Including waste pickers in metropolitan waste management

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Including Waste Pickers in Metropolitan Waste Management

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A child sorting waste at landfill © Eve Arnold/Magnum Photos

Abstract

The world population is projected to reach 9.7 billion people by 2050 and Africa is expected to be the fastest growing continent, nearly doubling its population by 2050. Cities in the global South are projected to grow at the fastest rate. Notably, nearly 90 per cent of the global urban expansion is expected to take place in the global South, with Africa and China driving a significant portion of this growth. This has resulted in cities spilling across their administrative areas, leading to a rise in the development of metropolitan areas. Metropolitan areas are characterized by strong interlinkages between cities and the surrounding areas that come with tremendous benefits. However, they are also exposed to increased social inequality and environmental hazards that extend beyond one administrative division, especially with regard to waste management. Due to dynamic urban growth, municipalities, which are the main providers of waste management services, have extended some services to the metropolitan level. While collection services are provided at the municipal level, new disposal facilities are being developed to serve several municipalities. Metropolitan solid waste management connects municipalities with local communities, particularly waste pickers, who play a crucial role in this field. The strategies for improving waste management across metropolitan areas are examined in this document with a focus on the individuals working in this sector. Waste pickers drive the circular economy by transforming waste into valuable resources, making them key actors in the fight against climate change.

The first chapter in this document has an examination of essential concepts to understand metropolitan waste management and some of the reasons for its current inefficiencies. The following sections provide an in-depth look at waste pickers, including the advantages of their activities and their day-to-day struggles, and the potential benefits of integrating them into formal waste management systems to advance global sustainability agendas. MetroHUB, the UN-Habitat initiative for supporting sustainable development in the world's metropolises and regions, is then introduced. The section What can you do? outlines 12 recommendations proposed to both empower waste pickers and improve waste management. Finally, the last chapter has an outline of UN-Habitat's commitments, urgent actions and open questions.

With this document, we aim to reach all stakeholders, particularly policymakers, decision-makers, planners and waste pickers' organizations, who need to understand each other and work together to build a better metropolitan waste sector, especially in a post COVID-19 world.

Keywords

Circular economy, informal sector, metropolises, metropolitan management, sustainable development, waste management, waste pickers.

Executive summary

I. Waste and resource management at the metropolitan scale

With city expansions, economic development, population growth and the throwaway culture of the past few decades, solid waste management has become a major issue of concern globally. To tackle this issue, drastic changes need to take place, starting with our definition of waste. Waste is generally understood as an unwanted product, something that you throw away when you no longer have a use for it. In a circular economy, waste is reclaimed when residual materials are eliminated from the production chain and all products on the market are designed to be re-used, transformed and/or recycled. Thus, a circular economy entails a paradigmatic shift from waste management (how to get rid of waste once it has already been produced) to resource management (how to transform the materials once they do not fulfil their original function).

This document is an exploration of the transformation of waste management from the municipal level to a metropolitan scale. Collection services are mainly done at a municipal level, but disposal facilities are now designed to cover more than one municipality, hence the need for coordination and governance across several municipalities. As a whole, those areas form a waste infrastructure that connects cities, towns, suburbs, rural areas, highways, provincial roads and recycling facilities, etc. across administrative borders. At the same time, waste management has a social component that includes consumers and all people involved in collecting, sorting, recycling, transforming, transporting and disposing of waste. With an increase in urban agglomerations, waste pickers' work and impact go beyond one municipality as they travel daily to urban residential areas, collection sites and recyclable business operators in various cities. The metropolitan scale allows for a comprehensive exploration of waste management as it takes into account all the spatial and social dimensions mentioned above. Whilst the metropolitan scale can provide a detailed picture of the waste sector, its connections at local, national and international scales are to be considered.

II. Waste pickers

The contents of this document focus on one group of actors in the waste sector: waste pickers. Many terms have been used to refer to the people in this sector and are referred to as recyclers, poachers, rag pickers and scavengers, among the many names used in different parts of the world (Samson, 2009). Some of these terms are seen as derogatory by many individuals in the business, leading to debates about the correct term to use.

There is no consensus on a universal term; however, in the First World Conference of Waste Pickers, the Steering Committee agreed to use "waste picker" as the universal term (Samson, 2009). All the terms used to refer to people who make a living out of materials that someone else discarded represent about 1 per cent of the global working population and are spread all over the planet (even though they are more concentrated in developing countries).

The type of services they provide, materials collected, social status, political power and income might significantly change from region to region, but despite local differences, waste pickers provide several benefits while facing many obstacles. According to several studies, they are among the poorest, most vulnerable and segregated groups in our societies and the COVID-19 pandemic further exacerbated their already fragile livelihoods. From handling contaminated materials to losing daily earnings during the forced lockdown, waste pickers and their families faced serious and life-altering challenges during the pandemic and now more than ever they need our support to keep working for a healthy world (Lowry, 2020).

III. Problem and relevance

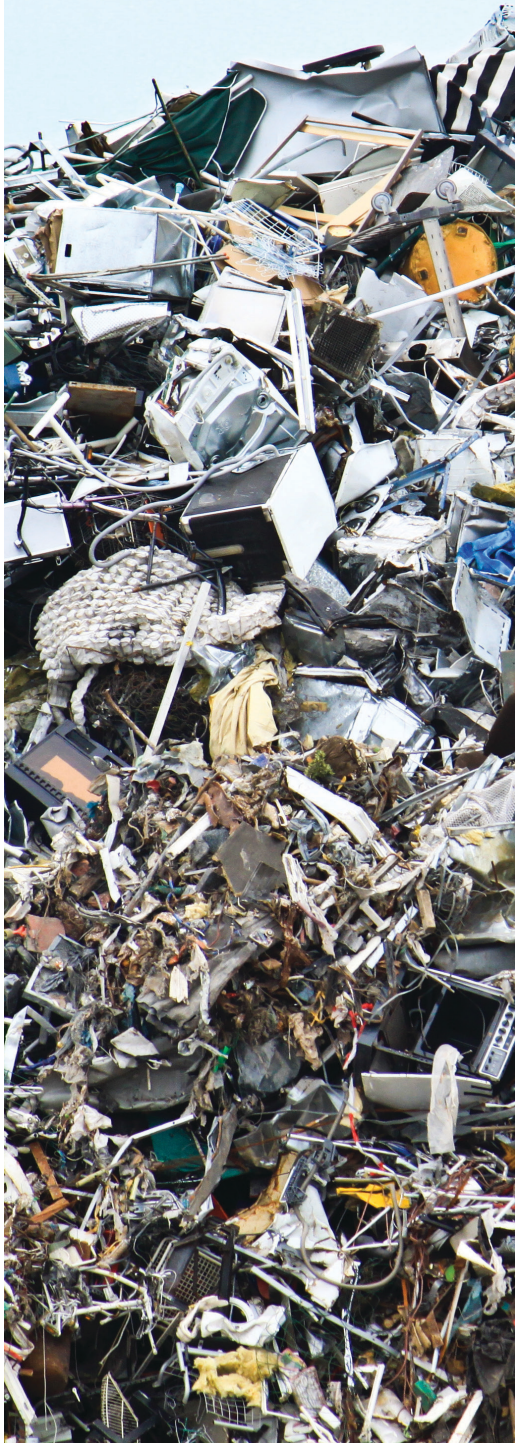
Many actions have been proposed and implemented to tackle problems related to waste management from different perspectives and aimed at different actors. Extended producer responsibility schemes, public awareness campaigns and bans on plastic bags are some examples. The aim of this document is to improve the efficiency and sustainability of the waste sector by including waste pickers. Thus, the main question is: how can we make metropolitan waste management more efficient and sustainable by including waste pickers?

It is crucial to address this issue in order to reach some of the Sustainable Development Goals endorsed by the United Nations. Better working and living conditions for waste pickers means promoting cleaner and healthier environments, strengthening efforts against climate change, increasing recycling rates, reducing poverty, bolstering green jobs, creating decent work, protecting human rights and promoting social equality.

IV. MetroHUB: an integrated approach for metropolises

MetroHUB is a UN-Habitat programme that promotes sustainable development in the world's metropolises and regions by tailoring innovative metropolitan solutions to local contexts and informing metropolises' decision-making processes with the latest research and data. UN-Habitat's integrative approach for metropolitan management involves local, subnational and national governments' participation in metropolitan governance, metropolitan policies and legislation, metropolitan planning and metropolitan finance and economics. Because of its holistic and people-focused approach, it provides a suitable framework to understand the mechanisms of waste picking and to enhance waste pickers' livelihoods. Ultimately, this will improve the overall waste management on a metropolitan scale.

» *Dumpsite under Clear Sky © Emmet*



V. What can you do?

As waste generators, all humans must facilitate the transition to a circular economy. At the same time, policymakers, governments and international agencies need to create an enabling environment for this change to happen.

Governments have to work with waste pickers for two main reasons: to improve waste management and to enhance waste pickers' livelihoods. One of the key issues highlighted in this document is that, as waste pickers are active in all countries, they may be part of a global solution to enhance waste management, fight climate change and the move towards circular economies. The recommendations presented below aim to guide metropolitan authorities, policymakers and planners in establishing a waste sector that includes waste pickers.

1. Establish a data-driven strategy

Conduct survey, map collection routes and set clear goals. This comprehensive approach enables informed decision-making and tailored interventions that support waste pickers and improve overall waste management.

2. Plan for spatial and infrastructural needs

Waste pickers need space to work efficiently and safely. Designate collection areas, create secure storage points and establish community-run recycling centres. These measures streamline operations and provide opportunities for waste pickers to increase earnings and develop new skills.

3. Ensure safe working environments

Provide protective equipment, safety training and establish safe zones, especially in hazardous areas such as landfills. Prioritizing health and safety protects waste pickers and enhances overall waste management efficiency.

4. Improve transport options

Efficient transportation can significantly boost productivity and income for waste pickers. This involves providing affordable vehicles, subsidizing transport costs and optimizing collection routes.

5. Promote multilevel governance

Create a metropolitan waste management committee and align local efforts with global sustainability goals. This coordination bridges local needs with national policies and international standards for more coherent strategies.

6. Involve all relevant stakeholders

Organize discussions bringing together waste pickers, recycling companies, authorities and community representatives. Including waste pickers in decision-making ensures their perspectives shape policies and practices.

7. Provide economic support and formalization options

Implement fair payment schemes and opportunities for formal employment. Integrating waste pickers into the formal sector improves their economic stability and enhances overall waste management efficiency.

8. Support waste pickers' associations

Facilitate the creation and strengthening of waste pickers' associations. These groups advocate for rights, negotiate better terms and provide support to their members, empowering waste pickers within the sector.

9. Promote social inclusion

Implement public awareness campaigns, provide uniforms and identity cards, and introduce gender-sensitive policies. Addressing stigma and ensuring equal opportunities improves waste pickers' quality of life and highlights their contributions.

10. Promote separation at source

Educate the public and implement policies for waste separation at homes and businesses. Pre-sorted waste reduces health risks for waste pickers, improves recyclable quality and increases overall recycling rates.

11. Expand coverage and range of services

Extend waste collection to underserved areas and diversify services that waste pickers provide. This creates new job opportunities and improves waste management in previously neglected areas.

