plastic containers' consumption (WAI = 0.78).

The university students were asked to rate "how often do you use single-use of different types of plastic waste composition?" (Figure 2). The WAI analysis finds that the students frequently used plastic bags (WAI = 0.73), plastic bottles and cups (WAI = 0.70), plastic straws (WAI = 0.68) and plastic food packaging (WAI = 0.66). Overall, the students occasionally consumed plastic utensils when they bought take-away lunch from shops and the streets.

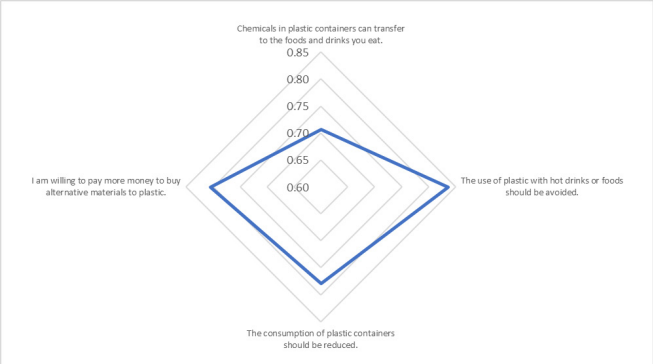


**Figure 1:** The use of plastic containers for food and drinks

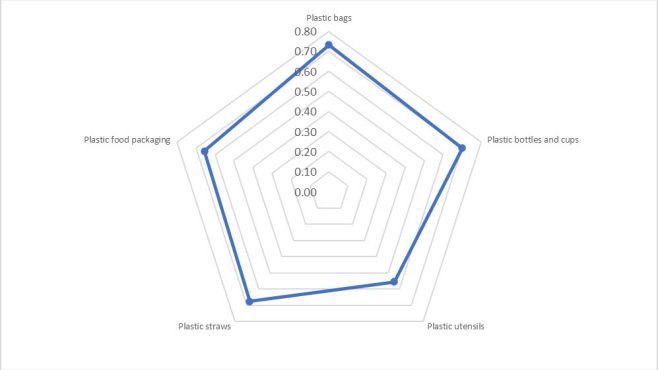


**Figure 2:** Single-use plastic waste composition

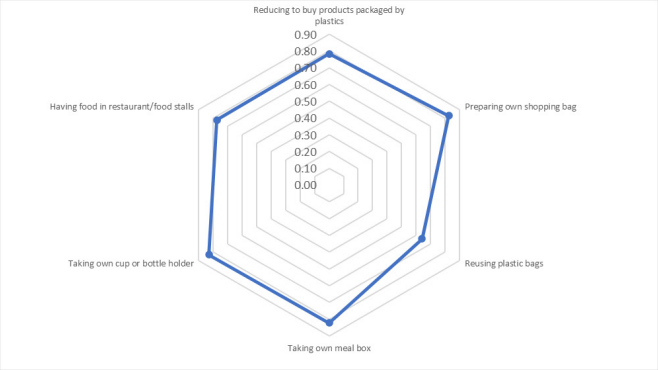


**Figure 3:** To what degree are you agreeing to contribute in reducing the usage of plastic for your daily life?

Figure 3 describes the degree of their agreement in reducing plastic usage in their daily lives. Overall, the university students rated a very high degree of preparing their own shopping bag (WAI = 0.83) and taking their own cup or bottle holder (WAI = 0.83). At the same time, they rated a high degree of their agreement of reducing buying products packaged by plastics (WAI = 0.78), having food in restaurants/food stalls (WAI = 0.77), and reusing plastic bags (WAI = 0.64).

## References


Barnes, D. K., Galgani, F., Thompson, R. C., & Barlaz, M. (2009). Accumulation and fragmentation of plastic debris in global environments. *Philosophical transactions of the royal society B: biological sciences*, *364*(1526), 1985-1998.

Borrelle, S. B., Ringma, J., Law, K. L., Monnahan, C. C., Lebreton, L., McGivern, A., Murphy, E., Jambeck, J., Leonard, G. H., Hilleary, M. A., Eriksen, M., Possingham, H. P., De Frond, H., Gerber, L. R., Polidoro, B., Tahir, A., Bernard, M., Mallos, N., Barnes, M., & Rochman, C. M. (2020). *Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. Science*, 369(6510), 1515-1518. https://doi.org/doi:10.1126/science.aba3656

Elliott, T., Gillie, H., & Thomson, A. (2020). *Chapter 24 - European Union's plastic strategy and an impact assessment of the proposed directive on tackling single-use plastics items. In T. M. Letcher (Ed.), Plastic Waste and Recycling (pp. 601-633)*. Academic Press. https://doi.org/https://doi.org/10.1016/B978-0-12-817880-5.00024-4

Geyer, R., Jambeck, J. R., & Lavender, K. (2017). Law Production, use, and fate of all plastics ever made. *Sci. Adv*, *3*(7), e1700782.

Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. Sci Adv 3: e1700782.

González-Fernández, D., Roebroek, C. T., Laufkötter, C., Cózar, A., & van Emmerik, T. H. (2023). *Diverging estimates of river plastic input to the ocean. Nature Reviews Earth & Environment*, 4(7), 424-426.

IUCN (2024) Plastic Pollution. International Union for Conservation. Issues Brief. Gland: Union for Conservation of Nature (IUCN).

Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., ... & Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, *347*(6223), 768-771.

Jang, Y. C., Lee, G., Kwon, Y., Lim, J. H., & Jeong, J. H. (2020). Recycling and management practices of plastic packaging waste towards a circular economy in South Korea. *Resources, Conservation and Recycling*, *158*, 104798.

Lavers, J. L., & Bond, A. L. (2017). Exceptional and rapid accumulation of anthropogenic debris on one of the world's most remote and pristine islands. *Proceedings of the National Academy of Sciences*, *114*(23), 6052-6055.

Lau, W. W. Y., Shiran, Y., Bailey, R. M., Cook, E., Stuchtey, M. R., Koskella, J., Velis, C. A., Godfrey, L., Boucher, J., Murphy, M. B., Thompson, R. C., Jankowska, E., Castillo Castillo, A., Pilditch, T. D., Dixon, B., Koerselman, L., Kosior, E., Favoino, E., Gutberlet, J., Baulch, S., Atreya, M. E., Fischer, D., He, K. K., Petit, M. M., Sumaila, U. R., Neil, E., Bernhofen, M. V., Lawrence, K., & Palardy, J. E. (2020). *Evaluating scenarios toward zero plastic pollution. Science*, 369(6510), 1455-1461. https://doi.org/doi:10.1126/science.aba9475

Levy, A., Orion, N., & Leshem, Y. (2018). Variables that influence the environmental behavior of adults. *Environmental Education Research*, *24*(3), 307-325.

Liu, P., Teng, M., & Han, C. (2020). How does environmental knowledge translate into pro-environmental behaviors?: The mediating role of environmental attitudes and behavioral intentions. Science of the total environment, 728, 138126.

Nielsen, T.D.; Holmberg, K.; Stripple, J. Need a bag? A review of public policies on plastic carrier bags–Where, how and to what effect? *Waste Manag.* **2019**, *87*, 428–440.

Oliveira, M., Almeida, M., & Miguel, I. (2019). A micro (nano) plastic boomerang tale: A never ending story?. *TrAC Trends in Analytical Chemistry*, *112*, 196-200.

Ritchie, H. (2018). Our World in Data, Plastic Pollution. Available online: https://ourworldindata.org/plastic-pollution (accessed on 2 July 2020).

San, V., Spoann, V., & Schmidt, J. (2018, 2018/02/15/). Industrial pollution load assessment in Phnom Penh, Cambodia using an industrial pollution projection system. *Science of the Total Environment*, 615, 990-999. https://doi.org/https://doi.org/10.1016/j.scitotenv.2017.10.006

Silva Filho, C. R., & Velis, C. A. (2022). *United Nations' plastic pollution treaty pathway puts waste and resources management sector at the centre of massive change* (5).

SAGE Publications Sage UK: London, England.

Soares, J., Miguel, I., Venâncio, C., Lopes, I., & Oliveira, M. (2020). Perspectives on Micro (Nano) Plastics in the marine environment: biological and societal considerations. *Water*, *12*(11), 3208.

Statista (2024) Plastic waste worldwide - statistics & facts. Plastic waste worldwide - statistics & facts | Statista. Retrievd from https://www.statista.com/topics/5401/global-plastic-waste/#topicOverview on 19 June 2024.

van Emmerik, T., Vriend, P., & Copius Peereboom, E. (2022). Roadmap for long-term macroplastic monitoring in rivers. *Frontiers in Environmental Science*, 9, 802245.