

# #breakfreefromplastic



GREENPEACE



## The externalized costs of Nestlé's plastic pollution

Nestlé's reliance on throwaway plastic packaging in marketing its products is evident in the volume of Nestlé-branded trash found in clean-up activities and municipal and city waste audits in the Philippines. With such a large plastic footprint, Nestlé must realize its role in creating plastic pollution, the liabilities it faces in abetting the plastic crisis in the Philippines, and its duty to act to repair the damages caused and to stop further harm.

Although the adverse impacts of plastic pollution are widely known, there is currently no comprehensive valuation of the economic impacts of plastic pollution by a certain company or industry, which includes economic estimates on costs to human health, environment, livelihoods, biodiversity and climate. Such costs are called 'externalities,' or the economic costs that are not shouldered by those responsible for the impacts, but which are shouldered by society.

This paper outlines the various external costs arising from the impacts of single-use plastic packaging.

### 1. Waste management

Waste management is costly, but it is often not internalized by businesses.<sup>1</sup> While businesses like Nestlé use sachets and other problematic single use packaging extensively as part of their business planning and marketing strategy, they have essentially taken a free ride in the management of the resulting waste which is taken on by the city or municipality.

In the Philippines, the National Solid Waste Management Commission (NSWMC) estimated waste generation in the country in 2016 at 40,000 tons per day (tpd).<sup>2</sup> If we assume that all this goes to landfill, the cost for managing this waste is around PHP 32 million to 40 million daily. If NSWMC data cites that residuals comprise 18% of waste generated, then the cost for management of residuals (which is mostly single use plastics) is around PHP 5.8 to 7.2 million per day, or around PHP 2.1 to 2.6 billion per year.

Data from the GAIA report *Plastics exposed: How waste and brand audits are helping Philippine cities fight plastic pollution*<sup>3</sup> shows that in 15 waste assessment and brand audit sites located in seven cities and municipalities across the Philippines, 55% of all unrecyclable residual waste is branded waste. In these sites, throwaway packaging from Nestlé comprised almost 15% of all

<sup>1</sup> UNEP. 2014. *Valuing plastic: the business case for measuring, managing and disclosing plastic use in the consumer goods industry*. From: <http://wedocs.unep.org/bitstream/handle/20.500.11822/9238/-Valuing%20plastic%3a%20the%20business%20case%20for%20measuring%2c%20managing%20and%20disclosing%20plastic%20use%20in%20the%20consumer%20goods%20industry-2014Valuing%20plasticsF.pdf?sequence=8&isAllowed=y>

<sup>2</sup> Philippine Senate briefer on solid waste, citing data from the NSWMC. From: [https://www.senate.gov.ph/publications/SEPO/AAG\\_Philippine%20Solid%20Wastes\\_Nov2017.pdf](https://www.senate.gov.ph/publications/SEPO/AAG_Philippine%20Solid%20Wastes_Nov2017.pdf)

<sup>3</sup> <http://www.no-burn.org/wp-content/uploads/PlasticsExposed-3.pdf>

branded residual waste analyzed. Although no national extrapolation was made for data on estimated volume of branded plastic residual waste throughout the country, the report presents a snapshot of the extent of the proliferation of branded trash produced by companies such as Nestlé-- and the burden of cost of management shouldered almost entirely by cities or municipalities for their packaging.

If we were to use the waste assessment and brand audit data from the 15 sites at a national level, this would translate to PHP 1.15 to 1.43 billion a year spent by cities and municipalities just to manage the plastic packaging waste produced by companies.

Costs of clean-up activities are not included in this valuation. For example, a 2012 study estimated that the opportunity cost of volunteers cleaning up beaches around the globe costs around USD 74 billion in the same year.<sup>4</sup>

*It is important to note that while waste management is costly, it represents the lowest cost of plastic pollution, compared to the externalized costs to health, environment, wildlife, climate and livelihoods (discussed below).*

## 2. Health

A 2019 report published by the Center for International Environmental Law (CIEL)<sup>5</sup> revealed that plastic threatens human health on a global scale, and that plastics pose risks to human health at every stage of its lifecycle, from extraction to disposal.

No economic study of the health impacts of plastic pollution has yet been undertaken, but according to the Lancet Commission on Pollution and Health, pollution is “the world’s largest environmental cause of disease and premature death” and the economic costs to health are extremely high. A 2017 study by the Commission estimates the global economic burden of air, water and soil pollution at USD 4.6 trillion per year.

