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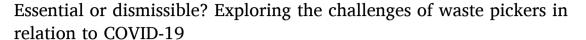
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ABSTRACT

Waste plays an essential role during the COVID-19 crisis. This includes increased attention to the amount of waste produced, concerns with how hazardous materials are discarded and handled, or unease that sustainability and recycling efforts are derailed. However, there is a human side to waste: the people who work directly with these materials. Waste pickers are the men, women, and children around the world who rely on tossed away items for their livelihoods. Across dynamic and generally informal networks, waste pickers collect, transport, and separate our discarded materials. They are recyclers, entrepreneurs, and a key component of solid waste management systems in many countries. However, they are also subject to discrimination and unsafe working conditions. The pandemic has shed light on the nuances between vulnerability and opportunity for waste pickers. This intervention considers economic and societal structures during and beyond COVID-19 to highlight underlying concepts of health, hygiene and sustainability and how these may shape experiences of waste pickers.

1. Realities of waste work

Waste pickers have been identified as the "invisible heroes" of informal solid waste management due to their positive contributions to both the local environment and the local economy (Gall et al., 2020, 2). Yet, they often receive little recognition in the form of social standing, wages and protections. Waste workers are time and again referred to as vulnerable, which can be understood through the prisms of economics, health and sustainability.

The pandemic disrupted the economics of waste work in several ways. Social distancing measures put in place by governments around the world may have halted ability to go to work. Additionally, as global oil demand lowered, prices of oil dropped, and as such, cost of virgin plastics dropped; this impacts the recycling market (Kaza, 2020). Limited transnational movement may prompt some countries to dispose of their waste instead of recycling (Kaza, 2020). These disruptions pose a larger threat to waste pickers due to the informal nature of the work as many are without social and economic protections.

There are physical vulnerabilities to the work, too. Waste picking is a job that can place workers in direct contact with toxic or dangerous substances. Health susceptibilities of waste pickers are related both to the nature of the work and worksites, and the often-low-income living situations, sometimes without proper sanitation or sufficient water, poor air quality and food insecurity (Schenck et al., 2019, 3). In some settings,

this includes acts of using bare hands to sort waste containing sharp and rusted objects, animal parts, and medical instruments, such as syringes.

However, the motivation for not using gloves may include cost, discomfort, or maintaining a certain decorum or standards shared between waste pickers (Carenbauer, 2015, 35). For example, waste pickers in Bangladesh noted cultural stigmatization with the use of protective gear, with one waste picker proclaiming the use of this gear implies one is "not friends with the waste" (Casey, 2016, 7). This furthers how waste workers need to be included in the design of safety measures, rather than being assigned to protocols "assumed to fit their needs" (Casey, 2016, 7).

2. Health and Hygiene during COVID-19

Now, with COVID-19 there is evolving understanding about how the virus lives and is transmitted via different materials. Some studies suggest that the virus can remain active on plastics for as long as three days (Woodward and Gal, 2020). Waste pickers work directly with recyclable materials, increasing their exposure compared with many other workers, and as mentioned, are often conducting this work without gloves or masks (Dias, 2020).

In the Global South, much waste work is done on the side of the road, along informal landfills. In many countries, due to the unregulated and informal nature of the work, city administrators often do not intervene for "safer working conditions" (Gutberlet, 2016, 56). When sorting

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waste materials in indoor settings, the working conditions are often without proper distance between workers or ventilation (Dias, 2020). This may produce conditions in which a virus can spread more readily.

This brings us to social distancing, perhaps an unacknowledged luxury. "Social distancing" quickly entered the public vocabulary for many. According to the Center for Disease Control and Prevention (CDC), social distancing practices involve keeping physical space between oneself and others outside one's home; and is considered one of the "best tools" available for slowing the spread of the virus locally and across nations (CDC, 2020). The CDC provides additional protocols and suggestions for those living in close quarters and shared housing; however, these may not be feasible for all dependent upon country, income and access to resources.

As explained by Wasdani and Prasad (2020) in India, stringent social distancing measures set in place by the government are not always attainable and particularly exclude the countries' most socially vulnerable. This is due to several reasons. The very densely populated living arrangements in slums are "natural conduits" for the contagious virus (Wasdani and Prasad, 2020, 416). Many workers and laborers rely on daily wages; this includes waste pickers. Without the ability to complete their work and limited access to social welfare, some workers have to choose between the threat of contracting COVID-19 or the threat of hunger (Wasdani and Prasad, 2020). This reveals several cracks in societal structure, including social protection. There are also interesting questions about what work is considered "essential" and how we value work based on necessity, culture and cleanliness.