12. Build partnerships and leverage global best practices

Collaborate with local authorities, businesses, NGOs and international networks. Sharing knowledge and resources can facilitate the implementation and continuous improvement of waste management practices.

VI. What are the next steps?

UN-Habitat is committed to supporting the transition to a more socially inclusive and efficient waste sector with a wide range of interdisciplinary and multi-stakeholder activities. Immediate actions include promoting this document through various communication channels, raising awareness about waste picking at conferences and other events, and fostering partnerships with key stakeholders.

Future steps will focus on cross-country learning, collaborating with progressive metropolitan authorities, engaging with innovative producers in the waste management sector and developing new solutions to address complex challenges in the field.

I. Waste and resource management at the metropolitan scale

What is waste?

Waste is a global and increasingly challenging issue (see box 1). It is directly linked to the way societies produce and consume. Thus, it affects everyone and, if not properly managed, is a threat to public health and the environment (United Nations Environment Programme, 2015).

Waste is a very broad concept that generally indicates unwanted or discarded materials. According to the United Nations Statistics Division (1997, p.76), waste is defined as "materials that are not prime products for which the generator has no further use of in terms of his/her own purposes of production, transformation or consumption, and of which he/she wants to dispose". In recent decades, with the environmental concerns and the circular economy revolution, waste has not been seen as a residual material to be disposed of but instead as a resource to be efficiently managed.

The contents of this document focus on solid waste, which refers to useless and sometimes hazardous materials with a low liquid content. Solid waste includes municipal garbage, industrial and commercial waste, sewage sludge, agricultural waste and mining residue, among others.

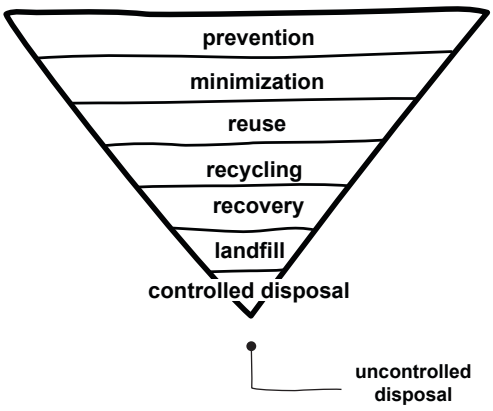
What is (waste and) resource management?

Waste management is an essential urban service for contemporary societies, together with the provision of drinkable water, shelter, food, energy, transport and communications.

Despite its primary importance, the public and political resonance of waste management is often insufficient (UNEP, 2015).

There are different strategies that a city, region or country can adopt to deal with waste. They are usually summarized in the waste management hierarchy (see figure 1).

FIGURE 1. Waste management hierarchy



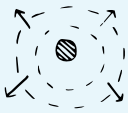
This reversed pyramid shows the least-preferred option of managing waste at its vertex (controlled waste disposal), the most sustainable at the base (prevention of waste), and increasingly sustainable strategies in the intermediate steps (going upwards).

This illustration is useful as it provides a priority order for waste management options, but it also has the following limitations:

- It does not include some of the early steps in the waste management chain, such as storage, collection, sorting and transport of waste;
- There can be different versions of the hierarchy because the option considered "best" can vary depending on the scope of the work (for example, a limit to a specific type of waste) and on the geographical location (for example, the amount and type of waste produced, collection rates, etc.);
- It does not provide a holistic framework to guide waste management as its validity is limited to technical aspects (UNEP, 2015).

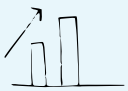
BOX 1. Facts and figures

1. Metropolitan trends



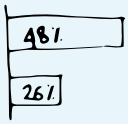
At least 2.59 billion people lived in metropolises in 2020, equivalent to 1/3 of the global population and 60 per cent of the urban population. It is projected that almost 1 billion more people will become metropolitan inhabitants in the next 15 years, reaching 39 per cent of the global population by 2035. A new metropolis will arise every two weeks in the next 15 years – a total of 429 new metropolises (UN-Habitat, 2020).

2. Waste generation



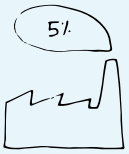
By 2050, waste generation will have increased by 70 per cent at a global scale and up to 150 per cent in low-income countries (Kaza and others, 2018).

3. Waste collection



Low-income countries collect about half of the waste produced in cities and one quarter of the waste generated outside urban areas (Kaza and others, 2018).

4. Waste and climate change



Inefficient waste management contributes nearly 5 per cent, or 1.6 billion tons, of global greenhouse gas emissions (Kaza and others, 2018).

5. Waste and society

Public education and awareness activities have a key role to play in improving waste management (UN-Habitat, 2010).

6. Waste pickers

About 1 per cent of the urban population are waste pickers (Medina, 2007) and a majority work within the informal sector (Morais and others, 2022).

7. Waste pickers and gender

Women in waste picking typically earn less than men (WIEGO, 2021).

8. Waste pickers' health

In 2015, the Wasted Health report highlighted that exposure to open dumpsites has a greater detrimental impact on a population's life expectancy than malaria (Mavropoulos & Newman, 2015). Many waste pickers are reported to live nearby, or inside, landfills.

9. Waste collectors in low-income countries

Waste pickers commonly collect between 50 and 100 per cent of waste in cities in low-income countries, at no cost to municipalities (UN-Habitat 2010).

As presented in the influential document "Solid waste management in the world cities" (UN-Habitat, 2008, p. XIX), "a good solid waste management system is like good health: if you are lucky to have it, you don't notice it […]. On the other hand, if things go wrong, it is a big and urgent problem and everything else seems less important".

Establishing sustainable waste management is a key challenge of the twenty-first century. In the long run, the following components are to be considered to ensure an efficient waste management sector (UNEP, 2015):

- Physical elements (or infrastructure), including waste generation, storage, sorting, collection, transport, recycling, recovery, treatment and disposal;
- All stakeholders (or actors), including but not limited to governments, waste generators, producers, service providers, civil society and international agencies;
- Strategic aspects of our societies, environments and economies. Indeed, waste management is a cross-cutting issue that has strong linkages to a range of other global challenges such as health, climate change, poverty reduction, food and resource security and sustainable production and consumption.

For centuries, regions have developed and consolidated different strategies to manage waste.

In some parts of the world, especially in low- and medium-income countries, the spotlight is on ensuring a sustainable disposal of waste, which means phasing out uncontrolled disposal (open dumping or burning waste) in order to get onto the waste management hierarchy in the first place (see figure 1).

In this context, urgent actions are required to ensure universal access to waste collection services, eliminate uncontrolled disposal and burning, and move towards environmentally sound management for all kinds of waste (UNEP, 2015).

In industrial countries, particularly since the 1960s (with the booming international attention on environmental protection), waste management has greatly improved. What is relevant is the revolutionary change of mindset that cities, countries and regions (for example, San Francisco, Sweden and the European Union); if the initial focus pf public authorities was on how to dispose of waste after its generation, today the attention has moved upstream, addressing the problem before the waste is generated. In other words, many countries moved away from the concept of "waste disposal" to the notion of "waste management" and reshaped the understanding of waste itself, moving from the term "waste" to "resources".

Waste and resource management considers both upstream and downstream waste management. The first one, upstream waste management, focuses on waste prevention and upgrading resources based on circular economy mechanisms.

The second one, downstream waste management, looks at the management of garbage after its generation. As pinpointed above, moving from downstream to upstream is one of the core challenges when dealing with waste management. New strategies based on waste prevention and upgrading include minimizing waste in product and service design; reducing quantities and uses of hazardous substances; reusing; and, where residuals do occur, promoting separation at source to preserve their intrinsic value for recycling and recovery (UNEP, 2015).

Looking at human history can help to understand how this fundamental change of mindset occurred. According to the literature (Scheinberg and others, 2010), the main driving forces for the development and modernization of waste management systems relate to:

- improvement of public health;
- resource value of the waste;
- protection of the environment;
- a call for climate change-mitigation strategies.

Particularly relevant in the context of this present document is the second point, "resource value of waste", an expression that indicates the series of activities aimed to extract maximum value from residual materials.

A number of influential studies (Scheinberg et al., 2016; Barles, 2014) pinpoint two important facts about waste and its management.

First, practices of recycling and reusing are well-rooted in ancient civilizations; and second, those practices boomed in the nineteenth century with the industrial revolution. At that time, large numbers of urban dwellers found a source of income in collecting, using or selling to industries materials such as rags and animal bones recovered from waste. As noted by Scheinberg and colleagues (2010, p.19), "this activity continues today – virtually unchanged – in many developing and transitional country cities, where informal-sector activities in solid waste management and recycling secure the livelihood of millions of people".

Who is involved?

Efficient waste management systems involve all stakeholders in planning, implementing and monitoring changes. According to the Waste Wise Cities,[1] a solid waste system consists of three main groups of actors:

- Service users, or waste generators, who represent the clients of the service including industry (meaning manufacturers, brand owners, importers and others in the supply chain) businesses, institutions and households;

[1] The Waste Wise Cities initiative, launched by UN-Habitat in 2018, aims to support cities in tackling global waste management challenges. The initiative offers cities tools to assess their waste management systems, identify gaps and design targeted interventions. Data collection, capacity-building, sharing best practices and advocating for integrated waste management approaches are its key action areas. Over 200 cities globally have joined this initiative, committing to improve waste management, protect the environment and contribute to a circular economy. Improving the collection and transport of waste and establishing better working conditions for waste workers are among its 12 key principles.

- Service providers that work for the public sector, the private sector or in partnership; might be part of formal organizations or work in informal contexts of widely varying sizes and capabilities. These include the following: city waste management offices, public collection service providers, formal and informal private collection service providers, formal and informal chain enterprises, and formal private recovery and disposal service providers;
- External agents that play a variety of roles aimed at creating an enabling environment (for example, they facilitate the participation of vulnerable actors and implement changes) and include national, regional and local governments, civil society, community-based organizations, non-governmental organizations and international agencies.

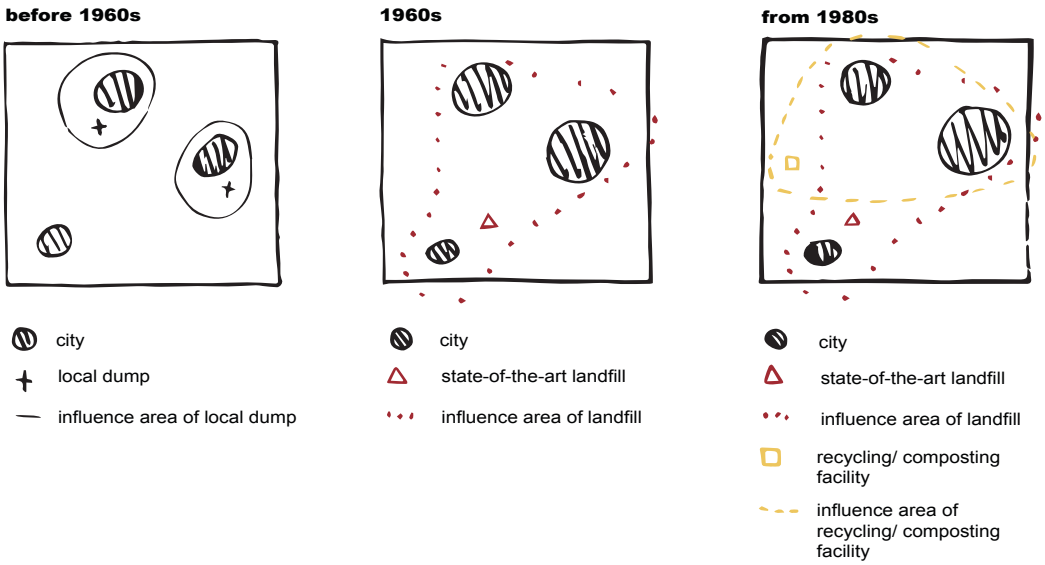
When the modernization process started in developed countries during the 1960s, solid waste management was seen largely as a technical problem with engineering solutions. That changed during the 1980s and 1990s when municipalities recognized the importance of an active role for all citizens and producers of waste. The main point is that waste management cannot be reduced to a purely technical issue, and thus all stakeholders need to be engaged, and all sustainability aspects need to be addressed.