When taken together and considering the damage from historical plastic pollution, the health costs of plastic pollution in the Philippines can translate to billions of pesos.

Below is a summary of the impacts of plastics to human health, according to the CIEL report:

*Extraction:* Toxins which have direct and documented impacts on skin, eyes, and other sensory organs, the respiratory, nervous, and gastrointestinal systems, liver, and brain.

*Refining and processing:* Transforming fossil fuel into plastic resins and additives releases carcinogenic and other highly toxic substances into the air. Documented effects of exposure to these substances include impairment of the nervous system, reproductive and developmental problems, cancer, leukemia, and genetic impacts like low birth weight.

*Consumer products and packaging:* Use of plastic products leads to ingestion and/or inhalation of large amounts of both microplastic particles and hundreds of toxic substances with carcinogenic, developmental, or endocrine disrupting impacts.

*Toxic releases from plastic waste management:* All plastic waste management technologies (including incineration, co-incineration, gasification, and pyrolysis) result in the release of toxic metals such as lead and mercury, organic substances (dioxins and furans), acid gases, and other toxic substances to the air, water, and soils.

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<sup>4</sup> Raveender Vannela (2012). Are we “digging our own grave” under the oceans? Biosphere level effects and global policy challenge from plastic(s) in oceans, 46(15) *ENVTL. SCI. & TECH.* 7932-3. <https://pubs.acs.org/doi/full/10.1021/es302584e>

<sup>5</sup> CIEL. 2019. *Plastic and health: the hidden costs of a plastic planet*. From : <https://www.ciel.org/wp-content/uploads/2019/02/Plastic-and-Health-The-Hidden-Costs-of-a-Plastic-Planet-February-2019.pdf>

*Fragmenting and microplastics:* Microplastics entering the human body via direct exposures through contact, ingestion, or inhalation can lead to an array of health impacts, including inflammation, genotoxicity, oxidative stress, apoptosis, and necrosis, which are linked to an array of negative health outcomes including cancer, cardiovascular diseases, inflammatory bowel disease, diabetes, rheumatoid arthritis, chronic inflammation, autoimmune conditions, neurodegenerative diseases, and stroke.

*Cascading Exposure as Plastic Degrades:* Most plastic additives are not bound to the polymer matrix and easily leach into the surrounding environment, including air, water, food, or body tissues. As plastic particles continue to degrade, new surface areas are exposed, allowing continued leaching of additives from the core to the surface of the particle in the environment and the human body.

*Ongoing Environmental Exposures:* Once plastic reaches the environment in the form of macro- or microplastics, it contaminates and accumulates in food chains through agricultural soils, terrestrial and aquatic food chains, and the water supply. This environmental plastic can leach toxic additives or concentrate toxins already in the environment, making them bioavailable again for direct or indirect human exposure.

### **3. Environment**

A 2014 report by the United Nations Environment<sup>6</sup> estimated that the total natural capital cost of plastic used in the consumer goods industry is over USD 75 billion per year. It also cited food companies as “the largest contributor to this cost, responsible for 23% of the total natural capital cost.”

The report uses “natural capital valuation” to estimate the impacts of plastic (throughout its lifecycle) to be expressed in monetary terms in order to “reflect the scale of the damage caused.” The report cites that “the cost comes from a range of environmental impacts including those on oceans and the loss of valuable resources when plastic waste is sent to landfill rather than being recycled” and that “incinerating plastic at its end-of-life has associated air pollution impacts.”

The report recognizes that companies (that profit from plastic use) generally externalize these costs (meaning, the burden is borne by society, not the company), and that the “‘natural capital cost’ gives an indication of the financial cost to companies were they to internalise impacts associated with their current practices.”

### **4. Wildlife**

According to the non-profit Plastic Soup Foundation,<sup>7</sup> “at least 1400 marine species are affected by plastic, distributed across almost all levels in the marine food chain, from the smallest bacteria to the great whales. The groups most affected by the plastic are sea birds, fish, crustaceans and mammals.”

Wildlife (whether marine fish, mammals or birds, or terrestrial animals) can get sick and die when they eat plastic and ingest its toxic additives. They can also get entangled in different kinds of plastic waste, such as abandoned nets and other “ghost gear.” Leaking toxic additives also put wildlife at risk, leading to toxic chemicals accumulating in tissues, causing disease, and bioaccumulating in the food chain.