3. Sustainability: Plastic as pollution or protection

During the pandemic, plastic plays an important role. Personal protective equipment (PPE), such as masks, gloves and face shields are made of plastic and protect front line workers (Hughes, 2020). This may or may not include waste pickers. Meanwhile, single use plastic is surging in popularity (Kaplan, 2020); for example, single-use water bottles, plastic bags and increased packaging are rising due to safety concerns. While these trends, and current or future environmental implications, may persist in both high- and low-income nations, it is noteworthy to consider this in low-income countries with regard to the waste picker population.

The COVID-19 pandemic has situated plastic in a new way: as a necessity for protection. This is not exactly new but goes against trends shifting away from the nonbiodegradable materials. Evidence of this trend includes full or partial bans of plastic bags in countries in both the Global Northand the Global South. However, the pandemic has increased the need for plastic for certain professions and individuals. While this protection is required, it does not erase the numerous health and environmental issues related to the life cycle of plastics, both at local and global scales (Akenji and Bengtsson, 2019, 17-18).

Medical waste is a new driver of environmental degradation and is already posing to overwhelm countries like Bangladesh, where hospitals generated around 250 tons of medical waste during May 2020 (Chowdhury, 2020). Without the ability to manage this waste, the spread of the virus could be worsened as sanitation workers lack the necessary protective gear (Chowdhury, 2020).

Plastic is connected to several environmental and health concerns, locally and globally (Akenji and Bengtsson, 2019, 17-18). These concerns include disrupting ecosystems, worsened flooding and increased hazardous contaminants which harm human and soil health (Akenji and Bengtsson, 2019, 17-18). Quite interestingly, during COVID-19, plastic and waste are reaffirmed as a source of burden and of livelihood; of challenge and of opportunity.

4. Circular economy: Its meaning to waste pickers

The concept of circular economy has gained traction in recent years, both among academics and practitioners (Kirchherr et al., 2017). While

definitions of the concept vary, typically the concept engages reduction, reuse and recycling of materials (Kirchherr et al., 2017). Shifts towards a circular economy could tactfully involve waste workers, and the Global South may have a unique opportunity. Waste pickers' role in sorting and recycling waste, including plastics is critical. They are often the first processors of the waste.

As mentioned, plastic poses health and environmental problems. The COVID-19 pandemic has accentuated tension between plastic as a protector or polluter (Hughes, 2020). The recycling pillar of a circular economy is particularly dependent upon dealing with plastic, as this allows opportunity to address challenges confronting the "economic, the environmental, and the social sphere alike" (Gall et al., 2020, 9).

The ways in which the pandemic may or may not offer occasion to restructure societal relations to plastic and waste and labour needs to be considered in future efforts within the context of a circular economy located in the socio-economic settings of low and middle-income nations (Gall et al., 2020). Circular economy efforts should be modified locally and socially oriented in the Global South, with a specific focus on waste picker communities (Gall et al., 2020, 9).

5. Essential work: What and who is needed?

Collecting mixed waste is generally considered as a needed service, as discontinuing this may pose the risk of generating an outbreak of infectious diseases in addition to COVID-19 (Global Alliance of Waste Pickers, 2020). However, the additional services of collecting and sorting recyclable materials may be halted or postponed. The official advice given by the Global Alliance for Waste Pickers (2020, sec. 4, para. 2) was that "if waste pickers who are not providing essential mixed waste collection services can afford to skip work and stay at home, then they should". While it is understandable to prioritize health and safety, which cannot at this time be guaranteed in the work environments of waste pickers, there are interesting notions to unpack around how we consider and label work as essential.

The terms "essential work" and "essential worker" have emer been associated with the pandemic, along with terms such as social distancing. While these are widely used, there is not yet an agreed upon global definition of essential work. Naming - or not naming - waste work as an essential service varies across the world. For example, according to the National Waste and Recycling Association, in the United States, the Department of Homeland Security named solid waste collection as essential; however, at the time of writing, the designation did not include recycling options (Wright, 2020). Defining what constitutes essential work across the Global South was not available at the time of writing. However, collecting and removing potentially dangerous materials from public space does seem essential - especially during an outbreak of a virus that is overwhelming hospitals and paralyzing economies.