Solutions have to be the result of citizens, leaders and the waste and recycling sector working together to come up with new approaches. Integrated solid waste management combines technical, social and intersectoral sustainability aspects in a holistic framework (Scheinberg and others, 2010).

Why to explore waste management in metropolises?

Before the 1960s, in high-income countries, waste was collected and disposed of locally. The modernization process of the sector began around the 1960s and extensively transformed the way waste is disposed of and managed (see figure 2).

FIGURE 2. How the modernization process changed waste management dynamics



Municipal solid waste management remains predominantly a responsibility of local governments. According to the World Bank (Kaza and others, 2018), municipal solid waste management encompasses the collection, treatment and disposal of waste, and it involves:

- Sites of waste generation, such as households, commercial areas, offices, institutions and public spaces;
- Waste handling sites, such as temporary storage facilities, recycling centers, incineration plants and landfills;
- Transportation networks, such as routes for waste collection and transfer.

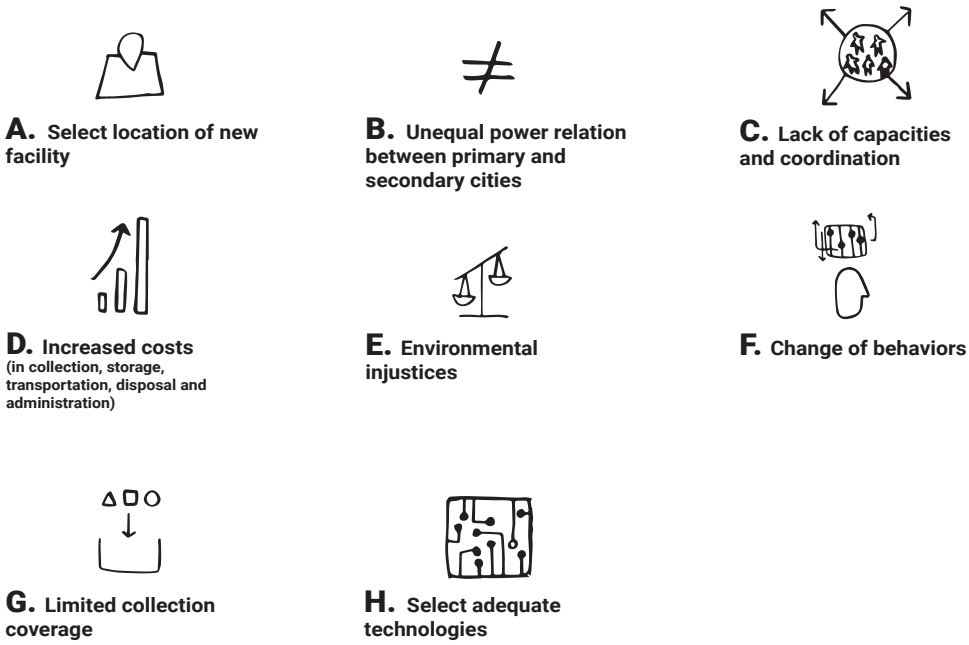
In low and middle-income countries, the management of municipal solid waste is the largest single budget item for cities and one of the largest employers (Kaza and others, 2018). Notably, millions of people worldwide earn their living in this sector (ILO & WIEGO, 2013).

While collection services are more effective at a municipal scale, new waste disposal facilities are very expensive and are thus designed to serve not only one but several urban centres (Scheinberg and others, 2010). Managing waste at the metropolitan scale is often more efficient, but this approach introduces a series of challenges (see figure 3). This change of scale (from local to metropolitan) influenced and transformed not only the physical space but also governance structures and finance mechanisms of the waste sector.

Local dumps were gradually closed and state-of-the-art landfills were developed in the poorest, least populated and weakest municipalities of metropolitan areas.

At the same time, selecting the geographical location of the new facilities resulted in environmental justice conflicts and met with fierce opposition from the public.

FIGURE 3. Main challenges of metropolitan waste management.



The new geographical dimension of waste management required adequate governance structures to coordinate, and effectively divided costs and stipulated agreements between municipalities to ensure long-term stability of the sector. This brought new challenges, such as lack of capacities, increased administration costs and lack of or multiplication of regulations. Some metropolises, such as Adelaide in South Australia (see box 2), took up these challenges by creating a dedicated governance body and setting up a coordinated strategy for the whole metropolitan region.

BOX 2. Adelaide metropolitan region

Since the early 2000s, resource management in South Australia has been a major policy priority. In 2003, a new dedicated government body, called Zero Waste South Australia, was established to drive forward waste reduction, recycling and reuse practices by establishing an integrated strategy.

One of the most innovative aspects of this new government body is that its revenue is linked to the landfill tax: out of every dollar of landfill tax charged, 50 cents are made available to Zero Waste South Australia for initiatives that divert waste from landfill. Moreover, the 'Zero Waste Act' and the 'Plastic Bag Ban' are two excellent examples of South Australia's politicians showing leadership by putting in place the institutional structures, financing mechanisms, organizational capacity and actions to support a major drive towards a more sustainable waste sector (Scheinberg and others, 2010).

The combination of new technologies, the need for more management, and longer distances to cover (from the point where waste is generated to the facility where it is disposed, brought additional financial issues to cities and their contractors:

- The costs of disposing of waste in new facilities are much higher than the costs of local (largely uncontrolled) disposal. This is partially due to a newly introduced fee, often called the "landfill gate fee" or "host community fee", that aims to compensate the host community for offering their land as a sink to others;
- Collection, storage and transport costs are much higher, as longer distances imply more time on roads, increased fuel consumption and, in some cases, the need for local transfer stations;
- There are also increased (and often not considered) administration costs. Finding an agreement on where the landfill should be and how laws, regulations and administration should work requires not only money but also time and political will;
- Oppositions by activists and civil society introduce legal battles that cost the local authority time, money and political credibility.

In the 1980s and 1990s, high costs and scarce land availability triggered a search for cheaper and environmentally sustainable waste management strategies. In this context, recycling and composting began to appear as not only viable but also preferable alternatives to regional landfills.

Modern recycling infrastructures come with benefits and challenges. Natural reserve conservation, protection of ecosystems and wildlife, energy savings, reduction in carbon emissions, cuts in landfill waste and job creation are some of the main reasons why it is important to recycle. On the other hand, recycling also brings some challenges, such as the following:

- Successful recycling rates require effective separation at the source – that is, at the household level – meaning that waste producers need

to change behaviour; instead of discharging their waste in the same bin, they sort it into several categories and store it separately;

- Collecting several separated waste streams without greatly increasing collection costs is a challenge to the waste-collection providers and operators. This also requires changing the way in which they think and behave. In some cases, this has led to a reduction in collection frequency for the residual waste.

Today, developing countries should aim to phase out uncontrolled disposal sites. In this context, one of the main challenges is how to extend collection coverage to unserved parts of the city where there is less infrastructure and the ability to pay the collection service is lower. Without providing comprehensive collection, these cities are not fulfilling their responsibility to protect public health – not just for the most vulnerable groups, but for all citizens (Scheinberg and others, 2010).

Another issue in middle-income countries that are starting to build a modern waste management sector is to select the most appropriate technological solutions.

It has been learned in cities in industrialized countries that technologies depend on institutional, governance and policy frameworks, which are diverse, complex and context-based. It follows that technological solutions need to be appropriate and financially sustainable under local conditions (Scheinberg and others, 2010). While high land prices and energy demands may incentivize waste-to-energy investments, these facilities face significant hurdles in low- and middle-income countries. High capital and operating costs, coupled with waste composition issues, present major challenges (UNEP, 2019).

The waste in these countries often has a low calorific value (meaning it produces less energy when burned), typically due to high moisture content and a large proportion of organic materials.

This characteristic makes the waste less suitable for efficient incineration, potentially reducing the viability of waste-to-energy projects in these contexts. Moreover, this option is among the last steps of the waste management hierarchy and is thus not environmentally sustainable.

II. Waste pickers

Who are they?

For centuries, people around the world have been making a living from materials that someone else has discarded (ILO & WIEGO, 2017). Across centuries and countries, waste pickers have established a fundamental role in the waste chain, acting as collectors, transporters, sorters, buyers and sellers of recyclables and reusable items (see figure 4).

In 2008, representatives of those groups met in Bogota and decided to call themselves "waste pickers", a term that replaces derogatory expressions such as "scavenger", and that aims to facilitate the creation of new bonds across nations.

This conference led to the creation of the International Alliance of Waste Pickers, an organization that advocates for waste pickers' rights globally and that has been instrumental in the formation of waste picker cooperatives and organizations in Africa, Latin America and Asia (IAWP Website).

Quantifying the global waste picker population is challenging. Box 3 presents the available data according to influential studies of the sector. Depending on the geographical location, waste pickers' work might vary significantly.

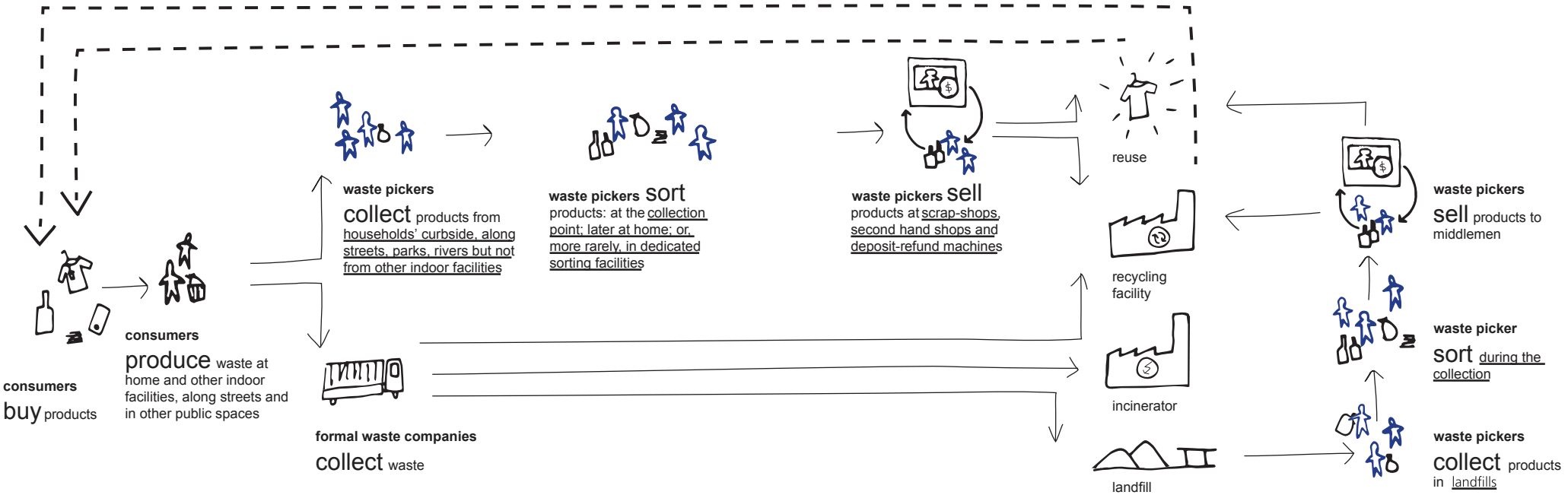
However, they are generally categorized based on the following criteria (WIEGO, 2019):

- Places where they work: they may rummage through garbage along streets, waterways, private bins or dumps.
- Type of activities they carry out: some collect materials for personal use, while others search for recyclables to sell to middlemen and women2 or companies. Some provide door-to-door collection services, others buy valuable items such as e-waste directly from owners.
- Linkages with municipalities, organizations and industries: in the past few decades, waste pickers from different regions have organized into cooperatives or associations and worked in recycling warehouses. In some counties such as Brazil, waste pickers have formal contracts (see case study 4 in the Annex).