### **5. Climate change**

The carbon footprint of plastic production and disposal is considerable. The UNEP study cited above, *Valuing Plastics*, states that “greenhouse gas emissions released from producing plastic feedstock...is responsible for almost a third of the total natural capital costs.” A 2018 report by Client

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<sup>6</sup> UNEP (2014).

<sup>7</sup> <https://www.plasticsoupfoundation.org/en/files/animal-cruelty/>

Earth<sup>8</sup> adds that “plastic pollution also has a non-negligible effect on climate change. [Most] [p]lastics are derived from fossil fuels and manufactured through energy-intensive processes, which release greenhouse gases into the environment. On average, each tonne of plastics produced results in 2.5 tonnes of CO<sub>2</sub> emissions from the production process alone.”

Aside from carbon emissions during production, GHG emissions from the disposal of plastic (particularly from incineration) is also a significant concern. Incinerating plastics (which is seen by industry to be a “way out” for plastics) releases as much climate emissions as plastic production. According to a study by Material Economics, “if plastics demand continues to grow as projected, and a larger share of landfilling is replaced with incineration, cumulative CO<sub>2</sub> emissions associated with plastics could grow very large....[T]he combined emissions from plastics production and embedded carbon would be as much as 287 billion tonnes by 2100 [corresponding] to more than a third of the whole carbon budget for a 2°C economy.”<sup>9</sup>

Plastic has also been studied to release greenhouse gases during degradation. A 2018 study shows that “the most commonly used plastics produce two greenhouse gases, methane and ethylene, when exposed to ambient solar radiation.”<sup>10</sup>

## 6. Livelihoods

Fisheries and tourism are the two livelihood sectors most affected by plastic pollution, particularly in coastal and marine ecosystems. The UNEP report discussed above estimates that environmental damage to marine ecosystems costs the globe USD 13 billion per year, including losses from the fisheries and tourism sector.<sup>11</sup> In the Asia-Pacific region, it is estimated that cost to tourism, fishing and shipping industries amount to USD 1.3 billion a year.<sup>12</sup>

Impact on tourism revenue can be considerable. A 2014 study estimates that in Geoje Island, South Korea, tourism revenue loss due to marine debris after a heavy rainfall event in 2011 amounted to USD 29 to 37 million for that year alone.<sup>13</sup>

In the Philippines, fishers in Manila Bay report decreased fish catch due to plastic pollution. Many fishers have reported that they haul more plastic debris than fish whenever they cast their nets into the bay. The impact of plastic pollution on fisheries has a cascading effect on food supply and nutrition, particularly in island countries such as the Philippines where fish is a major source of protein. With little fish to catch, plastic pollution also worsens poverty in the country, where many fisherfolk are subsistence fishers.

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<sup>8</sup> Client Earth. 2018. Risk unwrapped: plastic pollution as a material business risk. From:

<https://www.clientearth.org/feed-items/risk-unwrapped-plastic-pollution-as-a-material-business-risk/>.

<sup>9</sup> Material Economics Sverige AB. 2018. *The circular economy – a powerful force for climate mitigation*. From:

<https://www.sitra.fi/en/publications/circular-economy-powerful-force-climate-mitigation>.

<sup>10</sup> Royer S-J, Ferrón S, Wilson ST, Karl DM (2018) Production of methane and ethylene from plastic in the environment. PLoS ONE 13(8): e0200574. <https://doi.org/10.1371/journal.pone.0200574>

<sup>11</sup> UNEP. (2014).

<sup>12</sup> “Understanding the Economic Benefits and Costs of Controlling Marine Debris in the APEC Region” (APEC Marine Resources Conservation Working Group 2009): [http://publications.apec.org/publication-detail.php?pub\\_id=164](http://publications.apec.org/publication-detail.php?pub_id=164)

<sup>13</sup> Mar Pollut Bull. 2014 Apr 15;81(1):49-54. doi: 10.1016/j.marpolbul.2014.02.021. Epub 2014 Mar 11.

Estimation of lost tourism revenue in Geoje Island from the 2011 marine debris pollution event in South Korea.

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<https://www.ncbi.nlm.nih.gov/pubmed/24635983>