Waste work is essential. Waste pickers are essential. Without romanticizing the work and erasing the real physical threats and stigmatization that pervade this livelihood, the work is not always done out of desperation or in dehumanizing contexts. Although waste picking is arguably an undesirable occupation, and certainly one that poses levels of insecurity or exposure to harm, not all waste pickers serve this role "as a last resort, or with resentment" (Carenbauer, 2015, 41). Waste pickers in Dhaka, Bangladesh and in Beijing, China revealed that this career allowed them to earn more money than other similar informal work and to work independently (Carenbauer, 2015; Landsberge, 2019). Landsberger (2019, 100) goes so as far as to reject that waste pickers are "down and out"; deconstructing this language is an important step in reframing waste pickers and their essential role.

Waste work conditions have been described as "extremely dehumanizing" (WIEGO, 2005, 6). Word choice of dehumanizing implies that improving physical working conditions may make the work more humane. However, this approach is problematic in that not all waste pickers expressed finding the conditions dehumanizing (Carenbauer,

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2015; Rathore, 2020). Waste pickers are aware of the conditions of the work, and the physical health hardships. Rathore (2020, 181), suggests that is not "acute poverty" that steers individuals to "stumble" into e-waste work, a particlar type of waste work which deals with electronic materials. Rather, the e-waste sector is a more established community and livelihood.

The safety conditions and health of workers could, and should, be improved upon. However, not all engagement with waste pickers suggest that the conditions of the work environment led waste pickers to view the job as something less-than work, as suggested by some literature (WIEGO, 2005; Damasio, 2014).

6. Valuing essential work(ers) and the future

At the time of writing, COVID-19 continues to take lives, halt or devastate economies and produce waste. For waste pickers, the impact is felt physically and financially, with high risk of exposure to the virus and high risk of losing livelihood. In the article "A pandemic gives permission for change", Davidsen (2020) explains exactly that: a pandemic bares global vulnerabilities, including weaknesses of health, economic and social structures. The vulnerability of poor and marginalized populations has been forced into focus, along with the vulnerability of our planet (Davidsen, 2020).

The pandemic may present an opportunity to rebuild economies and services, particularly in urban environments. As we consider what is essential, public health, hygiene and environmental sustainability or circular economy are emerging. Relatedly, the need for increased social and economic protections for the huge number of informal workers, including those in the waste sector, has become urgent.

Across the world, people are adapting. People are changing their work conditions to remain relevant when possible; whether this means working from home or limiting work at a centralized office or increasing safety precautions by wearing PPE. Building upon this, there may be the prospect for more permanent improvement to safety conditions and deepened social protections for waste workers. Reframing and revaluing waste workers as agents of environmental and economic protection may increase their protections.

There may be hence numerous reasons, including access, as to why efforts to encourage use of safety protections, such as gloves did not work on waste sites. As norms shift and awareness and acceptance of masks expands, the cultural and practical adaptation of protective gear may resonate with waste pickers. This may come from the waste pickers themselves and an increased desire for physical protection, and from a broader societal understanding of contagions and contaminants and desire for shared protection.

At the risk of inappropriately applying what is perhaps a narrative more prominently used in the Global North to the Global South, discussion around work and essential work are evolving. Some valuation of work has been tied to education level or income. However, increased attention has been given to health workers, fire fighters, grocery clerks, mail services, transportation services, and waste workers. Dealing with waste - which potentially poses risk for human and environmental health - is essential.

The essential nature of this work may appeal to opportunities for greater formalization and more sanitary work conditions. Legal framework and public policies, which ensure decent working conditions and safe worksites, along with guaranteed access to recyclable materials, are key to continued protection of these essential workers (Gutberlet, 2016, 61).

Understanding waste picking as essential, for human and environmental health, may allow the profession to receive greater attention which could be leveraged for improved health and social protections under increasingly globalized lenses and standards. Waste work is not just dismal and dangerous; for many, this is their livelihood and "a viable career" (Carenbauer, 2015, 38; see also Rathore, 2020). This is important as there is the potential to reframe waste work from desperate to opportunistic; from dirty to sustainable; from vulnerable to empowered; from secondary to essential.

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