Despite several differences, waste picking is a common term for work to support the livelihoods of many urban poor and their families.

2 In this context, "middlemen and women" are those intermediaries between waste pickers and formal recycling industries. They buy recyclables (in small quantities) from individual waste pickers and sell them (in large quantities) to the formal sector.

FIGURE 4. Waste pickers in the waste chain



BOX 3. Waste pickers: numbers and demographics

Waste pickers make up less than 1 per cent of the urban workforce, which means 15 million to 20 million people worldwide (ILO & WIEGO, 2013). Although informal waste pickers are prevalent in developing countries, they are also present in developed countries (Medina, 2007; OECD, 2016). For instance, there are more than one million waste pickers in Europe alone (Scheinberg and others, 2016).

Waste pickers comprise a diverse group, including men, women, children, the elderly and migrants (Kaza and others, 2018). This demographic diversity often intersects with various forms of vulnerability. Many waste pickers face significant challenges due to low literacy levels, limiting their employment opportunities and ability to advocate for their rights (Dias and Samson, 2016). A substantial portion of waste pickers are migrants or displaced people, further exacerbating their social and economic marginalization (Dias and Samson, 2016). Women in this sector typically face greater hardships, earning less than their male counterparts and enduring harsher working conditions (Marques and others, 2021). The involvement of children is particularly concerning, with many contributing to household incomes through waste collection and recycling. In extreme cases, such as in Gjilan, Kosovo, minors constitute up to 40 per cent of waste pickers at local dumpsites (Kaza and others, 2018). These overlapping vulnerabilities underscore the complex socioeconomic challenges faced by waste pickers across different contexts.

What is their role?

In establishing a sustainable waste management sector, the role of waste pickers is gaining importance (Hoornweg and others, 2012), especially in developing countries cities where they carry out between 50 and 100 per cent of waste collection (UN-Habitat, 2010). Their contribution is not limited to collection; in some countries, they also perform activities such as sorting, storing, transporting, selling, buying, processing, re-using, recycling and composting.

Many benefits and challenges

Waste picking offers significant economic, social and environmental benefits (see figure 5). Environmentally, waste pickers contribute to the reduction of landfill and incineration waste by focusing on items that can be sold to recycling facilities, thereby mitigating the environmental impact. Economically, they collect recyclable materials from households, commercial establishments and public spaces.

This activity provides financial support for waste pickers and their families. Moreover, it can empower women who face barriers to accessing the formal employment sector.

Socially, waste picking creates jobs, helps reduce poverty and generates savings for municipalities in waste management and social services (Morais and others, 2022). For example, the well-established network of waste pickers in Cairo saved the city EUR 14.5 million in waste management (see box 4). Their work is essential for preventing health and environmental hazards, promoting resource conservation and enhancing overall quality of life in urban areas.

BOX 4. Waste pickers in Cairo, Egypt

Over the decades, the *zabaleen*, waste collectors of Cairo, have created what is arguably "one of the world's most efficient and sustainable resource recovery and waste recycling systems" (Fahmi and others, 2010). Yet their livelihood is jeopardized by the privatization of solid waste services through contracts with technology-intensive multinational corporations. In 2004, with the aim of formalizing the capital's waste management, the Government of Egypt contracted four corporate firms for the collection and disposal of the city's waste. The contracts required the companies to recycle only 20 per cent of the waste, far below the rate of 80 per cent achieved by the informal sector. Since 2013, the Government has taken a u-turn and is now starting to make the *zabaleens*' role official, giving them uniforms, vehicles, training and a wage of 12 Egyptian pounds for each apartment they serve (Kingsley, 2014).

FIGURE 5. Economic, social and environmental benefits of waste picking

job creation

poverty reduction

savings in municipal budgeting

public health

clean city

less transport of waste

saved space in landfill

climate change mitigation

protection of natural resources

Waste pickers are vital for maintaining urban cleanliness, especially in areas with limited access to public waste collection and recycling services. By collecting waste from streets, parks and water bodies, they prevent litter accumulation, reduce disease transmission risks and minimize pollutants entering the environment, thereby protecting water sources and air quality (Zisopoulos and others, 2023).

Furthermore, by removing waste, they reduce the risk of diseases such as malaria, dengue fever and leptospirosis, while improving community satisfaction and mental health through cleaner environments and enhanced waste management aesthetics. This not only promotes sustainability but also helps prevent pollution in nearby ecosystems (Dias and Samson, 2016).

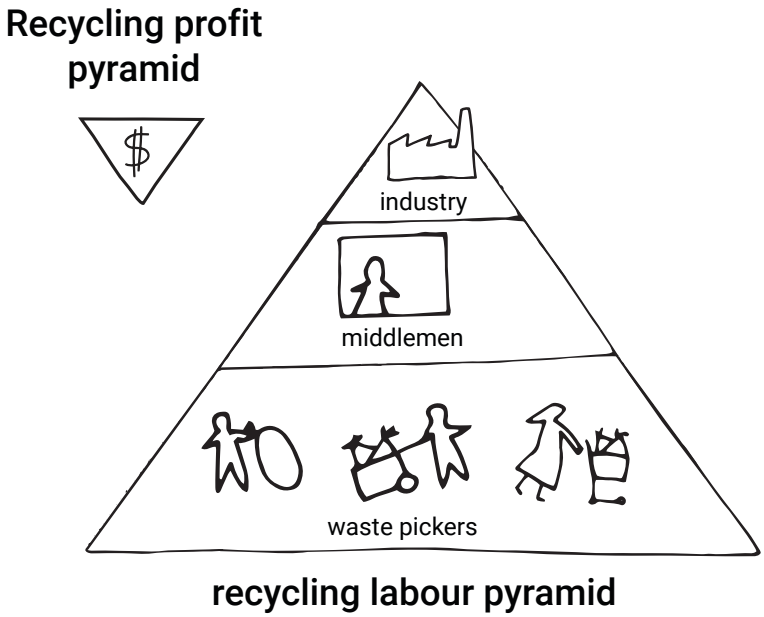
Despite offering many benefits, waste pickers face several daily challenges. They are at the bottom of the recycling pyramid, often have no power to negotiate the price of the recyclables with middlemen and industries and earn very little (see figure 6).

Their livelihoods are threatened by global trends to privatize municipal waste by outsourcing it to private companies and by the increasing number of incinerators. Experts generally criticize incinerators because they indiscriminately burn all waste and produce 25 times more emissions than those of recycling facilities (Tellus Institute, 2008).

Waste pickers are also one of the most excluded and misunderstood groups and their role in the waste chain is often not recognized by authorities, recycling companies or society in general. In some countries, their activities are seen as illegal and not recognized by authorities.

An example of this is in Türkiye, where those carrying out waste picking work might face jail, and where formal waste recycling companies have high fines if they buy recyclables from informal waste pickers (Oran, 2016).

FIGURE 6. Comparison between the pyramid of recycling profit and the one of recycling labour (adapted from WIEGO, 2013)



Research from Women in Informal Employment: Globalizing and Organizing (WIEGO) indicates that some private companies have achieved great collection rates and profits thanks to the informal sector but scrupulously conceal this information to protect their interests (ILO & WIEGO, 2017). Inequalities and injustices are not only against but also among waste pickers and might significantly vary with the geographical location, type of activity and gender (Lines and others, 2016). Notably, women are particularly vulnerable as they are generally paid much less than men and have the burden of raising their children.

In terms of occupational health and safety, waste pickers are exposed to several diseases due to prolonged contact with contaminated or toxic materials. At the same time, they may also pollute the environment (especially while extracting metals from e-waste). Finally, if based in landfills, they may become victims of trucks, fires and waste slides. According to a study in Mexico City the life expectancy of dumpsite waste pickers is nearly 60 per cent shorter than average (Medina, 2007).

» *A woman collecting plastic bottles © Mumtahina Tanni*

Why at the metropolitan scale?

The city-proper or local scale cannot fully capture waste pickers' movements and impacts. In fact, to understand the complex system of waste picking, it is necessary to consider not only the city within its borders, but also its waste infrastructures. For instance, as landfills usually receive waste from several urban centres, landfill waste pickers assume a fundamental role in recycling and reusing the garbage of the whole metropolitan territory.

Moreover, waste pickers move extensively in the built environment, transporting recyclables from collection points to sites for sorting, storing, selling, recycling or reusing. For instance, in many developing countries, waste pickers working in dumpsites transport recyclables back to the closest city where the middlepeople buy their goods. In industrialized countries such as Sweden, where deposit-and-refund systems[3] are in place, waste pickers tend to live in peripheral towns where the rent is cheaper and commute every day to densely populated urban centres where redeemable cans and bottles are more available. Therefore, not only the waste infrastructure but also the transport infrastructure in the city hugely influences waste picking activities.

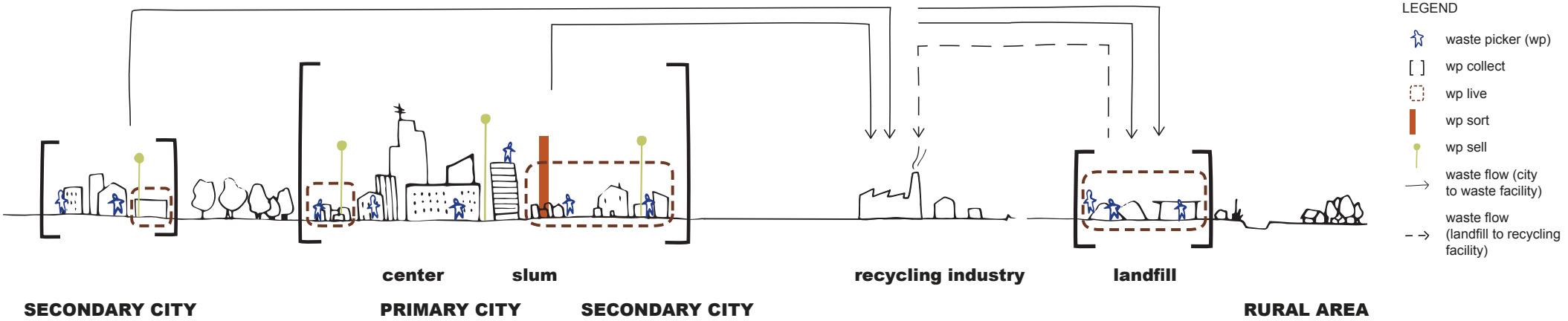
3 Under a deposit-refund system, some products such as bottles and cans have an additional small fee (deposit) when purchased that is paid back when they are return.

» *Aerial footage of landfill dawn © Tom Fisk*

Research (Dias and Samson, 2016) has shown that poor and costly access to infrastructure is a problem for 70 per cent of interviewed waste pickers in cities in Colombia, Kenya and South Africa. As waste increases and cities expand, existing waste pickers' networks can play an important role in waste management at the metropolitan scale, especially in low-income countries (see figure 7).

While existing research and projects on waste pickers focus mainly on the urban or national perspectives, waste pickers play an important role in overall metropolitan waste management and their work could be even more effective if they were seen as allies instead of enemies.

FIGURE 7. Waste pickers in metropolitan areas



III. Problem and relevance

Inefficient and fragile network

The increasing amount of waste and its sustainable management is an urgent challenge across the world. On the one hand, with rapid population growth and urbanization, the world's annual garbage generation is expected to increase by 70 per cent by 2050 (Kaza and others, 2018). On the other hand, today's most common options of dealing with waste, namely landfills and incinerators in developed countries and open dumps in the developing countries, are not conducive to a sustainable waste sector (Hoornweg and others, 2012).

Within the broad challenge of inefficient waste management depicted above, an aim with this document is to contribute to the improvement of waste systems by focusing on one actor in the chain: waste pickers. Their inclusion in the current waste management sector is as an extremely valuable asset for improving its overall efficiency.

For instance, extending the collection coverage, reducing the overall amount of waste, performing the first steps of the recycling process (for example, cleaning plastic materials), transporting materials to collection points, and promoting circular, green and local economies are among the gains. At the same time, waste pickers face many challenges at work, such as poor access to waste, lack of tools, social segregation, high competition, unequal pay and exposure to diseases. In a nutshell, the precarious livelihoods of waste pickers is a major barrier that hinders their ability to work efficiently. The contents of this document explores some strategies to make waste pickers' activities more efficient.

Hence, the main question this document aims to answer is:

How can metropolitan waste management be more efficient and sustainable by including waste pickers?

An aim with this document is to explain how to unlock the full potential of waste pickers by providing a series of recommendations to policymakers, subnational authorities and planners. These recommendations are designed to guide the above actors in understanding waste pickers activities and integrating them in the formal waste sector. As argued by several studies (UN-Habitat, 2010; Scheinberg and others, 2016; Dias and Samson, 2016; Lines and others, 2016) and shown in several case studies (see Annex), this is a win-win situation because, on the one hand, the living conditions of one of the most vulnerable groups of society are enhanced, and on the other hand, better living and working conditions of waste pickers result in an improved waste sector (that is, better collection and recycling rates).

Uplifting waste pickers' conditions is a broad and complex issue that must be tackled on multiple fronts. Although this document focuses on the metropolitan perspective, all levels of planning are relevant (see also part V, recommendation 7). For instance, at the global scale, it is important to examine the international trade in waste and its effects on waste pickers; at the same time, at the national scale, it can be crucial to recognize waste pickers' labour rights; and finally, the local scale is to be considered to develop tailor-made strategies.

Global agendas

Enhancing waste pickers' livelihoods goes hand in hand with the goals set by international agendas, including the 2030 Agenda for Sustainable Development and the New Urban Agenda. Improving waste pickers' conditions contributes to multiple Sustainable Development Goals of the Agenda for Sustainable Development (see figure 8).

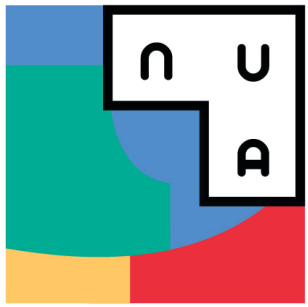
Waste pickers contribute significantly to Goal 1 (no poverty) by working in the recycling industry, though they remain among the most vulnerable groups. Their work directly impacts Goal 13 (climate action) by reducing CO2 emissions through increased recycling rates. Goal 3 (good health and well-being) is crucial, as waste pickers face severe occupational hazards and reduced life expectancy due to exposure to toxic materials. Goal 8 (decent work and economic growth) is particularly relevant, as waste pickers often lack basic rights and fair compensation in the informal market. Goal 11 (sustainable cities and communities) benefits from waste pickers' role in urban waste management, though they remain marginalized. Goal 5 (gender equality) is also significant, as many waste pickers are women who face additional challenges and discrimination in their work.

Additionally, their work contributes to Goal 12 (responsible consumption and production) by promoting resource efficiency and circular economy principles. Goals 9 (Industry, innovation and infrastructure) and 10 (reduced inequalities) are also impacted through the potential formalization and integration of waste pickers into official waste management systems.

FIGURE 8. Why improving waste pickers livelihoods helps achieve the Sustainable Development Goals

Many aspects of the New Urban Agenda, a global framework to ensure a sustainable urban future, touch on waste, its management, informal workers and poverty (see figure 9). Paragraph 59 is of particular interest as it gives recognition to "the contribution of the working poor in the informal economy, particularly women, including unpaid domestic and migrant workers, to the urban economies, the need to enhance their livelihoods, working conditions and income security, legal and social protection, access to skills, assets and other support services, and voice and representation". The paragraph is intended to promote a progressive transition to the formal economy while considering the specificities of each country. This document directly contribute to the NUA objective of leaving no one (that is, waste pickers) and no place (for example, landfills) behind by providing a set of recommendations (see chapter V).

FIGURE 9. Why improving waste pickers livelihoods helps implement the New Urban Agenda



Paragraph 57_ Promote legal income-earning opportunities for the most vulnerable
Waste pickers are often among the poorest and earn a living illegaly. Better working conditions is at the basis for a more equal society.

Paragraph 59_ Recognize contribution of informal economy
In most countries, waste pickers work in the informal economy and the benefits are not recognised. Acknowledge their existance is the first step in building fairer working opportunities, improving access to recources and quality of life.

Paragraph 122_ Decentralised waste management
Waste pickers are keyplayers in increasing recycling rates. NUA supports decentralized decision making processes in the waste sector in order to promote universal access to sustainable waste management systems.

As illustrated in the previous chapters, waste pickers play a crucial role in promoting recycling and responsible waste disposal within their communities, thereby contributing to environmental protection and climate change-mitigation. Their efforts support the transition to an ecological economy by focusing on resource management and advancing concepts such as reuse, reduction and recycling, which are essential to both the current climate change debate and sustainability goals. Waste pickers' work significantly contributes to achieving international and local waste reduction targets, such as target 3 of Goal 12, which is to halve global food waste by 2030.

Waste pickers' efforts not only help in meeting these objectives and reducing cities' environmental footprints but also align with the New Urban Agenda's goals by integrating informal workers into sustainable urban development strategies (Gutberlet and Carenzo, 2020). Thus, the integration of waste pickers' contributions into broader waste management policies and frameworks such as the NUA is essential for fostering inclusive and sustainable urban growth.

Improving conditions for waste pickers aligns with UN-Habitat's priorities for the 2026–2029 strategic plan which is focusing on housing.

The work of waste pickers contributes to the concept of "equitable prosperity" by enhancing basic services and promoting local economies. Waste picking activities also support the goal of "living in harmony with the natural environment" by reducing waste, mitigating climate change, and fostering circular economy. Moreover, the integration of waste pickers into formal waste management systems at the metropolitan scale resonates with UN-Habitat's approach of promoting integrated policies and multilevel governance. This integration addresses spatial inequalities by connecting waste management practices across urban-rural linkages. Finally, by improving livelihoods and environmental conditions, waste pickers' activities contribute to building resilient communities, another key priority in UN-Habitat's strategy for the period 2026 to 2029.

» *Catadores © Marivaldo Alves Barbosa, 2014*

IV. Metropolitan approach

The UN-Habitat MetroHUB initiative promotes an integrated approach to support metropolises and regions in their efforts to achieve sustainable development. Metro-HUB can facilitate the integration of waste pickers in the metropolitan waste management in the following three ways:

- By developing solutions across administrative borders: it can enhance the existing links within a metropolitan area or even support the creation of new collaborations when a metropolitan authority is not in place;
- By adopting a cross-sectoral approach: it enables the development of recommendations in crucial areas related to waste, such as governance, planning, finance and socio-environmental aspects, and can also support the capacity development and implementation of acupuncture projects;
- By adopting a people-centred approach: it has the necessary flexibility to include waste pickers within its range of activities.

The following sections outline in detail the MetroHUB initiative.

What is MetroHUB?

UN-Habitat has established the MetroHUB initiative to support sustainable development in the world's metropolises and regions, by tailoring innovative metropolitan solutions to local contexts and informing metropolises' decision-making processes with the latest research and data. UN-Habitat's work on metropolitan and regional management includes the following: capacity development of metropolitan and regional authorities; formulation of metropolitan sectoral policies; drafting and improvement of metropolitan legal frameworks; strengthening of supra-municipal governance schemes; designing metropolitan and regional planning instruments; and innovating on financing mechanisms at metropolitan and regional scales. Specific objectives of the MetroHUB initiative are the following:

- Developing and sharing information as well as enhancing capacity development and learning;
- Establishing a strong partnership with relevant networks and creating a platform for linking several networks;
- Developing and gathering practical tools and case studies, with special reference to policies, legislation, governance, planning and finance aspects;

- Building up a dialogue among diverse actors such as professionals, civil servants, academia, civil society and the private sector;
- Promoting a shared vision and consensus on crucial projects for metropolitan development;
- Fostering vertical and horizontal collaboration to improve metropolitan development and ensure a participatory approach for decision-making by including civil society and especially vulnerable groups such as women, children and young people and persons living with disabilities.

Services provided by MetroHUB, namely trainings, field visits, technical assistance, normative support, knowledge exchange, studies, among others, have diverse scope and timeframes according to counterparts' and beneficiaries' needs and requirements. These services have already been applied in the following regions and countries, among others: i) in Latin America and the Caribbean: Bolivia, Colombia, El Salvador, Mexico; ii) in Africa: Cameroon, Mali and Uganda; iii) in Europe: Spain.

MetroHUB framework

MetroHUB is composed of six thematic areas that constitute the framework: planning, governance, finance, socio-environmental considerations, capacity-development and acupuncture projects are some of them (see figure 10).

Because of its holistic and people-focused approach, MetroHUB provides a suitable framework to enhance waste pickers' livelihoods and thus improve the overall waste management at the metropolitan scale. The components of MetroHUB are presented below in detail.

Planning

In the sphere of planning, MetroHUB supports with the following services:

- Identification of common visions for metropolitan development;
- Definition of strategic and tangible projects;
- Strengthening of urban-rural linkages through metropolitan and regional planning;
- Design of normative tools and guides for territorial and supra-municipal planning (for example, IG-UTP and the tool kit on Metropolitan Planning and Management Methodologies).

Governance

In this field, MetroHUB can provide support in the following ways:

- Providing tools and guidance for achieving multilevel governance (for example, Metropolitan, Territorial and Regional Governance Assessment Framework and Metropolitan Capacity Assessment);

- Fostering collaboration and coordination across different levels of government and sectoral authorities;
- Including relevant stakeholders such as civil society organizations (including organizations that represent the most vulnerable population groups), private sector and academia;
- Supporting the formation of governance structures that are limited to specific sectors or projects such as land-use planning or waste management (for example tool kit on metropolitan authorities).

FIGURE 10. MetroHUB framework

Finance

One of the biggest barriers preventing metropolitan areas from delivering on sustainable development is the unreliable access to financing for public services investments (for example, waste treatment facilities, water points, roads). There is an uneven relationship between the responsibilities entrusted to metropolitan authorities and their available resources, especially in developing countries where many municipal governments depend on the central government for funding.

Thus, for a more balanced relationship, metropolitan areas need to find innovative ways to expand revenue sources without increasing local taxes.

In particular, MetroHUB aims to:

- Support regions in identifying the appropriate financing mechanisms (which can be a combination of loans, various types of taxes, and public-private partnerships) to ensure adequate revenue resources;
- Help establish sound financial management by hiring qualified people and continuously building people's capacities;
- Support increasing metropolitan productivity and competitiveness (for example, a circular economy).

Socio-environmental considerations

In metropolitan areas, where the level of service provision is higher than in rural areas or smaller cities, social exclusion and inequality are enduring problems that need to be addressed. This becomes visible at very different levels of service provision and access to facilities or public transport. At the same time, the environment has to be not only protected in its current state (reactive-passive policy), but it also has to be enhanced and capitalized on (proactive and improvement policy).

At the metropolitan scale, social and environmental considerations are strongly included in all activities:

- Linking sustainable development with metropolitan management;
- Supporting the identification of patterns of social exclusion and inequalities and developing strategies to promote social cohesion. For instance, bringing/ improving service provision, enhancing accessibility to public transport and improving security could be some of the proposed actions;
- Supporting the protection and regeneration of environmental assets;
- Promoting resilience to climate change and other crises.

» *Modern megapolis with tall skyscrapers © Laura Tancredi*

Capacity development

Developing human, financial and institutional capacity at different government levels is one of the priority areas of the MetroHUB initiative. It can take several forms:

- Sharing and disseminating information, inspiring practices and case studies;
- Collecting, processing and realizing new data on metropolitan and territorial trends;
- Benchmarking and knowledge exchange;
- Developing normative tools for specific metropolitan and territorial challenges;
- Policies-review for enhancing institutional and human capacities;
- Workshops on improving organizational processes, enhanced communication, peer-to-peer learning.

Acupuncture projects

MetroHUB also promotes the definition and implementation of acupuncture projects, meaning tangible projects that directly improve the lives of the population while triggering further, long-term development. Translating a vision into strategic and tangible projects is an important step for implementing the vision and ensures that the population of a metropolitan area can experience the benefits of "actions taken" and thus buy-in to further implementations of the vision.

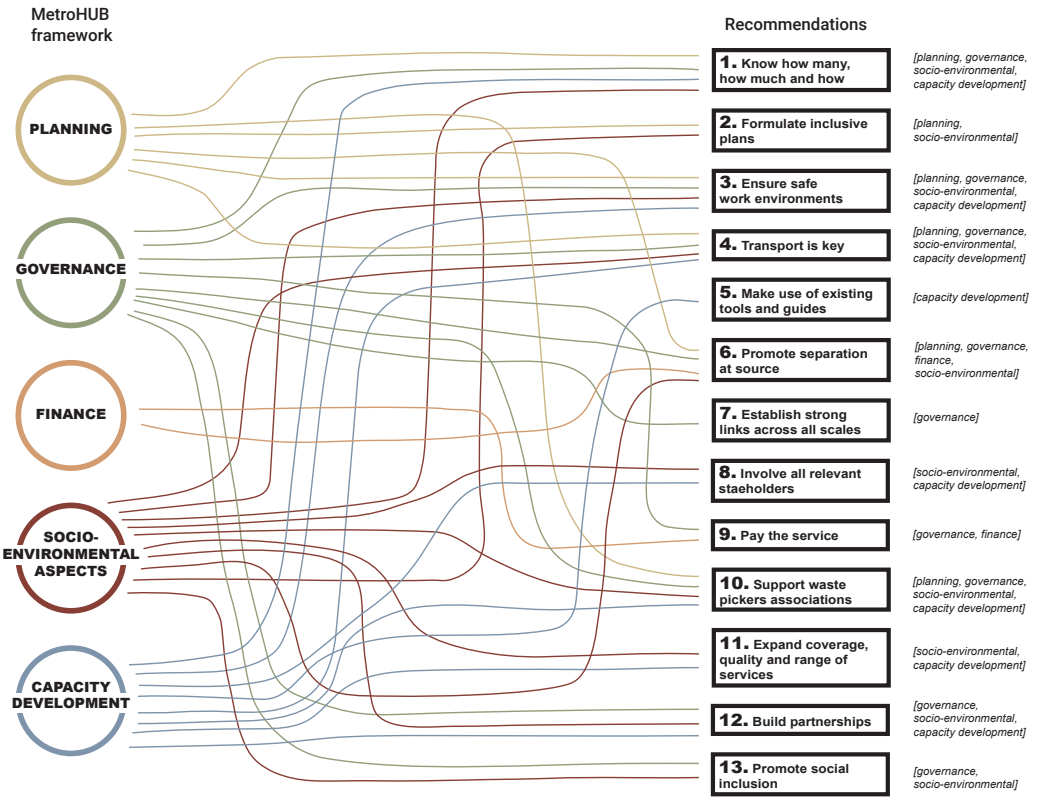
Acupuncture projects are designed to be impactful, realistically implementable and show a tangible "change" for the beneficiaries. The implementation of acupuncture projects also helps to adjust plans to the reality on the ground.

V. What can we do?

Twelve recommendations

The recommendations presented below are aimed at guiding metropolitan authorities, policymakers, and planners in establishing a waste sector that includes waste pickers into formal waste management systems (see figure 11). For each recommendation, a priority level (high, medium and low) and a list of concrete actions are provided. In addition, the case studies in the Annex illustrate how some of these recommendations have already been implemented across different parts of the world. However, successful implementations depend highly on the local context, meaning that an in-depth and on-the-ground study must be carried out to define the appropriate set of actions for each territory.

FIGURE 11. Recommendations for including waste pickers in metropolitan waste management



1. Establish a data-driven strategy

Priority Level: High

Accurate and comprehensive data collection is the foundation of an effective and tailored strategy for inclusive and sustainable waste management systems. Data on waste pickers, their working conditions and the materials they handle is crucial for designing interventions that align with actual needs. Without this foundational data, policies and further interventions may fail to effectively support waste pickers and improve waste management.

Conduct comprehensive surveys: Collect detailed data on waste pickers, including the population size, their working conditions, the types of materials they handle, and the areas in which they operate (see box 5). This foundational information will help to establish tailored strategies and ensure informed decision-making.

Map waste collection routes: Use geographic information systems (GIS) to map waste collection routes and identify areas where waste picking is most active. This will help to visualize the contribution of waste pickers and target support where it is most needed.

Set goals: The data collected can be used to set clear goals for waste management strategies. For example, you can establish goals based on the quantity of waste diverted from landfills thanks to the efforts of waste pickers. This can be calculated using the following formula: quantity of waste diverted from landfill = number of waste pickers in an area × average quantity of items daily collected by a waste picker.

Establish a monitoring system: This system helps to identify challenges and redefine interventions. It could involve periodic surveys, collaboration with waste picker associations and the use of GIS to track changes in collection areas.

BOX 5. Planning for waste pickers

There are many aspects to consider in understanding a waste picking infrastructure at the metropolitan scale. To enhance both productivity and livelihoods of waste pickers, it is important to answer the following questions:

- Who are waste pickers (age, sex, family, social status)?
- How many waste pickers are active in the defined region?
- What do waste pickers collect (paper, glass, metal, e-waste)? How much in each category?

- Why do they collect certain materials and not others?
- To whom do they sell their materials and how is the price determined?
- How do they transport the material they collect?
- If they do not live and work in the same place, how do they move between home and work?

From a spatial perspective, it is essential to investigate:

- What services do they provide?
- Where do they collect, sort, store, sell and recycle materials?
- Where do they live and where do they originally come from (rural migrants, member of a waste pickers' family)?
- Are they spatially excluded from certain neighbourhoods? Why?
- If the formal waste facilities exist (for example, landfills, incinerators, recycling plants), where are they located? Do they receive waste from other cities or countries? Do waste pickers work, live or somehow interact with these facilities?

2. Plans for spatial and infrastructural needs of waste pickers

Priority Level: High

Waste pickers require adequate space to efficiently carry out their work, which includes collecting, transporting, sorting, storing, selling, and processing waste. Providing dedicated spaces for waste pickers improves the efficiency and safety of their activities.

Designate collection areas: Assign specific collection areas to individual waste pickers or their organizations to streamline the collection process. This measure helps reduce competition among waste pickers operating in overlapping territories, promoting collaboration and efficiency.

Create intermediary storage points: Provide secure warehouses where waste pickers can sort and store materials. These facilities protect valuable recyclables from theft and weather damage, ensuring higher quality and better prices. Storage points also improve efficiency, allow for bulk sales, and reduce health risks by moving materials away from public streets.

Establish community-run recycling centers: Municipalities can establish recycling centers that are run by waste pickers or their associations. Recycling facilities provide opportunities for waste pickers to gain new skills and increase their earnings by engaging in activities such as recycling, repairing and repurposing materials. Thus, these centers improve efficiency and value recovery.

3. Ensure safe working environments, especially in landfills

Priority Level: High

Waste pickers often work in hazardous conditions, particularly those who operate in landfills. These environments expose them to health risks, such as physical injuries, exposure to toxic substances, and poor air quality. Providing basic safety tools, training, and designated safe zones within landfills can greatly reduce these risks. Ensuring a safe working environment is not only a matter of human rights but also improves the efficiency and sustainability of waste management by reducing health-related disruptions.

Provide personal protective equipment: Equip waste pickers with personal protective equipment (PPE) such as gloves, boots, masks, and reflective clothing. This reduces their exposure to hazardous materials and helps prevent injuries.

Organize health and safety training: Conduct training sessions on health and safety practices, including the proper use of PPE, safe handling of hazardous materials, and first aid. These trainings can empower waste pickers to protect themselves better.

Establish safe zones within landfill: Designate specific areas within landfills where waste pickers can safely sort waste, separate recyclables, and avoid heavy machinery. This measure helps minimize the risk of accidents and injuries.

The case study in Mumbai, India, highlights the severe health risks waste pickers face in hazardous environments and the need for protective measures and social inclusion (see case study 2 in Annex).

4. Improve transport options

Priority Level: Medium

Transportation is a critical aspect of waste pickers' work. The ability to move collected materials efficiently from collection points to sorting or selling locations can significantly impact their productivity and income. Due to limited access to affordable and appropriate modes of transport, many waste pickers are forced to carry heavy loads over long distances.

Improving access to transport can ease their workload, enhance efficiency and expand their coverage area. This will also help reduce their dependence on middlemen, who often set the prices, and provide them with greater bargaining power in selling recyclables directly to recycling industries.

Facilitate access to affordable transportation: Provide waste pickers with affordable vehicles, such as carts, bicycles, or small trucks. Many waste pickers currently cover large distances on foot, carrying heavy bags. Offering appropriate transport options will significantly reduce their burden and improve efficiency in collecting and moving valuable materials.

Subsidize transportation costs: Many waste pickers spend a significant portion of their income on transporting materials or are forced to sell their recyclables at prices dictated by middlemen. This measure aims to offset transportation costs for waste pickers. Subsidies could be provided through municipal funding or partnerships with NGOs.

Revise access regulations: Local governments should revise regulations that restrict waste pickers' access to certain areas or public transportation. Allowing waste pickers to use public transport or access restricted zones can improve their efficiency.

Identify optimal routes: Collaborate with waste pickers to develop efficient waste collection and transport routes that minimize physical strain and travel time. This can be done using GIS mapping to identify the most efficient paths.

5. Promote multi-level governance

Priority Level: High

Effective waste management requires coordination across multiple levels of governance, from local to global. Metropolitan authorities should ensure that community needs are reflected in national and international policies and that these agendas are implemented locally. This multilevel governance approach creates more coherent policies and stronger support for waste pickers.

Create a metropolitan waste management committee: Establish a committee that includes representatives from all levels of government—local, metropolitan and national—to ensure that waste management strategies are comprehensive and inclusive. This committee should focus on various issues such as phasing out uncontrolled dumps and developing comprehensive national policies such as recycling targets. Moreover, the recognition of waste pickers' contributions at the national level should be a priority, ensuring that resources are allocated to enhance their work conditions and access to infrastructure.

Align with global agendas: Work to align metropolitan waste management initiatives with international standards and goals, such as the Sustainable Development Goals. This alignment can help secure funding and technical support from international organizations. For instance, international regulations on traded waste are scarcely enforced. As developing countries often lack recycling facilities, better controls at borders might prevent imported waste ending up in landfills or uncontrolled dumps.

6. Involve all relevant stakeholders in waste (and resource) management

Priority Level: High

Successful waste management depends on the involvement of all relevant stakeholders, including waste pickers, recycling companies, municipal authorities and the public. Waste pickers are often marginalized and excluded from decision-making processes, despite their critical role in waste management. Involving them in planning and policymaking ensures their needs are addressed and promotes a more inclusive waste management system.

Organize roundtable discussions: Bring together waste pickers, private recycling companies, municipal authorities and community representatives for regular discussions on waste management issues. These discussions can help identify challenges and develop collaborative solutions.

Include waste pickers in policymaking: Ensure that waste pickers have representation in municipal councils or waste management committees. This inclusion will help ensure that their perspectives are considered in decision-making processes.

7. Provide economic support and offer formalization options

Priority Level: High

Waste pickers play a crucial role in advancing several Sustainable Development Goals' targets and contributing to the circular economy at multiple levels. Despite this, their work is often undervalued and they remain under-compensated. Integrating waste pickers into the formal sector can yield numerous benefits, including enhanced economic stability, improved working conditions and access to essential social protections such as healthcare. These advantages not only contribute to the livelihoods of waste pickers but also enhance the efficiency of waste management systems, for instance by extending collection coverage to underserved areas. Establishing payment schemes

and financial support mechanisms can facilitate the transition to a formal waste management system. Despite these advantages, it is crucial that any inclusion strategy takes care not to exclude informal pickers through top-down formal waste management solutions that may only benefit private contractors or larger recycling companies (see case study 1 in Annex).

Establish a fair payment scheme: Develop a payment scheme for waste pickers that ensures they are fairly compensated for their services. This could be funded through municipal taxes, producer responsibility fees, or public-private partnerships. This measure ensures direct compensation for informal waste pickers without requiring the formalization of their employment status.

Develop contract-based systems: This measure is about formalizing the role of waste pickers by offering contracts that not only provide a stable income but also grant legal recognition and social protections (for example, health insurance, pensions). These contracts also create a more structured and reliable relationship between waste pickers and municipalities or businesses.

The case study in São Paulo, Brazil, showcases how waste picker cooperatives can improve livelihoods and partner with municipalities to formalize services (see case study 4 in Annex).

8. Support waste pickers' associations

Priority Level: Medium

Waste pickers' associations play a crucial role in advocating for the rights of waste pickers, negotiating better terms with buyers, and providing support to their members. These associations, often member-based organizations, offer a platform for waste pickers to address common challenges, engage with other stakeholders and gain legitimacy in the waste management sector. Moreover, associations can help address issues such as child labour (see also recommendation 9).

Facilitate the creation of local waste pickers' associations: If local associations are not in place, their creation should be fostered in several ways, for instance by offering initial financial support for registration and operational costs.

Strengthen existing waste pickers' associations: Waste stakeholders can support waste pickers' associations in many ways. For instance, they can offer training, facilitate access to microcredit, and support their legal recognition at the national level.

Provide employment and social protections: Encourage municipalities and recycling companies to employ waste pickers who are part of associations. This facilitates access of waste pickers to social protection systems (for example, health insurance,

pensions, safety nets for income loss due to illness or injury) and to social services such as free nursery and education for waste pickers' children.

The case study of Ankara, Turkey, illustrates the challenges waste pickers face when excluded from formal systems due to regulations, and the role of cooperatives in advocating for their rights (see case study 1 in Annex).

9. Promote social inclusion

Priority Level: Medium

Waste pickers are often marginalized and face social stigma and discrimination. Promoting social inclusion involves changing public perceptions of waste pickers, ensuring their rights are respected, and reducing inequalities in access to services and opportunities. By promoting social inclusion, municipalities can help waste pickers gain recognition for their contributions to achieving the Sustainable Development Goals and improve their quality of life.

Launch public awareness campaigns: Develop and launch public awareness campaigns to change societal attitudes towards waste pickers and promote respect for their work. Highlight how waste pickers contribute to climate change mitigation and the Goals by diverting waste from landfills and supporting the circular economy.

Provide uniforms and identity cards: Distribute uniforms and identification cards to waste pickers to enhance their legitimacy and visibility. This can help reduce harassment and improve their acceptance by the public.

Address discrimination: Work with local governments to address discrimination and harassment faced by waste pickers. For instance, make sure that they have access to waste, and facilities such as housing and transport, and fair pay.

Introduce gender-sensitive policies: Address the unique challenges faced by women waste pickers, including unequal pay, restricted access to high-value materials and childcare responsibilities. Key measures should include ensuring women's representation in leadership roles within waste management organizations, creating safer work environments and providing childcare support.

Eliminate child labour in waste picking: Local authorities should collaborate with NGOs, schools and social workers to identify children involved in waste picking and provide them with educational opportunities and safe spaces while their parents are working. Offer financial and social support to waste picker families so children are not forced into labour due to economic hardship. Prioritize child protection policies in any integration of waste pickers into formal waste management systems.

The case study of Johannesburg, South Africa, demonstrates the importance of formal recognition and reducing social stigma for waste pickers (see case study 3 in Appendix 1).

10. Promote separation at source

Priority Level: High

Separation at source is a critical step in reducing contamination of recyclables and improving the efficiency of resource recovery. Encouraging households and businesses to sort their waste at the source significantly enhances the ability of waste pickers to collect high-quality materials, reduces health risks, and dignifies their work. Promoting separation at the source involves not only regulations but also public awareness campaigns and incentives to encourage compliance.

Implement awareness campaigns: Launch awareness campaigns to educate the public about the importance of separating recyclables, helping to foster a culture of responsible waste management.

Establish policies for mandatory separation: Create regulations that require businesses and households to separate waste at the source, ensuring compliance through incentives or penalties. For instance, distributing different bins for recyclables, organic waste, and non-recyclables can facilitate the segregation of waste.

11.Expand coverage and range of services

Priority Level: Low

Expanding the coverage of waste management services can help improve overall efficiency and ensure that all communities are served. Waste pickers are often concentrated in densely populated urban areas, but there is a growing need for waste management services in underserved areas, including peri-urban and rural locations. Moreover, by correcting any potentially harmful practice and by expanding the range of services offered by waste pickers, municipalities can provide new economic opportunities for waste pickers and strengthen their role in the circular economy.

Broaden waste collection coverage: Partner with waste pickers to extend waste collection services to underserved areas. This expansion can help reduce illegal dumping and improve health conditions in these communities.

Support waste pickers in adopting sustainable practices: Organize workshops to address the unhygienic conditions and harmful practices often linked to informal recycling, such as land and water contamination from leachate discharge and exposure to hazardous materials. These sessions can equip waste pickers with safer and more sustainable techniques.

Create new job opportunities: Provide training to develop waste pickers' skills in areas such as recycling, repairing and composting. For instance, waste pickers might set up small-scale recycling industries. This measure aims to empower waste pickers by boosting their earning potential and contributions to the circular economy.

12. Build partnerships and leverage global best practices

Priority Level: Medium

Establishing local and global partnerships are essential for creating an inclusive, sustainable waste management system. These partnerships can yield several benefits for all stakeholders involved, including waste pickers and their associations, recycling industries, public authorities, NGOs and local businesses. These collaborations facilitate the sharing of innovative solutions and successful models from around the world, empowering waste pickers while improving waste management practices.

Collaborate with local authorities: Local governments should partner with waste pickers' associations to integrate waste pickers into municipal waste management systems. This collaboration can lead to multiple benefits, including fair compensation and recognition for waste pickers, higher recycling rates and improved environmental outcomes.

Establish contracts with recycling firms: Formal agreements between waste pickers' associations and recycling firms ensure a regular supply of recyclable materials to recycling industries. Moreover, these agreements help waste pickers secure better prices for their materials and reduce exploitation by middlemen.

Collaborate with local businesses: Local businesses can collaborate with waste pickers in several ways. For instance, they can provide already sorted recyclables, training programmes or even jobs to waste pickers. These collaborations foster community engagement and strengthen corporate social responsibility initiatives.

Partner with NGOs: Collaborate with NGOs to provide social services, such as healthcare, education and childcare for waste pickers and their families. NGOs can also provide technical support and advocacy for waste pickers' rights.

Join international networks: Join global networks such as WIEGO, Waste Wise Cities or the International Alliance of Waste Pickers to share best practices and successful strategies in waste management. These collaborations can lead to innovative approaches that address local challenges.

VI. Ways forward

Building on previous work, UN-Habitat can support the transition to a more socially inclusive and efficient waste sector with a wide range of interdisciplinary and multi-stakeholder projects. Specifically, it shall focus on the following steps and timeline to enhance waste pickers' livelihoods and working conditions in metropolitan regions.

What can be done now?

UN-Habitat is committed to take immediate action and in particular to do the following:

- Share this document and its recommendations with partners and the larger public through different communication channels and social media platforms. We invite you to do the same through your network;
- Welcome and support members (cities and local governments) or affiliates (any other organization) of UN-Habitat's Waste Wise Cities. To become members or affiliates, an email should be sent to wastewisecities@un.org;
- Raise awareness about waste picking and informal waste management through conferences and other forms of discussion platforms linked to waste, sustainable development and climate change. The participation in these events is instrumental in broadcasting and mainstreaming the waste pickers' agenda;
- Foster partnerships with: other United Nations agencies, such as the International Labour Organization, the Food and Agriculture Organization and the United Nations Environment Programme; other partners focused on waste management, working poor and informal economies, such as WIEGO, the World Bank and International Solid Waste Association; and representatives from civil society, such as the International Alliance of Waste Pickers and other waste pickers' organizations.

What can be done next?

Below are forthcoming actions:

- Promote cross-country learning by collecting case studies of waste pickers around the world based on the MetroHUB framework;
- Identify and work with forward-thinking metropolitan authorities that are willing to include waste picking in their waste management sector;

- Map out and engage with leading producers willing to invest, think out-of-the-box and experiment with new models of waste and resource management that take into account waste pickers' potential.

What needs further research?

The informal waste sector is a complex web of actors and sometimes conflicting interests. With reference to the recommendations and points made above, more research and actions are needed to answer the following key questions:

- What are the incentives for each group of actors to engage in inclusive and sustainable waste models?
- How can policies be evaluated and their impacts measured?
- How can the livelihoods of the most vulnerable among waste pickers (women, children, older people, persons living with disabilities and landfill waste pickers) be improved?

» *Wet Waste Picker, India © Mathieu Morand, 2013*

Annex – Case studies of waste pickers across the world

Case study 1: Effects of regulations on waste pickers in Ankara, Turkey

Even though not formally recognized, waste pickers in Türkiye are fundamental for the collection and recycling system. Notably, they collect 30 to 70 per cent of the recyclables in the country (Florin, 2018). These undervalued, unrecognized and invisible heroes account for 2.5 per cent of the Turkish population. There are approximately 500,000 waste pickers in Türkiye and a total of 2 million families are dependent on waste picking as their primary source of livelihood (Oran, 2016). The waste pickers are usually immigrants and people from lower-class families (Oran, 2016). Ankara, the capital city and the second-largest city in the country, has 15,000 waste pickers (EJOLT, 2019). Apart from poor living conditions, the waste pickers in the metropolitan areas are not recognized by the Ankara Metropolitan Municipality.

Recycling in the city was entirely under the Invest Trading and Consulting AG, and waste pickers were prohibited from taking part in any activity (EJOLT, 2019). More than 30,000 individuals were negatively affected by this since they lost their jobs and their monthly income dropped (EJOLT, 2019). This resulted from the new urban waste management laws synchronized by the Government of Türkiye with 2004 European Union legislation after the 2003 European Union integration process (Dinler, 2016). The Government also introduced the 2011 Regulation on Packaging Waste Control (Oran, 2016). These laws enabled the municipalities in Türkiye to establish and manage waste facilities or collaborate with licensed private companies in establishing recycling facilities (Dinler, 2016).

Garbage collector in action © Pexels/ Fatih Guney

This case study will contain an analysis of the effect of the regulations and laws on waste pickers in Ankara and how they are at risk of being unemployed due to the environmental laws that have been implemented in Türkiye.

The new laws and regulations from 2003 meant that waste collection would only benefit licensed firms, excluding informal waste pickers from the sector (Gugus, 2019). The Government also imposed fines of US$ 48,000 on recycling firms that bought waste from an informal waste picker (Gugus, 2019). These penalties resulted in most waste pickers losing their jobs, since recycling companies feared purchasing waste from unaccredited warehouses. Waste picking was considered to be illegal in Türkiye, making it hard for waste pickers to keep their jobs (Odevci, 2012; Dzhengiz, 2024). In 2016, The Ministry of Environment and Urban Planning had amended the laws and allowed licensed firms to purchase waste from waste pickers; however, this waste is not considered to be legal and is not entered into income and expense reports of the recycling companies.

There are various developments in the solid waste management system; however, waste pickers' exclusion and lack of legal recognition is a problem. Waste pickers have begun forming cooperatives in Ankara such as the Street Waste Collectors Association, Recycling Workers/ Waste Picker Association, and Waste Materials Manufacturers Association to fight policies that threaten their existence (EJOLT, 2019). These organizations are essential in fighting for recognition, fighting against discrimination and marginalization, engaging the various municipalities and demonstrating waste pickers' significance in waste management (Florin, 2018).

Case study 2: Enhancing health of waste pickers in Mumbai, India

Waste picking is one of the lowest-ranked jobs in the informal economy of India. Between 1.5 million to 4 million waste pickers in the country make a livelihood from the 62 million tonnes of waste generated annually (Dandapani, 2017).

Waste pickers, largely women, children and illiterate individuals, often face marginalization due to their gender, class and caste. For many of them, waste picking is their only source of income (Reddy, 2017). Despite the country's impressive recycling rate, where 70 per cent of all PET(polyethylene terephthalate) bottles are recycled thanks to the informal sector (Dandapani, 2017), waste pickers remain highly vulnerable. They face severe challenges, such as marginalization, lack of recognition, discrimination and, most notably, significant health hazards. The focus in this document is on the health risks waste pickers face in Mumbai.

There, they are frequently exposed to severe health risks due to poor waste management. A study conducted in Mumbai highlighted their heightened vulnerability to respiratory complications such as chronic coughing and dyspnoea, caused by exposure to landfill fumes (Chokhandre and others, 2017). Poor hygiene practices lead to gastrointestinal problems such as nausea, dysentery and intestinal pain. Waste pickers perform physically strenuous tasks, such as prolonged bending and climbing over piles of garbage, often without protective equipment. This contributes to musculoskeletal disorders affecting their lower and upper backs, shoulders, and knees, disrupting their daily activities (Singh and Chokhandre, 2015; Schibye and others, 2001). Moreover, open burning of waste and air pollution exacerbate respiratory issues, while contact with waste materials can lead to skin infections, such as scabies. Other risks include injuries from improperly disposed of medical waste and exposure to vector-borne diseases such as malaria, dengue, Zika and rat-borne illnesses. Mental health conditions, such as anxiety and depression, are also common, particularly among women, due to the harsh work conditions (Mote and others, 2016).

To improve waste pickers' health, several initiatives have been introduced. In 2016, the Union Ministry of Environment, Forest and Climate Change introduced new Solid Waste Management Rules (Sambyal, 2016). These rules mandate segregation at source and promote awareness campaigns for sanitary waste disposal. These efforts aim to create a more hygienic work environment for waste pickers. Further measures could enhance these steps, such as organizing health camps, implementing education and vaccination programmes and providing protective uniforms. By integrating these initiatives with the 2016 Solid Waste Management Rules, waste pickers can work in safer conditions, which will enhance public health and environmental sustainability.

Cleaning up shoreline debris © Pexels/ Asi Pav

Case study 3: Integrating waste pickers in local regulations in Johannesburg, South Africa

South Africa has an estimated 60,000 to 90,000 waste pickers, who play a critical role in waste management by collecting between 80 to 90 per cent of recyclable waste in the country (Godfrey and Oelofse, 2017; Makhasana and others, 2012). Despite their significant contribution, waste pickers are not formally recognized and face widespread discrimination and marginalization (Oxford, 2020). The country's National Waste Management Strategy of 2011 acknowledged the important role of waste pickers, but municipal governments have been slow to integrate them into formal waste management systems (Simatele and others, 2017). In Johannesburg, the situation mirrors national trends. Waste pickers are regularly excluded from landfills and other formal waste management activities, while also facing daily discrimination from both the public and authorities. Notably, 97 per cent of waste pickers in Johannesburg have experienced some form of public discrimination (Samson, 2019).

Furthermore, these workers are usually not paid for their services, lack formal identity cards and operate in precarious conditions without social protections (Oxford, 2020). Recent efforts have been made to improve the integration of waste pickers into Johannesburg's formal waste management system. The Department of Environmental Affairs has initiated a registration process for waste pickers, which is a key step towards formal recognition and inclusion. Additionally, government-led initiatives have begun compensating waste pickers for their collection services. Collaboration between non-governmental organizations, waste picker associations and local authorities has also resulted in the development of policies aimed at their seamless integration into the formal solid waste management system (Simatele and others, 2017). These measures, however, will only succeed if waste pickers are actively involved in decision-making processes and if public perceptions are changed through social integration efforts.

A lively urban street © Pexels/ Vukile Makau

Case study 4: Improving livelihoods of waste pickers in Sao Paulo, Brazil

In Brazil, waste picking has gained recognition and support over the years. It was legally recognized as a formal occupation in 2002, making Brazil the first country to systematically collect official statistics on waste pickers. Over 250,000 waste pickers contribute to the country's impressive recycling rates—92 per cent for aluminium and 80 per cent for cardboard in 2018. However, only about 5 per cent of these workers have formal contracts that guarantee better wages and working conditions. The sector is male-dominated, though women's presence within waste pickers' associations is increasing (Fergutz and others, 2011).

São Paulo, the country's largest city, faces a unique set of challenges with waste pickers. The city is home to about 10,000 waste pickers, 90 per cent of whom work independently in difficult conditions and earn below the minimum wage. The rising cost of living and a decline in the price of waste materials have worsened the situation. Waste pickers who are not part of cooperatives struggle the most, as they lack the benefits and protections enjoyed by those affiliated with municipal cooperatives. On the other hand, waste pickers in cooperatives benefit from access to water, electricity and rent subsidies provided by the government, which also pays cooperatives for their waste collection services (IAWP website; Jacobi and Besen, 2011; ILO, 2019).

The integration of waste pickers into formal cooperatives has proved to be one of the most successful measures in enhancing their livelihoods. Cooperatives have been vital in ensuring that waste pickers are recognized, improving their working conditions, and securing better pay through negotiations with both private intermediaries and public authorities. São Paulo has 21 waste picker associations that work closely with the municipal government, which has supported the establishment of sorting centres and provided financial compensation for their services. Although cooperatives have significantly improved the lives of many waste pickers, there is still a need for a more comprehensive and universal cooperative framework to ensure all waste pickers can benefit from these advancements (Magni and Gunther, 2014; Fergutz and others, 2011). Further efforts should focus on expanding cooperative participation and enhancing social protections for independent waste pickers.

Sorting waste at landfill © Lixao Catadores - Marcello Casal Jr /Agencia Brasil

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This document discusses the inclusion of waste pickers in metropolitan waste management systems, highlighting their roles, challenges, and recommendations for effective integration.

Several ways to improve waste management in metropolitan areas are described in this publication, starting with the people who work in this sector. Waste pickers contribute to the circular economy by transforming waste into valuable resource and are key allies in the fight against climate change.

Essential concepts to understand metropolitan waste management are examined in the first chapter, followed by an exploration of some of the reasons for its current inefficiencies. The other sections respectively outline the work of waste pickers, including the advantages of their activities and their day-to-day struggles, defining the problem as ''inefficiency and fragile waste picking'', and show the connections between waste picking and global agendas on sustainable development. The UN-Habitat MetroHUB initiatives, a holistic approach to promote the development of metropolitan areas, is introduced next.

The section 'What can we do?' features 12 recommendations proposed to both empower waste pickers and improve waste management. UN-Habitat's commitments, urgent actions and open questions are outlined in the last chapter.

With this document, we aim to reach all stakeholders, in particular policymakers, decision-makers, planners and waste pickers' organizations who need to understand each other and work together to build a better metropolitan waste sector in a post-COVID world.

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